GNU Gnulib

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This manual is for GNU Gnulib (updated 2017-05-03 05:43:19), which is a library of common routines intended to be shared at the source level.

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1 Brief Overview

Gnulib is a source code library that provides basic functionality to programs and libraries. Many software packages make use of Gnulib to avoid reinventing the portability wheel.

Resources:

- Gnulib is hosted at Savannah: `http://savannah.gnu.org/projects/gnulib`. Get the sources through Git from there.
- The Gnulib home page: `http://www.gnu.org/software/gnulib/`.

1.1 Gnulib Basics

While portability across operating systems is not one of GNU's primary goals, it has helped introduce many people to the GNU system, and is worthwhile when it can be achieved at a low cost. This collection helps lower that cost.

Gnulib is intended to be the canonical source for most of the important "portability" and/or common files for GNU projects. These are files intended to be shared at the source level; Gnulib is not a typical library meant to be installed and linked against. Thus, unlike most projects, Gnulib does not normally generate a source tarball distribution; instead, developers grab modules directly from the source repository.

The easiest, and recommended, way to do this is to use the `gnulib-tool` script. Since there is no installation procedure for Gnulib, `gnulib-tool` needs to be run directly in the directory that contains the Gnulib source code. You can do this either by specifying the absolute filename of `gnulib-tool`, or by using a symbolic link from a place inside your `PATH` to the `gnulib-tool` file of your preferred Gnulib checkout. For example:

```
$ ln -s $HOME/gnu/src/gnulib.git/gnulib-tool $HOME/bin/gnulib-tool
```

1.2 Git Checkout

Gnulib is available for anonymous checkout. In any Bourne-shell the following should work:

```
$ git clone git://git.sv.gnu.org/gnulib.git
```

For a read-write checkout you need to have a login on '`savannah.gnu.org`' and be a member of the Gnulib project at `http://savannah.gnu.org/projects/gnulib`. Then, instead of the URL `git://git.sv.gnu.org/gnulib`, use the URL '`ssh://`*user*`@git.sv.gnu.org/srv/git/gnulib`' where *user* is your login name on savannah.gnu.org.

git resources:

Overview: `http://en.wikipedia.org/wiki/Git_(software)`

Homepage:
`http://git-scm.com/`

When you use `git annotate` or `git blame` with Gnulib, it's recommended that you use the `-w` option, in order to ignore massive whitespace changes that happened in 2009.

1.3 Keeping Up-to-date

The best way to work with Gnulib is to check it out of git. To synchronize, you can use `git pull`.

Subscribing to the `bug-gnulib@gnu.org` mailing list will help you to plan when to update your local copy of Gnulib (which you use to maintain your software) from git. You can review the archives, subscribe, etc., via `https://lists.gnu.org/mailman/listinfo/bug-gnulib`.

Sometimes, using an updated version of Gnulib will require you to use newer versions of GNU Automake or Autoconf. You may find it helpful to join the autotools-announce mailing list to be advised of such changes.

1.4 Contributing to Gnulib

All software here is copyrighted by the Free Software Foundation—you need to have filled out an assignment form for a project that uses the module for that contribution to be accepted here.

If you have a piece of code that you would like to contribute, please email `bug-gnulib@gnu.org`.

Generally we are looking for files that fulfill at least one of the following requirements:

- If your `.c` and `.h` files define functions that are broken or missing on some other system, we should be able to include it.
- If your functions remove arbitrary limits from existing functions (either under the same name, or as a slightly different name), we should be able to include it.

If your functions define completely new but rarely used functionality, you should probably consider packaging it as a separate library.

1.4.1 Gnulib licensing

Gnulib contains code both under GPL and LGPL. Because several packages that use Gnulib are GPL, the files state they are licensed under GPL. However, to support LGPL projects as well, you may use some of the files under LGPL. The "License:" information in the files under modules/ clarifies the real license that applies to the module source.

Keep in mind that if you submit patches to files in Gnulib, you should license them under a compatible license, which means that sometimes the contribution will have to be LGPL, if the original file is available under LGPL via a "License: LGPL" information in the projects' modules/ file.

1.4.2 Indent with spaces not TABs

We use space-only indentation in nearly all files. This includes all `*.h`, `*.c`, `*.y` files, except for the `regex` module. Makefile and ChangeLog files are excluded, since TAB characters are part of their format.

In order to tell your editor to produce space-only indentation, you can use these instructions.

- For Emacs: Add these lines to your Emacs initialization file (`$HOME/.emacs` or similar):

```
;; In Gnulib, indent with spaces everywhere (not TABs).
```

```
;; Exceptions: Makefile and ChangeLog modes.
(add-hook 'find-file-hook '(lambda ()
  (if (and buffer-file-name
           (string-match "/gnulib\\>" (buffer-file-name))
           (not (string-equal mode-name "Change Log"))
           (not (string-equal mode-name "Makefile")))
      (setq indent-tabs-mode nil))))
```

- For vi (vim): Add these lines to your `$HOME/.vimrc` file:

  ```
  " Don't use tabs for indentation. Spaces are nicer to work with.
  set expandtab
  ```

  For Makefile and ChangeLog files, compensate for this by adding this to your `$HOME/.vim/after/indent/make.vim` file, and similarly for your `$HOME/.vim/after/indent/changelog.vim` file:

  ```
  " Use tabs for indentation, regardless of the global setting.
  set noexpandtab
  ```

- For Eclipse: In the "Window|Preferences" dialog (or "Eclipse|Preferences" dialog on Mac OS),
  1. Under "General|Editors|Text Editors", select the "Insert spaces for tabs" checkbox.
  2. Under "C/C++|Code Style", select a code style profile that has the "Indentation|Tab policy" combobox set to "Spaces only", such as the "GNU [built-in]" policy.

  If you use the GNU indent program, pass it the option `--no-tabs`.

1.4.3 How to add a new module

- Add the header files and source files to `lib/`.
- If the module needs configure-time checks, write an Autoconf macro for it in `m4/`*`module`*`.m4`. See `m4/README` for details.
- Write a module description `modules/`*`module`*, based on `modules/TEMPLATE`.
- If the module contributes a section to the end-user documentation, put this documentation in `doc/`*`module`*`.texi` and add it to the "Files" section of `modules/`*`module`*. Most modules don't do this; they have only documentation for the programmer (= Gnulib user). Such documentation usually goes into the `lib/` source files. It may also go into `doc/`; but don't add it to the module description in this case.
- Add the module to the list in `MODULES.html.sh`.

You can test that a module builds correctly with:

```
$ ./gnulib-tool --create-testdir --dir=/tmp/testdir module1 ... moduleN
$ cd /tmp/testdir
$ ./configure && make
```

Other things:

- Check the license and copyright year of headers.
- Check that the source code follows the GNU coding standards; see `http://www.gnu.org/prep/standards`.

- Add source files to `config/srclist*` if they are identical to upstream and should be upgraded in Gnulib whenever the upstream source changes.
- Include header files in source files to verify the function prototypes.
- Make sure a replacement function doesn't cause warnings or clashes on systems that have the function.
- Autoconf functions can use '`gl_*`' prefix. The '`AC_*`' prefix is for autoconf internal functions.
- Build files only if they are needed on a platform. Look at the `alloca` and `fnmatch` modules for how to achieve this. If for some reason you cannot do this, and you have a `.c` file that leads to an empty `.o` file on some platforms (through some big `#if` around all the code), then ensure that the compilation unit is not empty after preprocessing. One way to do this is to `#include <stddef.h>` or `<stdio.h>` before the big `#if`.

1.5 Portability guidelines

Gnulib code is intended to be portable to a wide variety of platforms, not just GNU platforms. Gnulib typically attempts to support a platform as long as it is still supported by its provider, even if the platform is not the latest version. See Section 2.4 [Target Platforms], page 8.

Many Gnulib modules exist so that applications need not worry about undesirable variability in implementations. For example, an application that uses the `malloc` module need not worry about `malloc (0)` returning `NULL` on some Standard C platforms; and `glob` users need not worry about `glob` silently omitting symbolic links to nonexistent files on some platforms that do not conform to POSIX.

Gnulib code is intended to port without problem to new hosts, e.g., hosts conforming to recent C and POSIX standards. Hence Gnulib code should avoid using constructs that these newer standards no longer require, without first testing for the presence of these constructs. For example, because C11 made variable length arrays optional, Gnulib code should avoid them unless it first uses the `vararrays` module to check whether they are supported.

The following subsections discuss some exceptions and caveats to the general Gnulib portability guidelines.

1.5.1 C language versions

Currently Gnulib assumes at least a freestanding C99 compiler, possibly operating with a C library that predates C99; with time this assumption will likely be strengthened to later versions of the C standard. Old platforms currently supported include AIX 6.1, HP-UX 11i v1 and Solaris 10, though these platforms are rarely tested. Gnulib itself is so old that it contains many fixes for obsolete platforms, fixes that may be removed in the future.

Because of the freestanding C99 assumption, Gnulib code can include `<float.h>`, `<limits.h>`, `<stdarg.h>`, `<stdbool.h>`, `<stddef.h>`, and `<stdint.h>` unconditionally. Gnulib code can also assume the existence of `<ctype.h>`, `<errno.h>`, `<fcntl.h>`, `<locale.h>`, `<signal.h>`, `<stdio.h>`, `<stdlib.h>`, `<string.h>`, and `<time.h>`. Similarly, many modules include `<sys/types.h>` even though it's not even in C11; that's OK since `<sys/types.h>` has been around nearly forever.

Even if the include files exist, they may not conform to the C standard. However, GCC has a `fixincludes` script that attempts to fix most C89-conformance problems. Gnulib

currently assumes include files largely conform to C89 or better. People still using ancient hosts should use fixincludes or fix their include files manually.

Even if the include files conform, the library itself may not. For example, `strtod` and `mktime` have some bugs on some platforms. You can work around some of these problems by requiring the relevant modules, e.g., the Gnulib `mktime` module supplies a working and conforming `mktime`.

1.5.2 C99 features assumed by Gnulib

Although the C99 standard specifies many features, Gnulib code is conservative about using them, partly because Gnulib predates the widespread adoption of C99, and partly because many C99 features are not well-supported in practice. C99 features that are reasonably portable nowadays include:

- A declarations after a statement, or as the first clause in a `for` statement.
- `long long int`.
- `<stdbool.h>`, assuming the `stdbool` module is used. See Section 8.46 [stdbool.h], page 56.
- `<stdint.h>`, assuming the `stdint` module is used. See Section 8.48 [stdint.h], page 57.
- Compound literals and designated initializers.
- Variadic macros.
- `static inline` functions.
- `__func__`, assuming the `func` module is used. See Section 13.16 [func], page 641.
- The `restrict` qualifier, assuming `AC_REQUIRE([AC_C_RESTRICT])` is used.
- Flexible array members (however, see the `flexmember` module).

1.5.3 C99 features avoided by Gnulib

Gnulib avoids some features even though they are standardized by C99, as they have portability problems in practice. Here is a partial list of avoided C99 features. Many other C99 features are portable only if their corresponding modules are used; Gnulib code that uses such a feature should require the corresponding module.

- Variable length arrays, unless `__STDC_NO_VLA__` is defined. See the `vararrays` module.
- `extern inline` functions, without checking whether they are supported. See Section 13.6 [extern inline], page 627.
- Type-generic math functions.
- Universal character names in source code.
- `<iso646.h>`, since GNU programs need not worry about deficient source-code encodings.
- Comments beginning with '`//`'. This is mostly for style reasons.

1.5.4 Other portability assumptions made by Gnulib

The GNU coding standards allow one departure from strict C: Gnulib code can assume that standard internal types like `size_t` are no wider than `long`. POSIX requires implementations to support at least one programming environment where this is true, and such environments are recommended for Gnulib-using applications. When it is easy to port to

non-POSIX platforms like MinGW where these types are wider than `long`, new Gnulib code should do so, e.g., by using `ptrdiff_t` instead of `long`. However, it is not always that easy, and no effort has been made to check that all Gnulib modules work on MinGW-like environments.

Gnulib code makes the following additional assumptions:

- `int` and `unsigned int` are at least 32 bits wide. POSIX and the GNU coding standards both require this.
- Signed integer arithmetic is two's complement.

  Previously, Gnulib code sometimes assumed that signed integer arithmetic wraps around, but modern compiler optimizations sometimes do not guarantee this, and Gnulib code with this assumption is now considered to be questionable. See Section 13.5 [Integer Properties], page 621.

  Although some Gnulib modules contain explicit support for the other signed integer representations allowed by the C standard (ones' complement and signed magnitude), these modules are the exception rather than the rule. All practical Gnulib targets use two's complement.
- There are no "holes" in integer values: all the bits of an integer contribute to its value in the usual way.
- Addresses and sizes behave as if objects reside in a flat address space. In particular:
  - If two nonoverlapping objects have sizes S and T represented as `size_t` values, then `S + T` cannot overflow.
  - A pointer P points within an object O if and only if `(char *) &O <= (char *) P && (char *) P < (char *) (&O + 1)`.
  - If an existing object has size S, and if T is sufficiently small (e.g., 8 KiB), then `S + T` cannot overflow. Overflow in this case would mean that the rest of your program fits into T bytes, which can't happen in realistic flat-address-space hosts.
  - Objects with all bits zero are treated as 0 or NULL. For example, `memset (A, 0, sizeof A)` initializes an array `A` of pointers to NULL.
  - Adding zero to a null pointer does not change the pointer. For example, `0 + (char *) NULL == (char *) NULL`.

The above assumptions are not required by the C or POSIX standards but hold on all practical porting targets that we're familiar with. If you have a porting target where these assumptions are not true, we'd appreciate hearing of any fixes. We need fixes that do not increase runtime overhead on standard hosts and that are relatively easy to maintain.

1.6 High Quality

We develop and maintain a testsuite for Gnulib. The goal is to have a 100% firm interface so that maintainers can feel free to update to the code in git at *any* time and know that their application will not break. This means that before any change can be committed to the repository, a test suite program must be produced that exposes the bug for regression testing. All experimental work should be done on branches to help promote this.

2 Philosophy

Gnulib's design and development philosophy is organized around steady, collaborative, and open development of reusable modules that are suitable for a reasonably wide variety of platforms.

2.1 Benefits of using Gnulib

Gnulib is useful to enhance various aspects of a package:

- Portability: With Gnulib, a package maintainer can program against the POSIX and GNU libc APIs and nevertheless expect good portability to platforms that don't implement POSIX.
- Maintainability: When a package uses modules from Gnulib instead of code written specifically for that package, the maintainer has less code to maintain.
- Security: Gnulib provides functions that are immune against vulnerabilities that plague the uses of the corresponding commonplace functions. For example, `asprintf`, `canonicalize_file_name` are not affected by buffer sizing problems that affect `sprintf`, `realpath`. `openat` does not have the race conditions that `open` has. Etc.
- Reliability: Gnulib provides functions that combine a call to a system function with a check of the result. Examples are `xalloc`, `xprintf`, `xstrtod`, `xgetcwd`.
- Structure: Gnulib offers a way to structure code into modules, typically one include file, one source code file, and one autoconf macro for each functionality. Modularity helps maintainability.

2.2 Library vs. Reusable Code

Classical libraries are installed as binary object code. Gnulib is different: It is used as a source code library. Each package that uses Gnulib thus ships with part of the Gnulib source code. The used portion of Gnulib is tailored to the package: A build tool, called `gnulib-tool`, is provided that copies a tailored subset of Gnulib into the package.

2.3 Portability and Application Code

One of the goals of Gnulib is to make portable programming easy, on the basis of the standards relevant for GNU (and Unix). The objective behind that is to avoid a fragmentation of the user community into disjoint user communities according to the operating system, and instead allow synergies between users on different operating systems.

Another goal of Gnulib is to provide application code that can be shared between several applications. Some people wonder: "What? glibc doesn't have a function to copy a file?" Indeed, the scope of a system's libc is to implement the relevant standards (ISO C, POSIX) and to provide access functions to the kernel's system calls, and little more.

There is no clear borderline between both areas.

For example, Gnulib has a facility for generating the name of backup files. While this task is entirely at the application level—no standard specifies an API for it—the naïve code has some portability problems because on some platforms the length of file name components is limited to 30 characters or so. Gnulib handles that.

Similarly, Gnulib has a facility for executing a command in a subprocess. It is at the same time a portability enhancement (it works on GNU, Unix, and Windows, compared to the classical `fork`/`exec` idiom which is not portable to Windows), as well as an application aid: it takes care of redirecting stdin and/or stdout if desired, and emits an error message if the subprocess failed.

2.4 Target Platforms

Gnulib supports a number of platforms that we call the "reasonable portability targets". This class consists of widespread operating systems, for three years after their last availability, or—for proprietary operating systems—as long as the vendor provides commercial support for it. Already existing Gnulib code for older operating systems is usually left in place for longer than these three years. So it comes that programs that use Gnulib run pretty well also on these older operating systems.

Some operating systems are not very widespread, but are Free Software and are actively developed. Such platforms are also supported by Gnulib, if that OS's developers community keeps in touch with the Gnulib developers, by providing bug reports, analyses, or patches. For such platforms, Gnulib supports only the versions of the last year or the last few months, depending on the maturity of said OS project, the number of its users, and how often these users upgrade.

Niche operating systems are generally unsupported by Gnulib, unless some of their developers or users contribute support to Gnulib.

The degree of support Gnulib guarantees for a platform depends on the amount of testing it gets from volunteers. Platforms on which Gnulib is frequently tested are the best supported. Then come platforms with occasional testing, then platforms which are rarely tested. Usually, we fix bugs when they are reported. Except that some rarely tested platforms are also low priority; bug fixes for these platforms can take longer.

As of 2016, the list of supported platforms is the following:

- glibc systems. With glibc 2.15 or newer, they are frequently tested. About the kernels:
  - glibc on Linux is frequently tested.
  - glibc on kFreeBSD is rarely tested.
- Mac OS X. In versions 10.11, it's occasionally tested. In version 10.5, it's rarely tested.
- FreeBSD 9.1 or newer is occasionally tested.
- OpenBSD 5.8 or newer is occasionally tested.
- AIX 7.1 is occasionally tested.
- Solaris 10 and 11 are occasionally tested. Solaris 9 and older are rarely tested and low priority.
- Cygwin 2.6 is occasionally tested. Cygwin 1.7.x is rarely tested.
- mingw is occasionally tested. But note that some modules are currently unsupported on mingw: `mgetgroups`, `getugroups`, `idcache`, `userspec`, `openpty`, `login_tty`, `forkpty`, `pt_chown`, `grantpt`, `pty`, `savewd`, `mkancesdirs`, `mkdir-p`, `euidaccess`, `faccessat`. The versions of Windows that are supported are Windows XP and newer. Only the latest version of mingw is tested; older versions are not supported.
- GNU Hurd 0.7 is rarely tested.

- NetBSD 7.0 or newer is rarely tested.
- Native Windows, with MSVC as compiler, is rarely tested and low priority.
- musl libc is rarely tested.
- Minix 3.3.0 is rarely tested.
- HP-UX 11.31 is very rarely tested.
- IRIX 6.5 is no longer tested.
- OSF/1 5.1 is no longer tested.
- Interix 6.1 is no longer tested, and requires the `suacomp` library (`http://sourceforge.net/projects/suacomp/`) in version 0.6.8 or newer.
- Haiku and BeOS are no longer tested.
- uClibc on Linux is no longer tested.
- QNX is no longer tested.

Gnulib supports these operating systems only in an unvirtualized environment. When you run an OS inside a virtual machine, you have to be aware that the virtual machine can bring in bugs of its own. For example, floating-point operations on Solaris can behave slightly differently in QEMU than on real hardware. And Haiku's `bash` program misbehaves in VirtualBox 3, whereas it behaves fine in VirtualBox 4.

Similarly, running native Windows binaries on GNU/Linux under WINE is rarely tested and low priority: WINE has a set of behaviours and bugs that is slightly different from native Windows.

The following platforms are not supported by Gnulib. The cost of supporting them would exceed the benefit because they are rarely used, or poorly documented, or have been supplanted by other platforms, or diverge too much from POSIX, or some combination of these and other factors. Please don't bother sending us patches for them.

- Windows 95/98/ME.
- DJGPP and EMX (the 32-bit operating systems running in DOS).
- MSDOS (the 16-bit operating system).
- Windows Mobile, Symbian OS, iOS.

2.5 Modules

Gnulib is divided into modules. Every module implements a single facility. Modules can depend on other modules.

A module consists of a number of files and a module description. The files are copied by `gnulib-tool` into the package that will use it, usually verbatim, without changes. Source code files (.h, .c files) reside in the `lib/` subdirectory. Autoconf macro files reside in the `m4/` subdirectory. Build scripts reside in the `build-aux/` subdirectory.

The module description contains the list of files; `gnulib-tool` copies these files. It contains the module's dependencies; `gnulib-tool` installs them as well. It also contains the autoconf macro invocation (usually a single line or nothing at all); `gnulib-tool` ensures this is invoked from the package's `configure.ac` file. And also a `Makefile.am` snippet; `gnulib-tool` collects these into a `Makefile.am` for the tailored Gnulib part. The module

description and include file specification are for documentation purposes; they are combined into `MODULES.html`.

The module system serves two purposes:

1. It ensures consistency of the used autoconf macros and `Makefile.am` rules with the source code. For example, source code which uses the `getopt_long` function—this is a common way to implement parsing of command line options in a way that complies with the GNU standards—needs the source code (`lib/getopt.c` and others), the autoconf macro which detects whether the system's libc already has this function (in `m4/getopt.m4`), and a few `Makefile.am` lines that create the substitute `getopt.h` if not. These three pieces belong together. They cannot be used without each other. The module description and `gnulib-tool` ensure that they are copied altogether into the destination package.
2. It allows for scalability. It is well-known since the inception of the MODULA-2 language around 1978 that dissection into modules with dependencies allows for building large sets of code in a maintainable way. The maintainability comes from the facts that:
   - Every module has a single purpose; you don't worry about other parts of the program while creating, reading or modifying the code of a module.
   - The code you have to read in order to understand a module is limited to the source of the module and the .h files of the modules listed as dependencies. It is for this reason also that we recommend to put the comments describing the functions exported by a module into its .h file.

   In other words, the module is the elementary unit of code in Gnulib, comparable to a class in object-oriented languages like Java or C#.

The module system is the basis of `gnulib-tool`. When `gnulib-tool` copies a part of Gnulib into a package, it first compiles a module list, starting with the requested modules and adding all the dependencies, and then collects the files, `configure.ac` snippets and `Makefile.am` snippets.

2.6 Various Kinds of Modules

There are modules of various kinds in Gnulib. For a complete list of the modules, see in `MODULES.html`.

2.6.1 Support for ISO C or POSIX functions.

When a function is not implemented by a system, the Gnulib module provides an implementation under the same name. Examples are the '`snprintf`' and '`readlink`' modules.

Similarly, when a function is not correctly implemented by a system, Gnulib provides a replacement. For functions, we use the pattern

```
#if !HAVE_WORKING_FOO
# define foo rpl_foo
#endif
```

and implement the `foo` function under the name `rpl_foo`. This renaming is needed to avoid conflicts at compile time (in case the system header files declare `foo`) and at link/run time (because the code making use of `foo` could end up residing in a shared library, and the executable program using this library could be defining `foo` itself).

For header files, such as `stdbool.h` or `stdint.h`, we provide the substitute only if the system doesn't provide a correct one. The template of this replacement is distributed in a slightly different name, with '`.in`' inserted before the '`.h`' extension, so that on systems which do provide a correct header file the system's one is used.

2.6.2 Enhancements of ISO C or POSIX functions

These are sometimes POSIX functions with GNU extensions also found in glibc—examples: '`getopt`', '`fnmatch`'—and often new APIs—for example, for all functions that allocate memory in one way or the other, we have variants which also include the error checking against the out-of-memory condition.

2.6.3 Portable general use facilities

Examples are a module for copying a file—the portability problems relate to the copying of the file's modification time, access rights, and extended attributes—or a module for extracting the tail component of a file name—here the portability to native Windows requires a different API than the classical POSIX `basename` function.

2.6.4 Reusable application code

Examples are an error reporting function, a module that allows output of numbers with K/M/G suffixes, or cryptographic facilities.

2.6.5 Object oriented classes

Examples are data structures like '`list`', or abstract output stream classes that work around the fact that an application cannot implement an stdio `FILE` with its logic. Here, while staying in C, we use implementation techniques like tables of function pointers, known from the C++ language or from the Linux kernel.

2.6.6 Interfaces to external libraries

Examples are the '`iconv`' module, which interfaces to the `iconv` facility, regardless whether it is contained in libc or in an external `libiconv`. Or the '`readline`' module, which interfaces to the GNU readline library.

2.6.7 Build / maintenance infrastructure

An example is the '`maintainer-makefile`' module, which provides extra Makefile tags for maintaining a package.

2.7 Collaborative Development

Gnulib is maintained collaboratively. The mailing list is `<bug-gnulib at gnu dot org>`. Be warned that some people on the list may be very active at some times and unresponsive at other times.

Every module has one or more maintainers. While issues are discussed collaboratively on the list, the maintainer of a module nevertheless has a veto right regarding changes in his module.

All patches should be posted the list, regardless whether they are proposed patches or whether they are committed immediately by the maintainer of the particular module. The

purpose is not only to inform the other users of the module, but mainly to allow peer review. It is not uncommon that several people contribute comments or spot bugs after a patch was proposed.

Conversely, if you are using Gnulib, and a patch is posted that affects one of the modules that your package uses, you have an interest in proofreading the patch.

2.8 Copyright

Most modules are under the GPL. Some, mostly modules which can reasonably be used in libraries, are under LGPL. The source files always say `"GPL"`, but the real license specification is in the module description file. If the module description file says `"GPL"`, it means `"GPLv3+"` (GPLv3 or newer, at the licensee's choice); if it says `"LGPL"`, it means `"LGPLv3+"` (LGPLv3 or newer, at the licensee's choice).

More precisely, the license specification in the module description file applies to the files in `lib/` and `build-aux/`. Different licenses apply to files in special directories:

`modules/` Module description files are under this copyright:

> Copyright © 20XX–20YY Free Software Foundation, Inc.
> Copying and distribution of this file, with or without modification, in any medium, are permitted without royalty provided the copyright notice and this notice are preserved.

`m4/` Autoconf macro files are under this copyright:

> Copyright © 20XX–20YY Free Software Foundation, Inc.
> This file is free software; the Free Software Foundation gives unlimited permission to copy and/or distribute it, with or without modifications, as long as this notice is preserved.

`tests/` If a license statement is not present in a test module, the test files are under GPL. Even if the corresponding source module is under LGPL, this is not a problem, since compiled tests are not installed by "make install".

`doc/` Documentation files are under this copyright:

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If you want to use some Gnulib modules under LGPL, you can do so by passing the option '`--lgpl`' to `gnulib-tool`. This will replace the GPL header with an LGPL header while copying the source files to your package. Similarly, if you want some Gnulib modules under LGPLv2+ (Lesser GPL version 2.1 or newer), you can do so by passing the option '`--lgpl=2`' to `gnulib-tool`.

Keep in mind that when you submit patches to files in Gnulib, you should license them under a compatible license. This means that sometimes the contribution will have to be LGPL, if the original file is available under LGPL. You can find out about it by looking for a `"License: LGPL"` information in the corresponding module description.

2.9 Steady Development

Gnulib modules are continually adapted, to match new practices, to be consistent with newly added modules, or simply as a response to build failure reports. Gnulib is available in two qualities:

- There is the newest version of Gnulib from the Git repository.
- We also make stable releases every two months, at `http://erislabs.net/ianb/projects/gnulib/`.

If you are willing to report an occasional regression, we recommend to use the newest version always, except in periods of major changes. Most Gnulib users do this. If you prefer stable releases, please use the newest stable release.

2.10 Openness

Gnulib is open in the sense that we gladly accept contributions if they are generally useful, well engineered, and if the contributors have signed the obligatory papers with the FSF.

The module system is open in the sense that a package using Gnulib can

1. locally patch or override files in Gnulib,
2. locally add modules that are treated like Gnulib modules by `gnulib-tool`.

This is achieved by the '`--local-dir`' option of `gnulib-tool` (see Chapter 5 [Extending Gnulib], page 34).

3 Invoking gnulib-tool

The `gnulib-tool` command is the recommended way to import Gnulib modules. It is possible to borrow Gnulib modules in a package without using `gnulib-tool`, relying only on the meta-information stored in the `modules/*` files, but with a growing number of modules this becomes tedious. `gnulib-tool` simplifies the management of source files, `Makefile.am`s and `configure.ac` in packages incorporating Gnulib modules.

`gnulib-tool` is not installed in a standard directory that is contained in the `PATH` variable. It needs to be run directly in the directory that contains the Gnulib source code. You can do this either by specifying the absolute filename of `gnulib-tool`, or you can also use a symbolic link from a place inside your `PATH` to the `gnulib-tool` file of your preferred and most up-to-date Gnulib checkout, like this:

```
$ ln -s $HOME/gnu/src/gnulib.git/gnulib-tool $HOME/bin/gnulib-tool
```

Run '`gnulib-tool --help`' for information. To get familiar with `gnulib-tool` without affecting your sources, you can also try some commands with the option '`--dry-run`'; then `gnulib-tool` will only report which actions it would perform in a real run without changing anything.

3.1 Finding modules

There are three ways of finding the names of Gnulib modules that you can use in your package:

- You have the complete module list, sorted according to categories, in `http://www.gnu.org/software/gnulib/MODULES.html`.
- If you are looking for a particular POSIX header or function replacement, look in the chapters Chapter 8 [Header File Substitutes], page 42, and Chapter 9 [Function Substitutes], page 71. For headers and functions that are provided by Glibc but not standardized by POSIX, look in the chapters Chapter 11 [Glibc Header File Substitutes], page 431, and Chapter 12 [Glibc Function Substitutes], page 442.
- If you have already found the source file in Gnulib and are looking for the module that contains this source file, you can use the command '`gnulib-tool --find` *filename*'.

3.2 Initial import

Gnulib assumes that your project uses Autoconf. When using Gnulib, you will need to have Autoconf among your build tools.

Unless you use `gnulib-tool`'s `--gnu-make` option, Gnulib also assumes that your project uses Automake at least in a subdirectory of your project. While the use of Automake in your project's top level directory is an easy way to fulfil the Makefile conventions of the GNU coding standards, Gnulib does not require it.

Invoking '`gnulib-tool --import`' will copy source files, create a `Makefile.am` to build them, generate a file `gnulib-comp.m4` with Autoconf M4 macro declarations used by `configure.ac`, and generate a file `gnulib-cache.m4` containing the cached specification of how Gnulib is used.

Our example will be a library that uses Autoconf, Automake and Libtool. It calls `strdup`, and you wish to use gnulib to make the package portable to C99 and C11 (which don't have `strdup`).

```
~/src/libfoo$ gnulib-tool --import strdup
Module list with included dependencies:
  absolute-header
  extensions
  strdup
  string
File list:
  lib/dummy.c
  lib/strdup.c
  lib/string.in.h
  m4/absolute-header.m4
  m4/extensions.m4
  m4/gnulib-common.m4
  m4/strdup.m4
  m4/string_h.m4
Creating directory ./lib
Creating directory ./m4
Copying file lib/dummy.c
Copying file lib/strdup.c
Copying file lib/string.in.h
Copying file m4/absolute-header.m4
Copying file m4/extensions.m4
Copying file m4/gnulib-common.m4
Copying file m4/gnulib-tool.m4
Copying file m4/strdup.m4
Copying file m4/string_h.m4
Creating lib/Makefile.am
Creating m4/gnulib-cache.m4
Creating m4/gnulib-comp.m4
Finished.

You may need to add #include directives for the following .h files.
  #include <string.h>

Don't forget to
  - add "lib/Makefile" to AC_CONFIG_FILES in ./configure.ac,
  - mention "lib" in SUBDIRS in Makefile.am,
  - mention "-I m4" in ACLOCAL_AMFLAGS in Makefile.am,
  - invoke gl_EARLY in ./configure.ac, right after AC_PROG_CC,
  - invoke gl_INIT in ./configure.ac.
~/src/libfoo$
```

By default, the source code is copied into `lib/` and the M4 macros in `m4/`. You can override these paths by using `--source-base=DIRECTORY` and `--m4-base=DIRECTORY`. Some

modules also provide other files necessary for building. These files are copied into the directory specified by '`AC_CONFIG_AUX_DIR`' in `configure.ac` or by the `--aux-dir=DIRECTORY` option. If neither is specified, the current directory is assumed.

`gnulib-tool` can make symbolic links instead of copying the source files. The option to specify for this is '`--symlink`', or '`-s`' for short. This can be useful to save a few kilobytes of disk space. But it is likely to introduce bugs when `gnulib` is updated; it is more reliable to use '`gnulib-tool --update`' (see below) to update to newer versions of `gnulib`. Furthermore it requires extra effort to create self-contained tarballs, and it may disturb some mechanism the maintainer applies to the sources. For these reasons, this option is generally discouraged.

`gnulib-tool` will overwrite any pre-existing files, in particular `Makefile.am`. It is also possible to separate the generated `Makefile.am` content (for building the gnulib library) into a separate file, say `gnulib.mk`, that can be included by your handwritten `Makefile.am`, but this is a more advanced use of `gnulib-tool`.

Consequently, it is a good idea to choose directories that are not already used by your projects, to separate gnulib imported files from your own files. This approach is also useful if you want to avoid conflicts between other tools (e.g., `gettextize` that also copy M4 files into your package. Simon Josefsson successfully uses a source base of `gl/`, and a M4 base of `gl/m4/`, in several packages.

After the '`--import`' option on the command line comes the list of Gnulib modules that you want to incorporate in your package. The names of the modules coincide with the filenames in Gnulib's `modules/` directory.

Some Gnulib modules depend on other Gnulib modules. `gnulib-tool` will automatically add the needed modules as well; you need not list them explicitly. `gnulib-tool` will also memorize which dependent modules it has added, so that when someday a dependency is dropped, the implicitly added module is dropped as well (unless you have explicitly requested that module).

If you want to cut a dependency, i.e., not add a module although one of your requested modules depends on it, you may use the option '`--avoid=`*`module`*' to do so. Multiple uses of this option are possible. Of course, you will then need to implement the same interface as the removed module.

A few manual steps are required to finish the initial import. `gnulib-tool` printed a summary of these steps.

First, you must ensure Autoconf can find the macro definitions in `gnulib-comp.m4`. Use the `ACLOCAL_AMFLAGS` specifier in your top-level `Makefile.am` file, as in:

```
ACLOCAL_AMFLAGS = -I m4
```

You are now ready to call the M4 macros in `gnulib-comp.m4` from `configure.ac`. The macro `gl_EARLY` must be called as soon as possible after verifying that the C compiler is working. Typically, this is immediately after `AC_PROG_CC`, as in:

```
...
AC_PROG_CC
gl_EARLY
...
```

If you are using `AC_PROG_CC_STDC`, the macro `gl_EARLY` must be called after it, like this:

```
...
AC_PROG_CC
AC_PROG_CC_STDC
gl_EARLY
...
```

The core part of the gnulib checks are done by the macro `gl_INIT`. Place it further down in the file, typically where you normally check for header files or functions. It must come after other checks which may affect the compiler invocation, such as `AC_MINIX`. For example:

```
...
# For gnulib.
gl_INIT
...
```

`gl_INIT` will in turn call the macros related with the gnulib functions, be it specific gnulib macros, like `gl_FUNC_ALLOCA` or Autoconf or Automake macros like `AC_FUNC_ALLOCA` or `AM_FUNC_GETLINE`. So there is no need to call those macros yourself when you use the corresponding gnulib modules.

You must also make sure that the gnulib library is built. Add the `Makefile` in the gnulib source base directory to `AC_CONFIG_FILES`, as in:

```
AC_CONFIG_FILES(... lib/Makefile ...)
```

You must also make sure that `make` will recurse into the gnulib directory. To achieve this, add the gnulib source base directory to a `SUBDIRS` Makefile.am statement, as in:

```
SUBDIRS = lib
```

or if you, more likely, already have a few entries in `SUBDIRS`, you can add something like:

```
SUBDIRS += lib
```

Finally, you have to add compiler and linker flags in the appropriate source directories, so that you can make use of the gnulib library. Since some modules (‘`getopt`’, for example) may copy files into the build directory, `top_builddir/lib` is needed as well as `top_srcdir/lib`. For example:

```
...
AM_CPPFLAGS = -I$(top_builddir)/lib -I$(top_srcdir)/lib
...
LDADD = lib/libgnu.a
...
```

Don’t forget to `#include` the various header files. In this example, you would need to make sure that ‘`#include <string.h>`’ is evaluated when compiling all source code files, that want to make use of `strdup`.

In the usual case where Autoconf is creating a `config.h` file, you should include `config.h` first, before any other include file. That way, for example, if `config.h` defines ‘`restrict`’ to be the empty string on a non-C99 host, or a macro like ‘`_FILE_OFFSET_BITS`’ that affects the layout of data structures, the definition is consistent for all include files. Also, on some platforms macros like ‘`_FILE_OFFSET_BITS`’ and ‘`_GNU_SOURCE`’ may be ineffective, or may have only a limited effect, if defined after the first system header file is included.

Finally, note that you cannot use `AC_LIBOBJ` or `AC_REPLACE_FUNCS` in your `configure.ac` and expect the resulting object files to be automatically added to `lib/libgnu.a`. This is because your `AC_LIBOBJ` and `AC_REPLACE_FUNCS` invocations from `configure.ac` augment a variable `@LIBOBJS@` (and/or `@LTLIBOBJS@` if using Libtool), whereas `lib/libgnu.a` is built from the contents of a different variable, usually `@gl_LIBOBJS@` (or `@gl_LTLIBOBJS@` if using Libtool).

3.3 Modified imports

You can at any moment decide to use Gnulib differently than the last time.

There are two ways to change how Gnulib is used. Which one you'll use, depends on where you keep track of options and module names that you pass to `gnulib-tool`.

- If you store the options and module names in a file under your own control, such as `autogen.sh`, `bootstrap`, `bootstrap.conf`, or similar, simply invoke `gnulib-tool` again, with modified options and more or fewer module names.
- `gnulib-tool` remembers which modules were used last time. If you want to rely on `gnulib-tool`'s own memory of the last used options and module names, you can use the commands `gnulib-tool --add-import` and `gnulib-tool --remove-import`.

  So, if you only want to use more Gnulib modules, simply invoke `gnulib-tool --add-import` *`new-modules`*. The list of modules that you pass after '`--add-import`' is *added* to the previous list of modules.

  Similarly, if you want to use fewer Gnulib modules, simply invoke `gnulib-tool --remove-import` *`unneeded-modules`*. The list of modules that you pass after '`--remove-import`' is *removed* from the previous list of modules. Note that if a module is then still needed as dependency of other modules, it will be used nevertheless. If you want to *really* not use a module any more, regardless of whether other modules may need it, you need to use the '`--avoid`' option.

  For other changes, such as different choices of '`--lib`', '`--source-base`' or '`--aux-dir`', the normal way is to modify manually the file `gnulib-cache.m4` in the M4 macros directory, then launch '`gnulib-tool --add-import`'.

  The only change for which this doesn't work is a change of the '`--m4-base`' directory. Because, when you pass a different value of '`--m4-base`', `gnulib-tool` will not find the previous `gnulib-cache.m4` file any more. A possible solution is to manually copy the `gnulib-cache.m4` into the new M4 macro directory.

  In the `gnulib-cache.m4` file, the macros have the following meaning:

  `gl_MODULES`
  : The argument is a space separated list of the requested modules, not including dependencies.

  `gl_AVOID`
  : The argument is a space separated list of modules that should not be used, even if they occur as dependencies. Corresponds to the '`--avoid`' command line argument.

  `gl_SOURCE_BASE`
  : The argument is the relative file name of the directory containing the gnulib source files (mostly *.c and *.h files). Corresponds to the '`--source-base`' command line argument.

`gl_M4_BASE`
: The argument is the relative file name of the directory containing the gnulib M4 macros (*.m4 files). Corresponds to the '`--m4-base`' command line argument.

`gl_TESTS_BASE`
: The argument is the relative file name of the directory containing the gnulib unit test files. Corresponds to the '`--tests-base`' command line argument.

`gl_LIB`
: The argument is the name of the library to be created. Corresponds to the '`--lib`' command line argument.

`gl_LGPL`
: The presence of this macro without arguments corresponds to the '`--lgpl`' command line argument. The presence of this macro with an argument (whose value must be 2 or 3) corresponds to the '`--lgpl=`*arg*' command line argument.

`gl_LIBTOOL`
: The presence of this macro corresponds to the '`--libtool`' command line argument and to the absence of the '`--no-libtool`' command line argument. It takes no arguments.

`gl_MACRO_PREFIX`
: The argument is the prefix to use for macros in the `gnulib-comp.m4` file. Corresponds to the '`--macro-prefix`' command line argument.

3.4 Simple update

When you want to update to a more recent version of Gnulib, without changing the list of modules or other parameters, a simple call does it:

```
$ gnulib-tool --add-import
```

This will create, update or remove files, as needed.

Note: From time to time, changes are made in Gnulib that are not backward compatible. When updating to a more recent Gnulib, you should consult Gnulib's `NEWS` file to check whether the incompatible changes affect your project.

3.5 Changing your sources for use with Gnulib

Gnulib contains some header file overrides. This means that when building on systems with deficient header files in `/usr/include/`, it may create files named `string.h`, `stdlib.h`, `stdint.h` or similar in the build directory. In the other source directories of your package you will usually pass '`-I`' options to the compiler, so that these Gnulib substitutes are visible and take precedence over the files in `/usr/include/`.

These Gnulib substitute header files rely on `<config.h>` being already included. Furthermore `<config.h>` must be the first include in every compilation unit. This means that to *all your source files* and likely also to *all your tests source files* you need to add an '`#include <config.h>`' at the top. Which source files are affected? Exactly those whose compilation includes a '`-I`' option that refers to the Gnulib library directory.

This is annoying, but inevitable: On many systems, `<config.h>` is used to set system dependent flags (such as `_GNU_SOURCE` on GNU systems), and these flags have no effect after any system header file has been included.

3.6 Using Gnulib for both a library and a binary

Your project might build both a library and some accompanying binaries in the same source tree. In that case you might want to use different modules for the library than for the binaries. Typically the binaries might want to make use of `getopt-posix` or `version-etc`, while the library wants to stay clear of these modules for technical or licensing reasons.

Let's assume that your project contains a `lib` directory where the source of the library resides and a `src` directory for the sources of the binaries as follows.

```
.
|-- configure.ac
|-- lib
|   |-- foo.c
|   `-- Makefile.am
|-- Makefile.am
`-- src
    |-- bar.c
    `-- Makefile.am
```

You can now add two instances of Gnulib to your project in separate source trees:

```
~/src/libfoo$ gnulib-tool --import --lib=libgnu --source-base=gnulib \
              --m4-base=gnulib/m4 --macro-prefix=gl strndup
~/src/libfoo$ gnulib-tool --import --lib=libgnutools \
              --source-base=src/gnulib --m4-base=src/gnulib/m4 \
              --macro-prefix=gl_tools getopt-gnu
```

The first one will import the module `strndup` in `gnulib` and the second one will import `getopt-gnu` in `src/gnulib` and you will end up with the following source tree (many files omitted in the interest of brevity):

```
.
|-- configure.ac
|-- gnulib
|   |-- m4
|   |-- strndup.c
|-- lib
|   |-- foo.c
|   `-- Makefile.am
|-- Makefile.am
`-- src
    |-- bar.c
    |-- gnulib
    |   |-- getopt.c
    |   |-- getopt.in.h
    |   |-- m4
    `-- Makefile.am
```

Integration with your code is basically the same as outlined in Section 3.2 [Initial import], page 14, with the one exception that you have to add both the macro `gl_EARLY` and the macro `gl_tools_EARLY` to your `configure.ac` (and of course also both macros `gl_INIT` and `gl_tools_INIT`). Obviously the name of the second macro is dependent on the value of the `--macro-prefix` option in your `gnulib-tool` invocation.

```
...
AC_PROG_CC
gl_EARLY
gl_tools_EARLY
...
# For gnulib.
gl_INIT
gl_tools_INIT
...
```

Also as outlined in Section 3.2 [Initial import], page 14, you will have to add compiler and linker flags. For the library you might have to add something along the line of the following to your `Makefile.am`:

```
...
AM_CPPFLAGS = -I$(top_srcdir)/gnulib -I$(top_builddir)/gnulib
...
libfoo_la_LIBADD = $(top_builddir)/gnulib/libgnu.la
...
```

Correspondingly for the binary you will have to add something along the lines of to the following:

```
...
AM_CPPFLAGS = -I$(top_srcdir)/src/gnulib -I$(top_builddir)/src/gnulib
...
LIBADD = $(top_builddir)/src/gnulib/libgnutools.la
...
```

The name of the library that you have pass in the linker option depends on the `--lib` option in `gnulib-tool` invocation.

3.7 Caveat: `gettextize` and `autopoint` users

The programs `gettextize` and `autopoint`, part of GNU `gettext`, import or update the internationalization infrastructure. Some of this infrastructure, namely ca. 20 Autoconf macro files and the `config.rpath` file, is also contained in Gnulib and may be imported by `gnulib-tool`. The use of `gettextize` or `autopoint` will therefore overwrite some of the files that `gnulib-tool` has imported, and vice versa.

Avoiding to use `gettextize` (manually, as package maintainer) or `autopoint` (as part of a script like `autoreconf` or `autogen.sh`) is not the solution: These programs also import the infrastructure in the `po/` and optionally in the `intl/` directory.

The copies of the conflicting files in Gnulib are more up-to-date than the copies brought in by `gettextize` and `autopoint`. When a new `gettext` release is made, the copies of the files in Gnulib will be updated immediately.

The choice of which version of gettext to require depends on the needs of your package. For a package that wants to comply to GNU Coding Standards, the steps are:

1. When you run `gettextize`, always use the `gettextize` from the matching GNU gettext release. For the most recent Gnulib checkout, this is the newest release found on `http://ftp.gnu.org/gnu/gettext/`. For an older Gnulib snapshot, it is the release that was the most recent release at the time the Gnulib snapshot was taken.
2. After running `gettextize`, invoke `gnulib-tool` and import the `gettext` module. Also, copy the latest version of gnulib's `build-aux/po/Makefile.in.in` to your `po/` directory (this is done for you if you use gnulib's `bootstrap` script).
3. If you get an error message like `*** error: gettext infrastructure mismatch: using a Makefile.in.in from gettext version ... but the Autoconf macros are from gettext version ...`, it means that a new GNU gettext release was made, and its Autoconf macros were integrated into Gnulib and now mismatch the `po/` infrastructure. In this case, fetch and install the new GNU gettext release and run `gettextize` followed by `gnulib-tool`.

On the other hand, if your package is not as concerned with compliance to the latest standards, but instead favors development on stable environments, the steps are:

1. Determine the oldest version of `gettext` that you intend to support during development (at this time, gnulib recommends going no older than version 0.17). Run `autopoint` (not `gettextize`) to copy infrastructure into place (newer versions of gettext will install the older infrastructure that you requested).
2. Invoke `gnulib-tool`, and import the `gettext-h` module.

Regardless of which approach you used to get the infrastructure in place, the following steps must then be used to preserve that infrastructure (gnulib's `bootstrap` script follows these rules):

1. When a script of yours run `autopoint`, invoke `gnulib-tool` afterwards.
2. When you invoke `autoreconf` after `gnulib-tool`, make sure to not invoke `autopoint` a second time, by setting the `AUTOPOINT` environment variable, like this:

```
$ env AUTOPOINT=true autoreconf --install
```

3.8 Handling Gnulib's own message translations

Gnulib provides some functions that emit translatable messages using GNU `gettext`. The '`gnulib`' domain at the Translation Project (`http://translationproject.org/`) collects translations of these messages, which you should incorporate into your own programs.

There are two basic ways to achieve this. The first, and older, method is to list all the source files you use from Gnulib in your own `po/POTFILES.in` file. This will cause all the relevant translatable strings to be included in your POT file. When you send this POT file to the Translation Project, translators will normally fill in the translations of the Gnulib strings from their "translation memory", and send you back updated PO files.

However, this process is error-prone: you might forget to list some source files, or the translator might not be using a translation memory and provide a different translation than another translator, or the translation might not be kept in sync between Gnulib and your package. It is also slow and causes substantial extra work, because a human translator must be in the loop for each language and you will need to incorporate their work on request.

For these reasons, a new method was designed and is now recommended. If you pass the `--po-base=`*`directory`* and `--po-domain=`*`domain`* options to `gnulib-tool`, then `gnulib-tool` will create a separate directory with its own `POTFILES.in`, and fetch current translations directly from the Translation Project (using `rsync` or `wget`, whichever is available). The POT file in this directory will be called *`domain`*`-gnulib.pot`, depending on the *domain* you gave to the `--po-domain` option (typically the same as the package name). This causes these translations to reside in a separate message domain, so that they do not clash either with the translations for the main part of your package nor with those of other packages on the system that use possibly different versions of Gnulib. When you use these options, the functions in Gnulib are built in such a way that they will always use this domain regardless of the default domain set by `textdomain`.

In order to use this method, you must—in each program that might use Gnulib code—add an extra line to the part of the program that initializes locale-dependent behavior. Where you would normally write something like:

```
setlocale (LC_ALL, "");
bindtextdomain (PACKAGE, LOCALEDIR);
textdomain (PACKAGE);
```

you should add an additional `bindtextdomain` call to inform gettext of where the MO files for the extra message domain may be found:

```
bindtextdomain (PACKAGE "-gnulib", LOCALEDIR);
```

(This example assumes that the *domain* that you specified to `gnulib-tool` is the same as the value of the `PACKAGE` preprocessor macro.)

Since you do not change the `textdomain` call, the default message domain for your program remains the same and your own use of `gettext` functions will not be affected.

3.9 Issues with Version Control Systems

If a project stores its source files in a version control system (VCS), such as CVS, Subversion, or Git, one needs to decide which files to commit.

In principle, all files created by `gnulib-tool`, except `gnulib-cache.m4`, can be treated like generated source files, like for example a `parser.c` file generated from `parser.y`. Alternatively, they can be considered source files and updated manually.

Here are the three different approaches in common use. Each has its place, and you should use whichever best suits your particular project and development methods.

1. In projects which commit all source files, whether generated or not, into their VCS, the `gnulib-tool` generated files should all be committed. In this case, you should pass the option '`--no-vc-files`' to `gnulib-tool`, which avoids alteration of VCS-related files such as `.gitignore`.

   Gnulib also contains files generated by `make` (and removed by `make clean`), using information determined by `configure`. For a Gnulib source file of the form `lib/foo.in.h`, the corresponding `lib/foo.h` is such a `make`-generated file. These should *not* be checked into the VCS, but instead added to `.gitignore` or equivalent.
2. In projects which customarily omit from their VCS all files that are generated from other source files, none of these files and directories are added into the VCS. As described in Section 3.3 [Modified imports], page 18, there are two ways to keep track

of options and module names that are passed to `gnulib-tool`. The command for restoring the omitted files depends on it:

- If they are stored in a file other than `gnulib-cache.m4`, such as `autogen.sh`, `bootstrap`, `bootstrap.conf`, or similar, the restoration command is the entire `gnulib-tool ... --import ...` invocation with all options and module names.
- If the project relies on `gnulib-tool`'s memory of the last used options and module names, then the file `gnulib-cache.m4` in the M4 macros directory must be added to the VCS, and the restoration command is:

  ```
  $ gnulib-tool --update
  ```

  The '`--update`' option operates much like the '`--add-import`' option, but it does not offer the possibility to change the way Gnulib is used. Also it does not report in the ChangeLogs the files that it had to add because they were missing.

Gnulib includes the file `build-aux/bootstrap` to aid a developer in using this setup. Furthermore, in projects that use git for version control, it is possible to use a git submodule containing the precise commit of the gnulib repository, so that each developer running `bootstrap` will get the same version of all gnulib-provided files. The location of the submodule can be chosen to fit the package's needs; here's how to initially create the submodule in the directory `.gnulib`:

```
$ dir=.gnulib
$ git submodule add -- git://git.sv.gnu.org/gnulib.git $dir
$ git config alias.syncsub "submodule foreach git pull origin master"
```

Thereafter, `bootstrap` can run this command to update the submodule to the recorded checkout level:

```
git submodule update --init $dir
```

and a developer can use this sequence to update to a newer version of gnulib:

```
$ git syncsub
$ git add $dir
$ ./bootstrap
```

3. Some projects take a "middle road": they do commit Gnulib source files as in the first approach, but they do not commit other derived files, such as a `Makefile.in` generated by Automake. This increases the size and complexity of the repository, but can help occasional contributors by not requiring them to have a full Gnulib checkout to do a build, and all developers by ensuring that all developers are working with the same version of Gnulib in the repository. It also supports multiple Gnulib instances within a project. It remains important not to commit the `make`-generated files, as described above.

3.10 Bundling the unit tests of the Gnulib modules

You can bundle the unit tests of the Gnulib modules together with your package, through the '`--with-tests`' option. Together with '`--with-tests`', you also specify the directory for these tests through the '`--tests-base`' option. Of course, you need to add this directory to the `SUBDIRS` variable in the `Makefile.am` of the parent directory.

The advantage of having the unit tests bundled is that when your program has a problem on a particular platform, running the unit tests may help determine quickly if the problem

is on Gnulib's side or on your package's side. Also, it helps verifying Gnulib's portability, of course.

The unit tests will be compiled and run when the user runs '`make check`'. When the user runs only '`make`', the unit tests will not be compiled.

In the `SUBDIRS` variable, it is useful to put the Gnulib tests directory after the directory containing the other tests, not before:

```
SUBDIRS = gnulib-lib src man tests gnulib-tests
```

This will ensure that on platforms where there are test failures in either directory, users will see and report the failures from the tests of your program.

Note: In packages which use more than one invocation of `gnulib-tool` in the scope of the same `configure.ac`, you cannot use '`--with-tests`'. You will have to use a separate `configure.ac` in this case.

3.11 Avoiding unnecessary checks and compilations

In some cases, a module is needed by another module only on specific platforms. But when a module is present, its Autoconf checks are always executed, and its `Makefile.am` additions are always enabled. So it can happen that some Autoconf checks are executed and some source files are compiled, although no other module needs them on this particular platform, just *in case* some other module would need them.

The option '`--conditional-dependencies`' enables an optimization of configure checks and `Makefile.am` snippets that avoids this. With this option, whether a module is considered "present" is no longer decided when `gnulib-tool` is invoked, but later, when `configure` is run. This applies to modules that were added as dependencies while `gnulib-tool` was run; modules that were passed on the command line explicitly are always "present".

For example, the `timegm` module needs, on platforms where the system's `timegm` function is missing or buggy, a replacement that is based on a function `mktime_internal`. The module `mktime-internal` that provides this function provides it on all platforms. So, by default, the file `mktime-internal.c` will be compiled on all platforms, even on glibc and BSD systems which have a working `timegm` function. When the option '`--conditional-dependencies`' is given, on the other hand, and if `mktime-internal` was not explicitly required on the command line, the file `mktime-internal.c` will only be compiled on the platforms where the `timegm` needs them.

Conditional dependencies are specified in the module description by putting the condition on the same line as the dependent module, enclosed in brackets. The condition is a boolean shell expression that can assume that the `configure.ac` snippet from the module description has already been executed. In the example above, the dependency from `timegm` to `mktime-internal` is written like this:

```
Depends-on:
...
mktime-internal [test $HAVE_TIMEGM = 0 || test $REPLACE_TIMEGM = 1]
...
```

Note: The option '`--conditional-dependencies`' cannot be used together with the option '`--with-tests`'. It also cannot be used when a package uses `gnulib-tool` for

several subdirectories, with different values of '`--source-base`', in the scope of a single `configure.ac` file.

4 Writing modules

This chapter explains how to write modules of your own, either to extend Gnulib for your own package (see Chapter 5 [Extending Gnulib], page 34), or for inclusion in gnulib proper.

The guidelines in this chapter do not necessarily need to be followed for using `gnulib-tool`. They merely represent a set of good practices. Following them will result in a good structure of your modules and in consistency with gnulib.

4.1 Source code files

Every API (C functions or variables) provided should be declared in a header file (.h file) and implemented in one or more implementation files (.c files). The separation has the effect that users of your module need to read only the contents of the .h file and the module description in order to understand what the module is about and how to use it—not the entire implementation. Furthermore, users of your module don't need to repeat the declarations of the functions in their code, and are likely to receive notification through compiler errors if you make incompatible changes to the API (like, adding a parameter or changing the return type of a function).

4.2 Header files

The .h file should declare the C functions and variables that the module provides.

The .h file should be stand-alone. That is, it does not require other .h files to be included before. Rather, it includes all necessary .h files by itself.

It is a tradition to use CPP tricks to avoid parsing the same header file more than once, which might cause warnings. The trick is to wrap the content of the header file (say, `foo.h`) in a block, as in:

```
#ifndef FOO_H
# define FOO_H
...
body of header file goes here
...
#endif /* FOO_H */
```

Whether to use `FOO_H` or `_FOO_H` is a matter of taste and style. The C99 and C11 standards reserve all identifiers that begin with an underscore and either an uppercase letter or another underscore, for any use. Thus, in theory, an application might not safely assume that `_FOO_H` has not already been defined by a library. On the other hand, using `FOO_H` will likely lead the higher risk of collisions with other symbols (e.g., `KEY_H`, `XK_H`, `BPF_H`, which are CPP macro constants, or `COFF_LONG_H`, which is a CPP macro function). Your preference may depend on whether you consider the header file under discussion as part of the application (which has its own namespace for CPP symbols) or a supporting library (that shouldn't interfere with the application's CPP symbol namespace).

Adapting C header files for use in C++ applications can use another CPP trick, as in:

```
# ifdef __cplusplus
extern "C"
```

```
{
# endif
...
body of header file goes here
...
# ifdef __cplusplus
}
# endif
```

The idea here is that `__cplusplus` is defined only by C++ implementations, which will wrap the header file in an '`extern "C"`' block. Again, whether to use this trick is a matter of taste and style. While the above can be seen as harmless, it could be argued that the header file is written in C, and any C++ application using it should explicitly use the '`extern "C"`' block itself. Your preference might depend on whether you consider the API exported by your header file as something available for C programs only, or for C and C++ programs alike.

Note that putting a `#include` in an `extern "C" { ... }` block yields a syntax error in C++ mode on some platforms (e.g., glibc systems with g++ v3.3 to v4.2, AIX, OSF/1, IRIX). For this reason, it is recommended to place the `#include` before the `extern "C"` block.

4.3 Implementation files

The .c file or files implement the functions and variables declared in the .h file.

Include ordering

Every implementation file must start with '`#include <config.h>`'. This is necessary for activating the preprocessor macros that are defined on behalf of the Autoconf macros. Some of these preprocessor macros, such as `_GNU_SOURCE`, would have no effect if defined after a system header file has already been included.

Then comes the '`#include "..."`' specifying the header file that is being implemented. Putting this right after '`#include <config.h>`' has the effect that it verifies that the header file is self-contained.

Then come the system and application headers. It is customary to put all the system headers before all application headers, so as to minimize the risk that a preprocessor macro defined in an application header confuses the system headers on some platforms.

In summary:

- First comes #include <config.h>.
- Second comes the #include "..." specifying the module being implemented.
- Then come all the #include <...> of system or system-replacement headers, in arbitrary order.
- Then come all the #include "..." of gnulib and application headers, in arbitrary order.

4.4 Specification

The specification of a function should answer at least the following questions:

- What is the purpose of the function?

- What are the arguments?
- What is the return value?
- What happens in case of failure? (Exit? A specific return value? Errno set?)
- Memory allocation policy: If pointers to memory are returned, are they freshly allocated and supposed to be freed by the caller?

Where to put the specification describing exported functions? Three practices are used in gnulib:

- The specification can be as comments in the header file, just above the function declaration.
- The specification can be as comments in the implementation file, just above the function definition.
- The specification can be in texinfo format, so that it gets included in the gnulib manual.

In any case, the specification should appear in just one place, unless you can ensure that the multiple copies will always remain identical.

The advantage of putting it in the header file is that the user only has to read the include file normally never needs to peek into the implementation file(s).

The advantage of putting it in the implementation file is that when reviewing or changing the implementation, you have both elements side by side.

The advantage of texinfo formatted documentation is that it is easily published in HTML or Info format.

Currently (as of 2010), half of gnulib uses the first practice, nearly half of gnulib uses the second practice, and a small minority uses the texinfo practice.

4.5 Module description

For the module description, you can start from an existing module's description, or from a blank one: `module/TEMPLATE` for a normal module, or `module/TEMPLATE-TESTS` for a unit test module. Some more fields are possible but rarely used. Use `module/TEMPLATE-EXTENDED` if you want to use one of them.

Module descriptions have the following fields. Absent fields are equivalent to fields with empty contents.

Description
: This field should contain a concise description of the module's functionality. One sentence is enough. For example, if it defines a single function '`frob`', the description can be '`frob() function: frobnication.`' Gnulib's documentation generator will automatically convert the first part to a hyperlink when it has this form.

Status
: This field is either empty/absent, or contains the word '`obsolete`'. In the latter case, `gnulib-tool` will, unless the option `--with-obsolete` is given, omit it when it used as a dependency. It is good practice to also notify the user about an obsolete module. This is done by putting into the '`Notice`' section (see below) text like '`This module is obsolete.`'

Notice
: This field contains text that `gnulib-tool` will show to the user when the module is used. This can be a status indicator like '`This module is obsolete.`' or additional advice. Do not abuse this field.

Applicability
: This field is either empty/absent, or contains the word '`all`'. It describes to which `Makefile.am` the module is applied. By default, a normal module is applied to *`source_base`*`/Makefile.am` (normally `lib/Makefile.am`), whereas a module ending in `-tests` is applied to *`tests_base`*`/Makefile.am` (normally `tests/Makefile.am`). If this field is '`all`', it is applied to both `Makefile.am`s. This is useful for modules which provide Makefile.am macros rather than compiled source code.

Files
: This field contains a newline separated list of the files that are part of the module. `gnulib-tool` copies these files into the package that uses the module.

  This list is typically ordered by importance: First comes the header file, then the implementation files, then other files.

  It is possible to have the same file mentioned in multiple modules. That is, if the maintainers of that module agree on the purpose and future of said file.

Depends-on
: This field contains a newline separated list of the modules that are required for the proper working of this module. `gnulib-tool` includes each required module automatically, unless it is specified with option `--avoid` or it is marked as obsolete and the option `--with-obsolete` is not given.

  A test modules `foo-tests` implicitly depends on the corresponding non-test module `foo`. `foo` implicitly depends on `foo-tests` if the latter exists and if the option `--with-tests` has been given.

  Tests modules can depend on non-tests modules. Non-tests modules should not depend on tests modules. (Recall that tests modules are built in a separate directory.)

  Each listed required module may be declared a conditional dependency. This is indicated by placing the condition for the dependency on the same line, enclosed in brackets, after the name of the required module. The condition is a shell expression that is run after the module's `configure.ac` statements. For example:

  ```
  strtoull   [test $ac_cv_func_strtoumax = no]
  ```

  Lines starting with `#` are recognized as comments and are ignored.

configure.ac-early
: This field contains `configure.ac` stuff (Autoconf macro invocations and shell statements) that are logically placed early in the `configure.ac` file: right after the `AC_PROG_CC` invocation. This section is adequate for statements that modify `CPPFLAGS`, as these can affect the results of other Autoconf macros.

configure.ac
: This field contains `configure.ac` stuff (Autoconf macro invocations and shell statements).

It is forbidden to add items to the `CPPFLAGS` variable here, other than temporarily, as these could affect the results of other Autoconf macros.

We avoid adding items to the `LIBS` variable, other than temporarily. Instead, the module can export an Autoconf-substituted variable that contains link options. The user of the module can then decide to which executables to apply which link options. Recall that a package can build executables of different kinds and purposes; having all executables link against all libraries is inappropriate.

If the statements in this section grow larger than a couple of lines, we recommend moving them to a `.m4` file of their own.

Makefile.am

This field contains `Makefile.am` statements. Variables like `lib_SOURCES` are transformed to match the name of the library being built in that directory. For example, `lib_SOURCES` may become `libgnu_a_SOURCES` (for a plain library) or `libgnu_la_SOURCES` (for a libtool library). Therefore, the normal way of having an implementation file `lib/foo.c` compiled unconditionally is to write

```
lib_SOURCES += foo.c
```

Include

This field contains the preprocessor statements that users of the module need to add to their source code files. Typically it's a single include statement. A shorthand is allowed: You don't need to write the word "#include", just the name of the include file in the way it will appear in an include statement. Example:

```
"foo.h"
```

Link

This field contains the set of libraries that are needed when linking libraries or executables that use this module. Often this will be written as a reference to a Makefile variable. Please write them one per line, so that `gnulib-tool` can remove duplicates when presenting a summary to the user. Example:

```
$(POW_LIBM)
$(LTLIBICONV) when linking with libtool, $(LIBICONV) otherwise
```

License

This field specifies the license that governs the source code parts of this module. See Section 2.8 [Copyright], page 12, for details.

Maintainer

This field specifies the persons who have a definitive say about proposed changes to this module. You don't need to mention email addresses here: they can be inferred from the `ChangeLog` file.

Please put at least one person here. We don't like unmaintained modules.

4.6 Autoconf macros

For a module `foo`, an Autoconf macro file `m4/foo.m4` is typically created when the Autoconf macro invocations for the module are longer than one or two lines.

The name of the main entry point into this Autoconf macro file is typically `gl_FOO`. For modules outside Gnulib that are not likely to be moved into Gnulib, please use a prefix specific to your package: `gt_` for GNU gettext, `cu_` for GNU coreutils, etc.

For modules that define a function `foo`, the entry point is called `gl_FUNC_FOO` instead of `gl_FOO`. For modules that provide a header file with multiple functions, say `foo.h`, the entry point is called `gl_FOO_H` or `gl_HEADER_FOO_H`. This convention is useful because sometimes a header and a function name coincide (for example, `fcntl` and `fcntl.h`).

For modules that provide a replacement, it is useful to split the Autoconf macro into two macro definitions: one that detects whether the replacement is needed and requests the replacement using `AC_LIBOBJ` (this is the entry point, say `gl_FUNC_FOO`), and one that arranges for the macros needed by the replacement code `lib/foo.c` (typically called `gl_PREREQ_FOO`). The reason of this separation is

1. to make it easy to update the Autoconf macros when you have modified the source code file: after changing `lib/foo.c`, all you have to review is the `Depends-on` section of the module description and the `gl_PREREQ_FOO` macro in the Autoconf macro file.
2. The Autoconf macros are often large enough that splitting them eases maintenance.

4.7 Unit test modules

A unit test that is a simple C program usually has a module description as simple as this:

```
Files:
tests/test-foo.c
tests/macros.h

Depends-on:

configure.ac:

Makefile.am:
TESTS += test-foo
check_PROGRAMS += test-foo
```

The test program `tests/test-foo.c` often has the following structure:

- First comes the obligatory '`#include <config.h>`'.
- Second comes the include of the header file that declares the API being tested. Including it here verifies that said header file is self-contained.
- Then come other includes. In particular, the file `macros.h` is often used here. It contains a convenient `ASSERT` macro.

The body of the test, then, contains many `ASSERT` invocations. When a test fails, the `ASSERT` macro prints the line number of the failing statement, thus giving you, the developer, an idea of which part of the test failed, even when you don't have access to the machine where the test failed and the reporting user cannot run a debugger.

Sometimes it is convenient to write part of the test as a shell script. (For example, in areas related to process control or interprocess communication, or when different locales should be tried.) In these cases, the typical module description is like this:

```
Files:
tests/test-foo.sh
tests/test-foo.c
tests/macros.h

Depends-on:
```

```
configure.ac:

Makefile.am:
TESTS += test-foo.sh
TESTS_ENVIRONMENT += FOO_BAR='@FOO_BAR@'
check_PROGRAMS += test-foo
```

Here, the `TESTS_ENVIRONMENT` variable can be used to pass values determined by `configure` or by the `Makefile` to the shell script, as environment variables. The Autoconf values `EXEEXT` and `srcdir` are already provided as environment variables, through an initial value of `TESTS_ENVIRONMENT` that `gnulib-tool` puts in place.

Regardless of the specific form of the unit test, the following guidelines should be respected:

- A test indicates success by exiting with exit code 0. It should normally not produce output in this case. (Output to temporary files that are cleaned up at the end of the test are possible, of course.)
- A test indicates failure by exiting with an exit code different from 0 and 77, typically 1. It is useful to print a message about the failure in this case. The `ASSERT` macro already does so.
- A test indicates "skip", that is, that most of its interesting functionality could not be performed, through a return code of 77. A test should also print a message to stdout or stderr about the reason for skipping. For example:

  ```
  fputs ("Skipping test: multithreading not enabled\n", stderr);
  return 77;
  ```

  Such a message helps detecting bugs in the autoconf macros: A simple message '`SKIP: test-foo`' does not sufficiently catch the attention of the user.

4.8 Incompatible changes

Incompatible changes to Gnulib modules should be mentioned in Gnulib's `NEWS` file. Incompatible changes here mean that existing source code may not compile or work any more.

We don't mean changes in the binary interface (ABI), since

1. Gnulib code is used in source-code form.
2. The user who distributes libraries that contain Gnulib code is supposed to bump the version number in the way described in the Libtool documentation before every release.

5 Extending Gnulib

Gnulib modules are intended to be suitable for widespread use. Most problems with Gnulib can and should be fixed in a generic way, so that all of Gnulib's users can benefit from the change. But occasionally a problem arises that is difficult or undesirable to fix generically, or a project that uses Gnulib may need to work around an issue before the Gnulib maintainers commit a final fix. Maintainers may also want to add their own pools of modules to projects as Gnulib "staging areas."

The obvious way to make local changes to Gnulib modules is to use `gnulib-tool` to check out pristine modules, then to modify the results in-place. This works well enough for short-lived experiments. It is harder to keep modified versions of Gnulib modules for a long time, even though Git (or another distributed version control systems) can help out a lot with this during the development process.

Git, however, doesn't address the distribution issue. When a package "foobar" needs a modified version of, say, `stdint.in.h`, it either has to put a comment into `foobar/autogen.sh` saying "Attention! This doesn't work with a pristine Gnulib, you need this and that patch after checking out Gnulib," or it has to use the '`--avoid=stdint`' option and provide the modified `stdint` module in a different directory.

The `--local-dir` option to `gnulib-tool` solves this problem. It allows the package to override or augment Gnulib. This means:

- You can store files that are to override Gnulib files or modules.
- You can store context diffs to be applied to Gnulib files.
- You can add modules of your own, that are not (yet) in Gnulib.
- You can also add unstructured amounts of code to the library, by grouping the non-Gnulib files of the library in a single kitchen-sink "module." (This kind of kitchen-sink module is not needed when you use the `gnulib-tool` option '`--makefile-name`'.)

In a release tarball, you can distribute the contents of this `--local-dir` directory that will be combinable with newer versions of Gnulib, barring incompatible changes to Gnulib.

If the '`--local-dir=`*`directory`*' option is specified, then `gnulib-tool` looks in *`directory`* whenever it reads a file from the Gnulib directory. Suppose `gnulib-tool` is looking for *file*. Then:

- If *`directory/file`* exists, then '`gnulib-tool`' uses it instead of the file included in Gnulib.
- Otherwise, if *`directory/file`*`.diff` exists, then `gnulib-tool` uses the file from Gnulib after applying the diff using the `patch` program.
- Otherwise, `gnulib-tool` uses the file included in Gnulib.

Please make wise use of this option. It also allows you to easily hold back modifications you make to Gnulib macros in cases it may be better to share them.

6 Miscellaneous Notes

6.1 Out of memory handling

The gnulib API does not have a standard error code for the out of memory error condition. Instead of adding a non-standard error code, gnulib has chosen to adopt a different strategy. Out of memory handling happens in rare situations, but performing the out of memory error handling after almost all API function invocations pollute your source code and might make it harder to spot more serious problems. The strategy chosen improves code readability and robustness.

For most applications, aborting the application with an error message when the out of memory situation occurs is the best that can be wished for. This is how the library behaves by default (using the '`xalloc-die`' module).

However, we realize that some applications may not want to abort execution in any situation. Gnulib supports a hook to let the application regain control and perform its own cleanups when an out of memory situation has occurred. The application can define a function (having a `void` prototype, i.e., no return value and no parameters) and set the library variable `xalloc_die` to that function. The variable should be declared as follows.

```
extern void (*xalloc_die) (void);
```

Gnulib will invoke this function if an out of memory error occurs. Note that the function should not return. Of course, care must be taken to not allocate more memory, as that will likely also fail.

6.2 Obsolete modules

Modules can be marked obsolete. This means that the problems they fix don't occur any more on the platforms that are reasonable porting targets now. `gnulib-tool` warns when obsolete modules are mentioned on the command line, and by default ignores dependencies from modules to obsolete modules. When you pass the option `--with-obsolete` to `gnulib-tool`, dependencies to obsolete modules will be included, however, unless blocked through an `--avoid` option. This option is useful if your package should be portable even to very old platforms.

In order to mark a module obsolete, you need to add this to the module description:

```
Status:
obsolete

Notice:
This module is obsolete.
```

6.3 Extra tests modules

Test modules can be marked with some special status attributes. When a test module has such an attribute, `gnulib-tool --import` will not include it by default.

The supported status attributes are:

`c++-test` Indicates that the test is testing C++ interoperability. Such a test is useful in a C++ or mixed C/C++ package, but is useless in a C package.

`longrunning-test`
: Indicates that the test takes a long time to compile or execute (more than five minutes or so). Such a test is better avoided in a release that is made for the general public.

`privileged-test`
: Indicates that the test will request special privileges, for example, ask for the superuser password. Such a test may hang when run non-interactively and is therefore better avoided in a release that is made for the general public.

`unportable-test`
: Indicates that the test is known to fail on some systems, and that there is no workaround about it. Such a test is better avoided in a release that is made for the general public.

`gnulib-tool --import --with-tests` will not include tests marked with these attributes by default. When `gnulib-tool` is invoked with one of the options `--with-c++-tests`, `--with-longrunning-tests`, `--with-privileged-tests`, `--with-unportable-tests`, it will include tests despite the corresponding special status attribute. When `gnulib-tool` receives the option `--with-all-tests`, it will include all tests regardless of their status attributes.

`gnulib-tool --create-testdir --with-tests` and `gnulib-tool --create-megatestdir --with-tests` by default include all tests of modules specified on the command line, regardless of their status attributes. Tests of modules occurring as dependencies are not included by default if they have one of these status attributes. The options `--with-c++-tests`, `--with-longrunning-tests`, `--with-privileged-tests`, `--with-unportable-tests` are recognized here as well. Additionally, `gnulib-tool` also understands the options `--without-c++-tests`, `--without-longrunning-tests`, `--without-privileged-tests`, `--without-unportable-tests`.

In order to mark a module with a status attribute, you need to add it to the module description, like this:

```
Status:
longrunning-test
```

If only a part of a test deserves a particular status attribute, you can split the module into a primary and a secondary test module, say `foo-tests` and `foo-extra-tests`. Then add a dependency from `foo-tests` to `foo-extra-tests`, and mark the `foo-extra-tests` with the particular status attribute.

6.4 Modules that modify the way other modules work

The normal way to design modules is that each module has its own code, and the module dependencies provide the facilities on which this code can rely. But sometimes it is necessary to use more advanced techniques. For example:

- You may want to have optional module dependencies: Let module A use facilities provided by module B, if module B is present, but without requiring that module B is present.
- A module can indicate support for particular behaviours. For example, Gnulib has a module '`sigpipe`' that requests POSIX compatible SIGPIPE behaviour from all other

modules – something that is not enabled by default. Or consider the '`nonblocking`' module, that is an indicator that all I/O functions should handle non-blocking file descriptors – something that, equally, is not enabled by default.

- A module can indicate to other modules that they can rely on certain guarantees, and thus omit specific code. For example, when Gnulib's '`malloc-gnu`' module is present, you can omit code that test `n` against zero when you call `malloc (n)`.

Be aware that these advanced techniques likely cause breakage in the situation of multiple `gnulib-tool` invocations in the scope of a single `configure` file. This is because the question "is module B present?" does not have a unique answer in such situations. `gnulib-tool` has support for these techniques in the situation of `--create-testdir --single-configure`, which basically has two `gnulib-tool` invocations, one for a set of modules that end up in `gllib`, and one for the set of modules that end up in `gltests`. But you should be aware that this does not cover the general situation.

Which technique to use, depends on the answer to the question: "If my module occurs among the modules of `gltests`, should it have an effect on the modules in `gllib`?"

If the answer is "no", your module description should invoke the Autoconf macro `gl_MODULE_INDICATOR`. This Autoconf macro takes one argument: the name of your module. The effect of `gl_MODULE_INDICATOR([`*`my-module`*`])` is to define, in `config.h`, a C macro `GNULIB_`*`MY_MODULE`* that indicates whether your macro is considered to be present. This works even when your macro is used in `gltests`: `GNULIB_`*`MY_MODULE`* will then evaluate to 1 in `gltests` but to 0 in `gllib`.

If the answer is "yes", you have two techniques available. The first one is to invoke a similar Autoconf macro, named `gl_MODULE_INDICATOR_FOR_TESTS`. It works similarly. However, when your macro is used in `gltests`, `GNULIB_`*`MY_MODULE`* will evaluate to 1 both in `gltests` and in `gllib`.

The second one is to define a shell variable in the `configure` file that tells whether your module is present, through use of `m4_divert_text`. The Autoconf macros of a dependency module will initialize this shell variable, through '`m4_divert_text([DEFAULTS], [`*`my_shell_var`*`=no])`'. The Autoconf macros of your module will override this value, through '`m4_divert_text([INIT_PREPARE], [`*`my_shell_var`*`=yes])`'. Then you can use *`my_shell_var`* in the Autoconf macros of both modules. You can find more details about this technique in the Gnulib module `getopt-gnu`.

Reminder: These techniques are advanced. They have the potential to cause lots of headaches if you apply them incorrectly.

6.5 A C++ namespace for gnulib

The function definitions provided by Gnulib (`.c` code) are meant to be compiled by a C compiler. The header files (`.h` files), on the other hand, can be used in either C or C++.

By default, when used in a C++ compilation unit, the `.h` files declare the same symbols and overrides as in C mode, except that functions defined by Gnulib or by the system are declared as '`extern "C"`'.

It is also possible to indicate to Gnulib to provide many of its symbols in a dedicated C++ namespace. If you define the macro `GNULIB_NAMESPACE` to an identifier, many functions will

be defined in the namespace specified by the identifier instead of the global namespace. For example, after you have defined

```
#define GNULIB_NAMESPACE gnulib
```

at the beginning of a compilation unit, Gnulib's `<fcntl.h>` header file will make available the `open` function as `gnulib::open`. The symbol `open` will still refer to the system's `open` function, with its platform specific bugs and limitations.

The symbols provided in the Gnulib namespace are those for which the corresponding header file contains a `_GL_CXXALIAS_RPL` or `_GL_CXXALIAS_SYS` macro invocation.

The benefits of this namespace mode are:

- Gnulib defines fewer symbols as preprocessor macros. For example, on a platform where `open` has to be overridden, Gnulib normally does `#define open rpl_open`. If your package has a class with a member `open`, for example a class `foo` with a method `foo::open`, then if you define this member in a compilation unit that includes `<fcntl.h>` and use it in a compilation unit that does not include `<fcntl.h>`, or vice versa, you will get a link error. Worse: You will not notice this problem on the platform where the system's `open` function works fine. This problem goes away in namespace mode.
- It provides a safety check whether the set of modules your package requests from Gnulib is sufficient. For example, if you use the function `gnulib::open` in your code, and you forgot to request the module '`open`' from Gnulib, you will get a compilation error (regardless of the platform).

The drawback of this namespace mode is that the system provided symbols in the global namespace are still present, even when they contain bugs that Gnulib fixes. For example, if you call `open (...)` in your code, it will invoke the possibly buggy system function, even if you have requested the module '`open`' from gnulib-tool.

You can turn on the namespace mode in some compilation units and keep it turned off in others. This can be useful if your package consists of an application layer that does not need to invoke POSIX functions and an operating system interface layer that contains all the OS function calls. In such a situation, you will want to turn on the namespace mode for the application layer—to avoid many preprocessor macro definitions—and turn it off for the OS interface layer—to avoid the drawback of the namespace mode, mentioned above.

6.6 Library version handling

The module '`check-version`' can be useful when your gnulib application is a system library. You will typically wrap the call to the `check_version` function through a library API, your library header file may contain:

```
#define STRINGPREP_VERSION "0.5.18"
...
  extern const char *stringprep_check_version (const char *req_version);
```

To avoid ELF symbol collisions with other libraries that use the '`check-version`' module, add to `config.h` through a AC_DEFINE something like:

```
AC_DEFINE(check_version, stringprep_check_version,
          [Rename check_version.])
```

The `stringprep_check_version` function will thus be implemented by the `check_version` module.

There are two uses of the interface. The first is a way to provide for applications to find out the version number of the library it uses. The application may contain diagnostic code such as:

```
printf ("Stringprep version: header %s library %s",
        STRINGPREP_VERSION,
        stringprep_check_version (NULL));
```

Separating the library and header file version can be useful when searching for version mismatch related problems.

The second uses is as a rudimentary test of proper library version, by making sure the application get a library version that is the same, or newer, than the header file used when building the application. This doesn't catch all problems, libraries may change backwards incompatibly in later versions, but enable applications to require a certain minimum version before it may proceed.

Typical uses look like:

```
/* Check version of libgcrypt. */
if (!gcry_check_version (GCRYPT_VERSION))
  die ("version mismatch\n");
```

6.7 Windows sockets

There are several issues when building applications that should work under Windows. The most problematic part is for applications that use sockets.

Hopefully, we can add helpful notes to this section that will help you port your application to Windows using gnulib.

6.7.1 Getaddrinfo and WINVER

This was written for the getaddrinfo module, but may be applicable to other functions too.

The getaddrinfo function exists in ws2tcpip.h and -lws2_32 on Windows XP. The function declaration is present if `WINVER >= 0x0501`. Windows 2000 does not have getaddrinfo in its `WS2_32.DLL`.

Thus, if you want to assume Windows XP or later, you can add AC_DEFINE(WINVER, 0x0501) to avoid compiling the (partial) getaddrinfo implementation.

If you want to support Windows 2000, don't do anything. The replacement function will open `WS2_32.DLL` during run-time to see if there is a getaddrinfo function available, and use it when available.

6.8 Libtool and Windows

If you want it to be possible to cross-compile your program to MinGW and you use Libtool, you need to use the `win32-dll` option of `LT_INIT`. In other words, put:

```
LT_INIT([win32-dll])
```

in your `configure.ac`. This sets the correct names for the `OBJDUMP`, `DLLTOOL`, and `AS` tools for the build.

If you are building a library, you will also need to pass `-no-undefined` to make sure Libtool produces a DLL for your library. From a `Makefile.am`:

```
libgsasl_la_LDFLAGS += -no-undefined
```

6.9 License Texinfo sources

Gnulib provides copies of the GNU GPL, GNU LGPL, and GNU FDL licenses in Texinfo form. (The master location is `http://www.gnu.org/licenses/`). These Texinfo documents do not have any node names and structures built into them; for your manual, you should `@include` them in an appropriate `@node`.

The conventional name for the GPL node is '`Copying`' and for the FDL '`GNU Free Documentation License`'. The LGPL doesn't seem to have a conventional node name.

Of course the license texts themselves should not be changed at all.

6.10 Build robot for gnulib

To simplify testing on a wide set of platforms, gnulib is built on many platforms every day and the results are uploaded to:

`http://autobuild.josefsson.org/gnulib/`

If you wish to help the gnulib development effort with build logs for your favorite platform, you may perform these steps:

1. Create gnulib directory

   On a machine with GNU development tools installed and with a gnulib git checkout, use

   ```
   gnulib-tool --create-megatestdir --with-tests --dir=...
   ```

   Note: The created directory uses ca. 512 MB on disk.

2. Transfer gnulib directory

   Transfer this directory to a build machine (HP-UX, Cygwin, or whatever). Often it is easier to transfer one file, and this can be achieved by running, inside the directory the following commands:

   ```
   ./configure
   make dist
   ```

   And then transferring the `dummy-0.tar.gz` file.

3. Build modules

   On the build machine, run ./do-autobuild (or "nohup ./do-autobuild"). It creates a directory `logs/` with a log file for each module.

4. Submit build logs

   Submit each log file to Simon's site, either through a

   ```
   mail `echo gnulib__at__autobuild.josefsson.org | sed -e s/__at__/@/`
   ```

   or through netcat

   ```
   autobuild-submit logs/*
   ```

7 Building the ISO C and POSIX Substitutes

This section shows a radically different way to use Gnulib.

You can extract the ISO C / POSIX substitutes part of gnulib by running the command

```
gnulib-tool --create-testdir --source-base=lib \
            --dir=/tmp/posixlib ‘posix-modules‘
```

The command ‘`posix-modules`’ is found in the same directory as `gnulib-tool`.

The resulting directory can be built on a particular platform, independently of the program being ported. Then you can configure and build any program, by setting `CPPFLAGS` and `LDFLAGS` at configure time accordingly: set `CPPFLAGS="-I.../posixlib/lib"`, plus any essential type definitions and flags that you find in `.../posixlib/config.h`, and set `LDFLAGS=".../posixlib/lib/libgnu.a"`.

This way of using Gnulib is useful when you don’t want to modify the program’s source code, or when the program uses a mix between C and C++ sources (requiring separate builds of the `posixlib` for the C compiler and for the C++ compiler).

8 ISO C and POSIX Header File Substitutes

This chapter describes which header files specified by ISO C or POSIX are substituted by Gnulib, which portability pitfalls are fixed by Gnulib, and which (known) portability problems are not worked around by Gnulib.

The notation "Gnulib module: —" means that Gnulib does not provide a module providing a substitute for the header file. When the list "Portability problems not fixed by Gnulib" is empty, such a module is not needed: No portability problems are known. Otherwise, it indicates that such a module would be useful but is not available: No one so far found this header file important enough to contribute a substitute for it. If you need this particular header file, you may write to <bug-gnulib at gnu dot org>.

8.1 aio.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/aio.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.2 arpa/inet.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/arpa_inet.h.html

Gnulib module: arpa_inet

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

8.3 assert.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/assert.h.html

Gnulib module: assert-h

See also the Gnulib module assert.

Portability problems fixed by Gnulib:

- The C11 and C++11 static_assert, and the C11 _Static_assert, are not supported by many platforms. For example, GCC versions before 4.6.0 do not support _Static_assert, and G++ versions through at least 4.6.0 do not support static_assert.

Portability problems not fixed by Gnulib:

- C11 _Static_assert and C++11 static_assert are keywords that can be used without including <assert.h>. The Gnulib substitutes are macros that require including <assert.h>.

- The C11 `static_assert` and `_Static_assert` can also be used within a `struct` or `union` specifier, in place of an ordinary declaration of a member of the struct or union. The Gnulib substitute can be used only as an ordinary declaration.
- In C99, `assert` can be applied to any scalar expression. In C89, the argument to `assert` is of type `int`.

8.4 `complex.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/complex.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5, BeOS.

8.5 `cpio.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/cpio.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

8.6 `ctype.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/ctype.h.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

8.7 `dirent.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/dirent.h.html`

Gnulib module: dirent

Portability problems fixed by Gnulib:

- The type `ino_t` is missing on some platforms: glibc 2.8 and others.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: MSVC 9.

8.8 dlfcn.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/dlfcn.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

8.9 errno.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/errno.h.html

Gnulib module: errno

Portability problems fixed by Gnulib:

- The macros `EOVERFLOW`, `ENOLINK`, `EMULTIHOP` are not defined on some platforms: OpenBSD 4.0, OSF/1 5.1, mingw, MSVC 9.
- The macro `ECANCELED` is not defined on some platforms: OpenBSD 4.0, Cygwin, mingw, MSVC 9.
- The macros `ENOMSG`, `EIDRM`, `EPROTO`, `EBADMSG`, `ENOTSUP` are not defined on some platforms: OpenBSD 4.0, mingw, MSVC 9.
- The macro `ESTALE` is not defined on some platforms: mingw, MSVC 9, Interix 3.5.
- The macro `EDQUOT` is not defined on some platforms: NonStop Kernel, mingw, MSVC 9.
- The macros `ENETRESET`, `ECONNABORTED` are not defined on some platforms: Minix 3.1.8, mingw, MSVC 9.
- The macros `EWOULDBLOCK`, `ETXTBSY`, `ELOOP`, `ENOTSOCK`, `EDESTADDRREQ`, `EMSGSIZE`, `EPROTOTYPE`, `ENOPROTOOPT`, `EPROTONOSUPPORT`, `EOPNOTSUPP`, `EAFNOSUPPORT`, `EADDRINUSE`, `EADDRNOTAVAIL`, `ENETDOWN`, `ENETUNREACH`, `ECONNRESET`, `ENOBUFS`, `EISCONN`, `ENOTCONN`, `ETIMEDOUT`, `ECONNREFUSED`, `EHOSTUNREACH`, `EALREADY`, `EINPROGRESS` are not defined on some platforms: mingw, MSVC 9.
- The macros `EOWNERDEAD`, `ENOTRECOVERABLE` are not defined on some platforms: glibc/Linux 2.3.6, glibc/Hurd 2.15, glibc/kFreeBSD 2.15, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw without pthreads-win32, MSVC 9, Interix 3.5, BeOS.
- The macro `EILSEQ` is not defined on some platforms: LynxOS 178 2.2.2.

Portability problems not fixed by Gnulib:

8.10 fcntl.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/fcntl.h.html

Gnulib module: fcntl-h

Portability problems fixed by Gnulib:

- The type `pid_t` is not defined on some platforms: MSVC 9.

- The type `mode_t` is not defined on some platforms: MSVC 9.
- '`O_CLOEXEC`', '`O_DIRECTORY`', '`O_DSYNC`', '`O_NOCTTY`', '`O_NOFOLLOW`', '`O_RSYNC`', '`O_SYNC`', and '`O_TTY_INIT`' are not defined on some platforms. Gnulib defines these macros to 0, which is generally safe.
- '`O_NONBLOCK`' is not defined on some platforms. If the '`nonblocking`' module is in use, gnulib guarantees a working non-zero value; otherwise, the gnulib replacement is 0.
- '`O_EXEC`' and '`O_SEARCH`' are not defined on some platforms. Gnulib defines these macros to '`O_RDONLY`', which is typically 0. The '`O_PATH`' macro of GNU/Linux is not a suitable substitute, as fchmod fails with '`errno==EBADF`' when invoked on a file descriptor that was opened with '`O_PATH`'.
- '`O_ACCMODE`' is not defined on some platforms: MSVC 9.
- The '`O_ACCMODE`' mask mistakenly omits '`O_SEARCH`' and '`O_EXEC`' on some platforms: Cygwin.
- '`O_BINARY`', '`O_TEXT`' (not specified by POSIX, but essential for portability to native Windows platforms) are defined on some platforms but not on others.
- '`O_CLOEXEC`', '`O_NOFOLLOW`', and '`O_TTY_INIT`' are defined to values that are too large for an `int` on some platforms: AIX 7.1 with XL C 12.1.
- '`O_DIRECT`', '`O_IGNORE_CTTY`', '`O_NDELAY`', '`O_NOATIME`', '`O_NOLINK`', '`O_NOLINKS`', and '`O_NOTRANS`' (not specified by POSIX) are defined on some platforms but not on others.
- '`FD_CLOEXEC`', '`F_DUPFD`', and '`F_GETFD`' are not defined on some platforms: mingw, MSVC 9.
- '`F_DUPFD_CLOEXEC`' is not defined on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.
- '`AT_FDCWD`', '`AT_EACCESS`', '`AT_SYMLINK_NOFOLLOW`', '`AT_SYMLINK_FOLLOW`', and '`AT_REMOVEDIR`' are not defined on many platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- '`AT_FDCWD`' is defined with a value too large for an `int` on some platforms: Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

- '`F_SETFD`', '`F_GETFL`', '`F_SETFL`', '`F_GETLK`', '`F_SETLK`', '`F_SETLKW`', '`F_GETOWN`', and '`F_SETOWN`' are not defined on some platforms: mingw, MSVC 9.
- '`POSIX_FADV_DONTNEED`', '`POSIX_FADV_NOREUSE`', '`POSIX_FADV_NORMAL`', '`POSIX_FADV_RANDOM`', '`POSIX_FADV_SEQUENTIAL`', and '`POSIX_FADV_WILLNEED`' are not defined on some platforms.

8.11 `fenv.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/fenv.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.7, MSVC 9, Interix 3.5, BeOS.

8.12 `float.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/float.h.html`

Gnulib module: float

Portability problems fixed by Gnulib:

- The conversion from `int` to `long double` in incorrect on some platforms: glibc 2.7 on Linux/SPARC64.
- The values of `LDBL_*` macros are incorrect on some platforms: On OpenBSD 4.0, MirBSD 10, and BeOS, they are the same as the values of the `DBL_*` macros, although '`long double`' is a larger type than '`double`'. On FreeBSD/x86 6.4, they represent the incorrect 53-bit precision assumptions in the compiler, not the real 64-bit precision at runtime. On Linux/PowerPC with GCC 4.4, on AIX 7.1 with GCC 4.2, and on IRIX 6.5, they don't reflect the "double double" representation of `long double` correctly.

Portability problems not fixed by Gnulib:

- The macro `FLT_ROUNDS` is a constant expression and does not represent the current rounding mode on some platforms: glibc 2.11, HP-UX 11, mingw.

8.13 `fmtmsg.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/fmtmsg.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.14 `fnmatch.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/fnmatch.h.html`

Gnulib module: fnmatch-posix or fnmatch-gnu

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

8.15 ftw.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/ftw.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 3.0, Minix 3.1.8, mingw, MSVC 9, BeOS.

8.16 glob.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/glob.h.html

Gnulib module: glob

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

8.17 grp.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/grp.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

8.18 iconv.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/iconv.h.html

Gnulib module: iconv

Portability problems fixed by Gnulib:

- The <iconv.h> from GNU libiconv is not found if installed in `$PREFIX/include`.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS, when GNU libiconv is not installed.

8.19 inttypes.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/inttypes.h.html

Gnulib module: inttypes

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: OSF/1 4.0, MSVC 9, Interix 3.5.
- This header file is very incomplete on some platforms.
- The PRI* macros are defined to non-string values on AIX 4.3.3.
- The declarations of `imaxabs` and `imaxdiv` are missing on some platforms: NetBSD 3.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, BeOS.
- The declarations of `strtoimax` and `strtoumax` are missing on some platforms: OpenBSD 3.8, AIX 4.3.2, AIX 5.1 (missing only `strtoumax`), OSF/1 5.1.
- On some hosts that predate C++11, when using C++ one must define `__STDC_FORMAT_MACROS` to make visible the declarations of format macros such as `PRIdMAX`.

Portability problems not fixed by Gnulib:

8.20 iso646.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/iso646.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, OSF/1 4.0, Cygwin, mingw, BeOS.

8.21 langinfo.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/langinfo.h.html

Gnulib module: langinfo

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- The constant `CODESET` is not defined on some platforms: glibc 2.0.6, OpenBSD 3.8.
- The constants `ERA`, `ERA_D_FMT`, `ERA_D_T_FMT`, `ERA_T_FMT`, `ALT_DIGITS` are not defined on some platforms: OpenBSD 3.8.
- The constants `T_FMT_AMPM`, `YESEXPR`, `NOEXPR` are not defined on some platforms: IRIX 5.3.

Portability problems not fixed by Gnulib:

8.22 libgen.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/libgen.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

The Gnulib module `dirname` provides similar API, with functions `base_name` and `dir_name` that also work with Windows file names.

8.23 limits.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/limits.h.html

Gnulib module: gethostname

Portability problems fixed by Gnulib:

- The `HOST_NAME_MAX` macro is not defined on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- Macros like `CHAR_WIDTH` are not defined on some platforms: glibc 2.24, many others.

Portability problems not fixed by Gnulib:

- The macros `LLONG_MIN`, `LLONG_MAX`, `ULLONG_MAX` are not defined on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OpenVMS, OSF/1 5.1 with gcc.
- The macros `WORD_BIT`, `LONG_BIT` are not defined on some platforms: glibc 2.11 without `-D_GNU_SOURCE`, Cygwin, mingw, MSVC 9.
- The macro `SSIZE_MAX` has the wrong type, albeit with the correct value: 32-bit glibc 2.24 (on some architectures), Cygwin 2.5.2.
- The macro `SSIZE_MAX` is not defined on some platforms: MSVC 9.

For `PATH_MAX`, Gnulib provides a module `pathmax` with a header file `"pathmax.h"`. It defines `PATH_MAX` to a constant on platforms with a file name length limit.

8.24 locale.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/locale.h.html

Gnulib module: locale

Portability problems fixed by Gnulib:

- The definition of '`LC_MESSAGES`' is missing on some platforms: mingw, MSVC 9.
- The `locale_t` type is not defined on some platforms: glibc 2.11, Mac OS X 10.5.
- The `struct lconv` type does not contain any members on some platforms: Android.

- The `struct lconv` type does not contain the members `int_p_cs_precedes`, `int_p_sign_posn`, `int_p_sep_by_space`, `int_n_cs_precedes`, `int_n_sign_posn`, `int_n_sep_by_space` on some platforms: glibc, OpenBSD 4.9, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

8.25 `math.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/math.h.html`

Gnulib module: math

Portability problems fixed by Gnulib:

- The conversion from `int` to `long double` in incorrect on some platforms: glibc 2.7 on Linux/SPARC64.
- The macro `NAN` is not defined on some platforms: OpenBSD 4.0, AIX 5.1, IRIX 6.5, OSF/1 5.1.
- The macro `NAN` is not exposed outside of C99 compilation on some platforms: glibc.
- The macros `NAN` and `HUGE_VAL` expand to a function address rather than a floating point constant on some platforms: Solaris 10.
- The macros `HUGE_VALF` and `HUGE_VALL` are not defined on some platforms: glibc/HPPA, glibc/SPARC, AIX 5.1, IRIX 6.5, Solaris 9, MSVC 9.
- The macros `FP_ILOGB0` and `FP_ILOGBNAN` are not defined on some platforms: NetBSD 5.1, AIX 5.1, IRIX 6.5, Solaris 9, MSVC 9.

Portability problems not fixed by Gnulib:

- `NAN` is not a compile time constant with some compilers: OSF/1 with Compaq (ex-DEC) C 6.4.
- The macro or variable `math_errhandling` is not defined on some platforms: glibc 2.11, OpenBSD 4.9, NetBSD 5.1, UP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.9, mingw, MSVC 9.

8.26 `monetary.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/monetary.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS, Android.

8.27 mqueue.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/mqueue.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.28 ndbm.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/ndbm.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.29 net/if.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/net_if.h.html

Gnulib module: net_if

Portability problems fixed by Gnulib:

- This header file is not self-contained on some platforms (needing <sys/socket.h> to be included first): FreeBSD 8.2, OpenBSD 5.2.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, Interix 3.5, BeOS.

8.30 netdb.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/netdb.h.html

Gnulib module: netdb

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.
- This header file is incomplete on some platforms: Cygwin 1.5.x, Haiku.
- This header file does not define the type `socklen_t` on some platforms: HP-UX 10.20, IRIX 6.5, OSF/1 4.0, Interix 3.5, BeOS.
- This header file does not define `AI_ALL`, `AI_V4MAPPED`, `AI_ADDRCONFIG` on some platforms: NetBSD 5.0.

Portability problems not fixed by Gnulib:

8.31 netinet/in.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/netinet_in.h.html

Gnulib module: netinet_in

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.
- This header file is not self-contained on some platforms (it requires <sys/types.h> to be included first): OpenBSD 4.6.

Portability problems not fixed by Gnulib:

8.32 netinet/tcp.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/netinet_tcp.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.33 nl_types.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/nl_types.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

8.34 poll.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/poll.h.html

Gnulib module: poll-h

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- This header file does not defined nfds_t on some platforms: IRIX 5.3.

8.35 pthread.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/pthread.h.html

Gnulib module: pthread

Portability problems fixed by Gnulib:

- This header pollutes the namespace with some broken macro implementations for various functions such as `strtok_r` and `gmtime_r`: mingw 3.0.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms; the replacement does not offer threads, so much as lightweight stubs that make conditional compilation easier for fallbacks to single-threaded programs. Minix 3.1.8, mingw 2.x, MSVC 9, BeOS.

8.36 pwd.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/pwd.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

8.37 regex.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/regex.h.html

Gnulib module: regex

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This header file is not self-contained on some platforms: it requires `<sys/types.h>` to be included first.

8.38 sched.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sched.h.html

Gnulib module: sched

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- This header file does not define the type `pid_t` on some platforms: glibc 2.11, Mac OS X 10.5.
- `struct sched_param` is not defined on some platforms: Haiku.
- `SCHED_FIFO`, `SCHED_RR`, `SCHED_OTHER` are not defined on some platforms: Haiku.

Portability problems not fixed by Gnulib:

8.39 search.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/search.h.html

Gnulib module: search

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, BeOS.

8.40 semaphore.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/semaphore.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

8.41 setjmp.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/setjmp.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

8.42 signal.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/signal.h.html

Gnulib module: signal-h

Portability problems fixed by Gnulib:

- `volatile sig_atomic_t` is rejected by older compilers on some platforms: AIX.
- `sigset_t` is missing on some platforms: MSVC 9.
- `sigset_t` is only declared in <sys/types.h> on some platforms: mingw.
- `struct sigaction` and `siginfo_t` are missing on some platforms: mingw, MSVC 9.
- `struct sigaction` lacks the `sa_sigaction` member on some platforms: Irix 5.3, Interix 3.5.
- The type `pid_t` is not defined on some platforms: MSVC 9.
- The signal `SIGPIPE` is not defined on some platforms: mingw, MSVC 9.
- The macro `SA_NODEFER` is not defined on some platforms: Interix 3.5.
- The macros `SA_RESETHAND` and `SA_RESTART` are not defined on some platforms: NonStop.

- The type `sighandler_t` (a GNU extension) is not defined on most non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

- Many signals are not defined on some platforms: mingw, MSVC 9.
- The macros `SIGRTMIN` and `SIGRTMAX` expand to an expression of type `long` instead of `int` on some platforms: OSF/1 5.1.
- The macro `SIGBUS` is set to the same value as `SIGSEGV`, rather than being a distinct signal, on some platforms: Haiku.

8.43 `spawn.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/spawn.h.html`

Gnulib module: spawn

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

8.44 `stdalign.h`

POSIX specification:
Not in POSIX yet, but we expect it will be. ISO C11 (latest free draft `http://www.open-std.org/jtc1/sc22/wg14/www/docs/n1570.pdf`) sections 6.5.3.4, 6.7.5, 7.15. C++11 (latest free draft `http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2011/n3242.pdf`) section 18.10.

Gnulib module: stdalign

Portability problems fixed by Gnulib:

- This header file is missing on most circa-2011 platforms.
- Clang 3.0's `<stdalign.h>` does not define `alignof`/`_Alignof`.
- The `alignof` and `_Alignof` macros return too large values for the types `double` and `long long` in GCC 4.7.0.

Portability problems not fixed by Gnulib:

- In ISO C11, the operand of `alignof`/`_Alignof` must be a parenthesized type. Recent versions of GCC support an extension in which the operand can also be a unary expression, as with `sizeof`. The Gnulib substitute does not support this extension.
- On most pre-C11 platforms, the operand of `alignof`/`_Alignof` cannot be a structure type containing a flexible array member.
- `_Alignas` and `alignas` are not always supported; on platforms lacking support, the macro `__alignas_is_defined` is not defined. Supported compilers include GCC, IBM C, Sun C 5.9 and later, and MSVC 7.0 and later.

- Some compilers do not support alignment via `alignas`/`_Alignas` of `auto` variables (i.e., variables on the stack). They diagnose and ignore the alignment: Sun C 5.11.
- Some linkers do not support operands of `_Alignas`/`alignas` that are greater than 8: mingw.
- Some compilers require the operand of `_Alignas`/`alignas` to be a single integer constant, not an expression: MSVC 7.0 through at least 10.0.
- The Sun C 5.11 compiler sometimes mishandles the alignment of multiple external variables that are declared close together with `_Alignas`/`alignas`. This compiler bug causes the Gnulib module `stdalign-tests` to fail. The Sun Studio Developer Bug Report Review Team assigned the internal review ID 2125432 (dated 2011-11-01) to this issue.
- `<stdalign.h>` must be #included before `_Alignas` and `_Alignof` can be used.
- You cannot assume that `_Alignas` and `_Alignof` are reserved words; they might be macros.

8.45 `stdarg.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/stdarg.h.html`

Gnulib module: stdarg

Portability problems fixed by Gnulib:

- Some compilers (e.g., AIX 5.3 cc) need to be in c99 mode for the builtin `va_copy` to work.

Portability problems not fixed by Gnulib:

8.46 `stdbool.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/stdbool.h.html`

Gnulib module: stdbool

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1.
- Some compilers have bugs relating to '`bool`'.
- This header file defines `true` incorrectly on some platforms: OpenBSD 4.7 with gcc 2.95.

Portability problems not fixed by Gnulib:

- '`_Bool`' cannot be used before `<stdbool.h>` is included, or if the program is intended to be compiled by a C++ compiler.
- You cannot assume that `_Bool` is a typedef; it might be a macro.
- Bit-fields of type '`bool`' are not supported. Portable code should use '`unsigned int foo : 1;`' rather than '`bool foo : 1;`'.

- Casts and automatic conversions to '`bool`' don't test against the zero value or the null pointer, as they should. Such casts should only be used if the value is known to be equal to 0 or 1.
- You cannot assume that casting a floating point literal to '`bool`' will result in a constant expression.

8.47 `stddef.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/stddef.h.html`

Gnulib module: stddef

Portability problems fixed by Gnulib:

- Some platforms fail to provide `max_align_t`, which was added in C11.
- Some old platforms fail to provide `wchar_t`.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

- Some platforms provide an `offsetof` macro that cannot be used in arbitrary expressions: Solaris 11 2011-11 This problem can be worked around by parenthesizing the `offsetof` expression in the unlikely case you use it with `sizeof` or '`[]`'.

8.48 `stdint.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/stdint.h.html`

Gnulib module: stdint

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: OpenBSD 3.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, MSVC 9, Interix 3.5, BeOS.
- This header file is very incomplete on some platforms.
- The values of `SIG_ATOMIC_MIN` and `SIG_ATOMIC_MAX` are incorrect on some platforms: FreeBSD 6.2 / ia64.
- The value of `WINT_MAX` is incorrect on some platforms: mingw.
- The values of `INT8_MAX`, `UINT8_MAX` etc. are not usable in preprocessor expressions on some platforms: HP-UX 11.23.
- The values of `INTPTR_MAX` and `UINTPTR_MAX`, although correctly defined in `<stdint.h>`, are replaced by empty values when `<limits.h>` or `<inttypes.h>` gets included later on some platforms: Solaris 9 with GCC 4.5 or newer.
- The macros `WCHAR_MIN` and `WCHAR_MAX` are not defined in `<stdint.h>` (only in `<wchar.h>`) on some platforms: Dragonfly, BSDI.
- On some hosts that predate C++11, when using C++ one must define `__STDC_CONSTANT_MACROS` to make visible the definitions of constant macros such as `INTMAX_C`, and one must define `__STDC_LIMIT_MACROS` to make visible the definitions of limit macros such as `INTMAX_MAX`.

- The macro `SIZE_MAX` has the wrong type, albeit with the correct value: 32-bit glibc 2.24 (on s390 architecture), Mac OS X 10.7.
- Macros like `INTMAX_WIDTH` are not defined on some platforms: glibc 2.24, many others.

Portability problems not fixed by Gnulib:

- `{uint,int}_fast{8,16,32,64}_t` may not correspond to the fastest types available on the system. Other `<stdint.h>` substitutes may define these types differently, so public header files should avoid these types.
- Macros are used instead of typedefs.
- Some C preprocessors mishandle constants that do not fit in `long int`. For example, as of 2007, Sun C mishandles `#if LLONG_MIN < 0` on a platform with 32-bit `long int` and 64-bit `long long int`. Some older preprocessors mishandle constants ending in `LL`. To work around these problems, compute the value of expressions like `LONG_MAX < LLONG_MAX` at `configure`-time rather than at `#if`-time.

The stdint.h module uses `#include_next`. If you wish to install the generated stdint.h file under another name, typically in order to be able to use some of the types defined by stdint.h in your public header file, you could use the following Makefile.am-snippet:

```
BUILT_SOURCES += idn-int.h
DISTCLEANFILES += idn-int.h
nodist_include_HEADERS += idn-int.h

idn-int.h:
if test -n "$(STDINT_H)"; then \
sed -e s/include_next/include/ gl/stdint.h > idn-int.h; \
else \
echo '#include <stdint.h>' > idn-int.h; \
fi
```

8.49 `stdio.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/stdio.h.html`

Gnulib module: stdio

Portability problems fixed by Gnulib:

- The type `off_t` is missing on some platforms: glibc 2.8, eglibc 2.11.2 and others.
- The type `ssize_t` is missing on some platforms: glibc 2.8, Mac OS X 10.5, Solaris 10, MSVC 9, and others.
- The type `va_list` is missing on some platforms: glibc 2.8, OpenBSD 4.0, Solaris 11 2011-11, and others.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

8.50 stdlib.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/stdlib.h.html

Gnulib module: stdlib, system-posix

Portability problems fixed by the Gnulib module stdlib:

- The macros EXIT_SUCCESS and EXIT_FAILURE are not defined on some platforms.
- The macro EXIT_FAILURE is incorrectly defined on Tandem/NSK.
- Some platforms provide a NULL macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems fixed by the Gnulib module system-posix:

- The macros WIFSIGNALED, WIFEXITED, WIFSTOPPED, WTERMSIG, WEXITSTATUS, WNOHANG, WUNTRACED, WSTOPSIG are not defined in this header file (only in <sys/wait.h>) on some platforms: MirBSD 10.

Portability problems not fixed by Gnulib:

- System status macros such as WEXITSTATUS require an lvalue argument on some platforms. Mac OS X 10.5.

8.51 stdnoreturn.h

POSIX specification:
Not in POSIX yet, but we expect it will be. ISO C11 (latest free draft http://www.open-std.org/jtc1/sc22/wg14/www/docs/n1570.pdf) sections 7.23.

Gnulib module: stdnoreturn

Portability problems fixed by Gnulib:

- This header file is missing on most circa-2012 platforms.

Portability problems not fixed by Gnulib:

- <stdnoreturn.h> should be #included before '_Noreturn' is used.
- You cannot assume that _Noreturn is a reserved word; it might be a macro.
- When the macro lint is defined, standard headers define _Noreturn (and therefore noreturn) to be a macro that expands to the empty token sequence on some platforms: Cygwin 2.5.1, FreeBSD 10.3.
- On MSVC 9, noreturn expands to the empty token sequence, to avoid problems with standard headers that use __declspec (noreturn) directly. Although the resulting code operates correctly, the compiler is not informed whether noreturn functions do not return, so it may generate incorrect warnings at compile-time, or code that is slightly less optimized. This problem does not occur with _Noreturn.
- Circa 2012 bleeding-edge GCC with -Werror=old-style-declaration requires _Noreturn or noreturn before the returned type in a declaration, and therefore rejects valid but unusually-worded declarations such as void _Noreturn foo (void);.

8.52 string.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/string.h.html

Gnulib module: string

Portability problems fixed by Gnulib:

- Some platforms provide a NULL macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

8.53 strings.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/strings.h.html

Gnulib module: strings

Portability problems fixed by Gnulib:

- This header file is not self-contained on some platforms: Minix 3.1.8.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: MSVC 9.
- This header file defines symbols, such as 'index', often used for variables, making debugging harder.

8.54 stropts.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/stropts.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

8.55 sys/ipc.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_ipc.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.56 sys/mman.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_mman.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.57 sys/msg.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_msg.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, Minix 3.1.8, mingw, MSVC 9, BeOS.

8.58 sys/resource.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_resource.h.html

Gnulib module: sys_resource

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.
- On some platforms, this header file requires that <sys/types.h> and <sys/time.h> already be included: FreeBSD 5.0.

Portability problems not fixed by Gnulib:

- On some platforms, this header does not define some or all of the symbolic constants required by POSIX. For example, Android does not define `RLIM_SAVED_CUR` or `RLIM_SAVED_MAX`.

8.59 sys/select.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_select.h.html

Gnulib module: sys_select

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: HP-UX 11.11, NonStop Kernel, mingw, MSVC 9, BeOS.
- This header file is not self-contained on some platforms: it requires `<sys/types.h>` to be included first.
- This header file does not define `struct timeval` on some platforms: OSF/1 4.0.

- This header file is not self-contained—it requires `<string.h>` before `FD_ZERO` can be used—on some platforms: AIX 7.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

8.60 sys/sem.h

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_sem.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.61 sys/shm.h

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_shm.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.62 sys/socket.h

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_socket.h.html`

Gnulib module: sys_socket

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.
- This header file is not self-contained on some platforms: it requires `<sys/types.h>` to be included first.
- This header file does not define the type `socklen_t` on some platforms: HP-UX 10.20, IRIX 6.5, OSF/1 4.0, Interix 3.5, BeOS.
- This header file does not define the type `struct iovec` on some platforms: OpenBSD 4.4.
- This header file is lacking the `SHUT_RD`, `SHUT_WR`, `SHUT_RDWR` macros on some platforms, despite having the `shutdown` functions: emx+gcc.
- The `struct sockaddr_storage` type does not have a member `ss_family` on some platforms: AIX 7.1.

Portability problems not fixed by Gnulib:

- This header file does not declare the `msg_control` and `msg_controllen` members of `struct msghdr` on some platforms. This can be detected by the absence of the `CMSG_FIRSTHDR` macro: gnulib replacement header, old BSD

8.63 sys/stat.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_stat.h.html

Gnulib module: sys_stat

Portability problems fixed by Gnulib:

- The type `mode_t` is not defined on some platforms: MSVC 9.
- Some macros, such as `S_IFMT` or `S_IFIFO`, are missing on some platforms.
- The macros `S_ISBLK`, `S_ISCHR`, `S_ISDIR`, `S_ISFIFO`, `S_ISLNK`, `S_ISREG`, `S_ISSOCK` are broken on some platforms.
- Some platforms define macros, such as `S_ISDOOR`, that are not defined on other platforms.
- The functions `lstat` and `mkdir` are not declared on some platforms: mingw, MSVC 9.
- The macros `UTIME_NOW` and `UTIME_OMIT` are missing on some platforms.
- On some platforms, `struct stat` does not include `st_atim`, `st_mtim`, or `st_ctim` members. Use the gnulib module '`stat-time`' for accessors to portably get at subsecond resolution.

Portability problems not fixed by Gnulib:

- The macro `S_IFBLK` is missing on some platforms: MSVC 9.
- On Windows platforms (excluding Cygwin), `st_ino` is always 0.
- On OpenVMS, `st_ino` is an array of three `ino_t` values, not a single value.
- To partially work around the previous two problems, you can test for nonzero `st_ino` and use the Gnulib `same-inode` module to compare nonzero values. For example, `SAME_INODE (a, b)` is true if the `struct stat` values `a` and `b` are known to represent the same file, `(a.st_ino && !SAME_INODE (a, b))` is true if they are known to represent different files, and `!a.st_ino` is true if it is not known whether they represent different files.
- On some platforms, two different files may have the same `st_dev` and `st_ino` values, even when `st_ino` is nonzero:
  - GNU/Linux NFS servers that export all local file systems as a single NFS file system, if a local `st_dev` exceeds 255, or if a local `st_ino` exceeds 16777215.
  - Network Appliance NFS servers in snapshot directories; see Network Appliance bug #195.
  - ClearCase MVFS; see bug id ATRia04618.

  One partial workaround is to compare other file metadata such as `st_mode` and `st_mtime` to detect this bug, but this approach does not work on files whose metadata are being changed by other programs.
- On some file systems, `st_size` contains bogus information for symlinks; use the Gnulib module `areadlink-with-size` for a better way to get symlink contents.

8.64 sys/statvfs.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_statvfs.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, mingw, MSVC 9.

8.65 sys/time.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_time.h.html

Gnulib module: sys_time

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: MSVC 9.
- '`struct timeval`' is not defined on some platforms.
- '`struct timeval`' is defined with a `tv_sec` type that is narrower than `time_t` on some native Windows platforms: mingw64 in 64-bit mode, mingw64 in 32-bit mode when `__MINGW_USE_VC2005_COMPAT` is defined, MSVC 9 in 64-bit mode, MSVC 9 in 32-bit mode when `_USE_32BIT_TIME_T` is not defined.

Portability problems not fixed by Gnulib:

- '`struct timeval`' is defined with a `tv_sec` type that is wider than `time_t`: OpenBSD 5.1 in 64-bit mode.

8.66 sys/timeb.h

POSIX specification:
http://www.opengroup.org/susv3xbd/sys/timeb.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

8.67 sys/times.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_times.h.html

Gnulib module: sys_times

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

8.68 sys/types.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_types.h.html

Gnulib module: sys_types

Portability problems fixed by Gnulib:

- The type `pid_t` is not defined on some platforms: MSVC 9.
- The type `size_t` is not defined in this file on some platforms: MSVC 9.
- The type `ssize_t` is not defined on some platforms: MSVC 9.
- The type `mode_t` is not defined on some platforms: MSVC 9.
- Some systems leak definitions of `major`, `minor`, and `makedev` through this header; however, when `sys/sysmacros.h` exists, that file should also be included to avoid deprecation warnings from the versions in this header: glibc 2.25.

Portability problems not fixed by Gnulib:

- On some platforms the types `blksize_t` and `suseconds_t` are signed integer types that are wider than `long`: glibc x32

This module, together with the module `largefile`, also defines the type `off_t` to a 64-bit integer type on some platforms: mingw (except mingw64), MSVC 9.

8.69 sys/uio.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_uio.h.html

Gnulib module: sys_uio

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.
- This header file is not self-contained (it requires `<sys/types.h>` to be included first) on some platforms: OpenBSD 4.4.

Portability problems not fixed by Gnulib:

8.70 sys/un.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_un.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.
- This header requires <code>sys/socket.h</code> to be included first on some platforms: Cygwin 1.7.18.

8.71 sys/utsname.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_utsname.h.html

Gnulib module: sys_utsname

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.
- This header file is not self-contained on some platforms: Minix 3.1.8.

Portability problems not fixed by Gnulib:

8.72 sys/wait.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/sys_wait.h.html

Gnulib module: sys_wait

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- System status macros such as `WEXITSTATUS` require an lvalue argument on some platforms. Mac OS X 10.5.

8.73 syslog.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/syslog.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

8.74 tar.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/tar.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

8.75 termios.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/termios.h.html

Gnulib module: termios

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.
- This header does not declare `pid_t` on all platforms: glibc on some architectures, FreeBSD 6.4, OpenBSD 4.9, Cygwin 1.7.11.

Portability problems not fixed by Gnulib:

- The types `struct termios`, `cc_t`, `speed_t`, `tcflag_t` are not defined on some platforms: mingw, MSVC 9.

8.76 tgmath.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/tgmath.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.77 time.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/time.h.html

Gnulib module: time

Portability problems fixed by Gnulib:

- '`struct timespec`' is not defined on some platforms.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

- On some platforms the `tv_nsec` member of `struct timespec` is not of type `long`, but is of type `long long` instead: glibc x32

8.78 trace.h

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/basedefs/trace.h.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.79 `uchar.h`

Defines the types `char16_t`, `char32_t` and declares the functions `mbrtoc16`, `c16rtomb`, `mbrtoc32`, `c32rtomb`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

8.80 `ucontext.h`

POSIX specification:
`http://www.opengroup.org/susv3xbd/ucontext.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: OpenBSD 3.8, Cygwin, mingw, MSVC 9, BeOS.

8.81 `ulimit.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/ulimit.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

8.82 `unistd.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/unistd.h.html`

Gnulib module: unistd

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: MSVC 9.

- The SEEK_* macros are not defined in this file on some platforms: mingw.
- The *_FILENO macros are not defined in this file on some platforms: OS/2 EMX, mingw.
- The `_exit` function is not declared in this file on some platforms: mingw.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

8.83 `utime.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/utime.h.html`

Gnulib module: utime-h

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: MSVC 14.

Portability problems not fixed by Gnulib:

8.84 `utmpx.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/utmpx.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

8.85 `wchar.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/wchar.h.html`

Gnulib module: wchar

Portability problems fixed by Gnulib:

- This header file cannot be included on some platforms: Linux uClibc built without wide character support.
- This header file is not self-contained on some platforms: OSF/1 with Desktop Toolkit C, BSD/OS 4.0.1.
- The type `wint_t` and macro `WEOF` are missing on some platforms: IRIX 5.3.
- The type `wint_t` is incorrect on some platforms: MSVC 9.
- Some platforms provide a `NULL` macro that cannot be used in arbitrary expressions: NetBSD 5.0

Portability problems not fixed by Gnulib:

- This header file leads to link errors and endless recursions or endless loops on some platforms: glibc version 2.5 or older, together with gcc version 4.3 or newer and the option '`-std=c99`' or '`-std=gnu99`'.

8.86 `wctype.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/wctype.h.html`

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: HP-UX 11.00, BeOS.
- This header file is not self-contained on some platforms: Solaris 2.5, OSF/1 with Desktop Toolkit C, BSD/OS 4.0.1.
- The type `wint_t` and macro `WEOF` are missing on some platforms: IRIX 5.3.
- The type `wint_t` is incorrect on some platforms: MSVC 9.
- The functions `isw*` are missing on some platforms: FreeBSD 4.11.
- The function `iswblank` is declared but not defined on some platforms: IRIX 6.5.30.
- The functions `isw*` are actually defined as macros that don't work, on IRIX 5.3.
- This header file defines some identifiers, such as `multibyte`, as macros on some platforms: Solaris 2.6.

Portability problems not fixed by Gnulib:

8.87 `wordexp.h`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/basedefs/wordexp.h.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9 ISO C and POSIX Function Substitutes

This chapter describes which functions and function-like macros specified by ISO C or POSIX are substituted by Gnulib, which portability pitfalls are fixed by Gnulib, and which (known) portability problems are not worked around by Gnulib.

The notation "Gnulib module: —" means that Gnulib does not provide a module providing a substitute for the function. When the list "Portability problems not fixed by Gnulib" is empty, such a module is not needed: No portability problems are known. Otherwise, it indicates that such a module would be useful but is not available: No one so far found this function important enough to contribute a substitute for it. If you need this particular function, you may write to <bug-gnulib at gnu dot org>.

9.1 FD_CLR

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/FD_CLR.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.2 FD_ISSET

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/FD_ISSET.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.3 FD_SET

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/FD_SET.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.4 FD_ZERO

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/FD_ZERO.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.5 _Exit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_Exit.html

Gnulib module: _Exit

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.6 _exit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_exit.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.7 _longjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_longjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.5.1, mingw, MSVC 9.

Note: A future revision of POSIX later than the 2008/2009 one may drop the functions `_setjmp` and `_longjmp`. Still, in 2008, on all systems which have `_setjmp`, it is the fastest way to save the registers but not the signal mask (up to 30 times faster than `setjmp` on some systems).

9.8 _setjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_setjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.5.1.

Note: A future revision of POSIX later than the 2008/2009 one may drop the functions `_setjmp` and `_longjmp`. Still, in 2008, on all systems which have `_setjmp`, it is the fastest way to save the registers but not the signal mask (up to 30 times faster than `setjmp` on some systems).

9.9 _tolower

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_tolower.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8.

9.10 _toupper

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/_toupper.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8.

9.11 a64l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/a64l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function was not correctly implemented in glibc versions before 2.2.5.

9.12 abort

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/abort.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- Some platforms mistakenly close all stdio streams prior to raising SIGABRT: Cygwin 1.5.x.
- Some platforms always print a message to stderr, even if a SIGABRT handler uses longjmp to resume execution at a safe point: mingw, MSVC 9.

9.13 abs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/abs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.14 accept

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/accept.html

Gnulib module: accept

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), the descriptors returned by the `accept` function cannot be used in calls to `read`, `write`, and `close`; you have to use `recv`, `send`, `closesocket` in these cases instead.
- On Windows platforms (excluding Cygwin), error codes for `accept` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- On BeOS, the descriptors returned by the `accept` function cannot be used in calls to `read`, `write`, and `close`; you have to use `recv`, `send`, `closesocket` in these cases instead.
- Some platforms don't have a `socklen_t` type; in this case this function's third argument type is '`int *`'.
- On some platforms, this function's third argument type is '`void *`', not '`socklen_t *`': Solaris 10.

9.15 access

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/access.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function uses the effective id instead of the real id on some platforms: Cygwin 1.5.x.

Other problems of this function:

- There is an inherent race between calling this function and performing some action based on the results; you should think twice before trusting this function, especially in a set-uid or set-gid program.
- This function does not have an option for not following symbolic links (like `stat` versus `lstat`). If you need this option, use the Gnulib module `faccessat` with the `AT_EACCESS` flag.

9.16 acos

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acos.html

Gnulib module: acos

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.17 acosf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acosf.html

Gnulib module: acosf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.18 acosh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acosh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.19 acoshf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acoshf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, mingw, MSVC 9.

9.20 acoshl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acoshl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.21 acosl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/acosl.html

Gnulib module: acosl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.22 aio_cancel

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_cancel.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.23 aio_error

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_error.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.24 aio_fsync

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_fsync.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.25 aio_read

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_read.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.26 aio_return

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_return.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.27 aio_suspend

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/aio_suspend.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.28 `aio_write`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/aio_write.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.29 `alarm`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/alarm.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function has no impact if <code>SIGALRM</code> is inherited as ignored; programs should use <code>signal (SIGALRM, SIG_DFL)</code> if it is important to ensure the alarm will fire.
- Use of this function in multi-threaded applications is not advised.
- This function is missing on some platforms: mingw (2011), MSVC 9.
- This function is conditionally declared in the non-standard `<io.h>` header on some platforms: mingw (2012 or newer).

9.30 `aligned_alloc`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.31 alphasort

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/alphasort.html

Gnulib module: alphasort

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 9, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- The parameters of this function are declared as `const void *` on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Interix 3.5.
- The parameters of this function are declared as `void *` on some platforms: AIX 5.1.

9.32 asctime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asctime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function may overflow its internal buffer if an invalid year is passed.

9.33 asctime_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asctime_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function may put more than 26 bytes into the argument buffer if an invalid year is passed.

9.34 asin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asin.html

Gnulib module: asin

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.35 asinf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asinf.html

Gnulib module: asinf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.36 asinh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asinh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.37 asinhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asinhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, mingw, MSVC 9.

9.38 asinhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asinhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.39 asinl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/asinl.html

Gnulib module: asinl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.40 assert

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/assert.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

Extension: Gnulib offers a module '`assert`' that allows the installer to disable assertions through a '`configure`' option: '`--disable-assert`'.

9.41 atan

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atan.html

Gnulib module: atan

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.42 atan2

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atan2.html

Gnulib module: atan2

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.43 atan2f

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atan2f.html

Gnulib module: atan2f

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.44 atan2l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atan2l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

9.45 atanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atanf.html

Gnulib module: atanf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.46 atanh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atanh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.47 atanhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atanhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, mingw, MSVC 9.

9.48 atanhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atanhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.49 atanl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atanl.html

Gnulib module: atanl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.50 atexit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atexit.html

Gnulib module: atexit

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

9.51 atof

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atof.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function mis-parses strings with leading '+' on some old platforms: Old versions of Linux.
- This function returns a positive value for negative underflow on some platforms: glibc 2.4, Mingw, Cygwin.
- This function fails to do a valid parse of '-0x' on some platforms: glibc 2.4, Cygwin < 1.5.25-11.
- This function fails to parse Infinities and plain NaNs on some platforms: Solaris 8, Mingw, OpenBSD 4.0.
- This function fails to parse NaN() on some platforms: Solaris 8, Mingw, OpenBSD 4.0, Cygwin < 1.5.25-11.
- This function fails to parse NaN(n-char-sequence) on some platforms: Solaris 8, Mingw, OpenBSD 4.0.
- This function fails to parse C99 hexadecimal floating point on some platforms: Solaris 8, Mingw, OpenBSD 4.0.
- This function fails to correctly parse very long strings on some platforms: Mingw, Cygwin.

9.52 atoi

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atoi.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.53 atol

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atol.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.54 atoll

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/atoll.html

Gnulib module: atoll

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.23, OSF/1 5.1, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

9.55 basename

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/basename.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: IRIX 6.5, Solaris 2.5.1, mingw, MSVC 9, BeOS.
- glibc has two different functions `basename`: the POSIX version and the GNU version.
- `basename` assumes file names in POSIX syntax; it does not work with file names in Windows syntax.

The Gnulib module `dirname` provides similar API, with function `base_name`, that also works with Windows file names.

9.56 bind

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/bind.html

Gnulib module: bind

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `bind` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.57 bsearch

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/bsearch.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.58 btowc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/btowc.html

Gnulib module: btowc

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 5.3, Solaris 2.6, mingw, Interix 3.5.
- This function returns WEOF for a NUL argument on some platforms: Cygwin 1.7.2.
- This function does not return WEOF for an EOF argument on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- In the C or POSIX locales, this function is not consistent with Gnulib's `mbrtowc` and can return `WEOF`: glibc 2.23, MirOS BSD #10.

9.59 c16rtomb

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.60 c32rtomb

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.61 cabs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cabs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 9.

9.62 cabsf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cabsf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, mingw, MSVC 9.

9.63 cabsl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cabsl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.64 cacos

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacos.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.65 cacosf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacosf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.66 cacosh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacosh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.67 cacoshf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacoshf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.68 cacoshl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacoshl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.69 cacosl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cacosl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.70 calloc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/calloc.html

Gnulib module: calloc-posix

Portability problems fixed by Gnulib:

- Upon failure, the function does not set `errno` to `ENOMEM` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

Extension: Gnulib provides a module '`calloc-gnu`' that substitutes a `calloc` implementation that behaves more like the glibc implementation.

9.71 carg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/carg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.72 cargf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cargf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.73 cargl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cargl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.74 casin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casin.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.75 casinf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casinf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.76 casinh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casinh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.77 casinhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casinhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.78 casinhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casinhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.79 casinl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/casinl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.80 catan

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catan.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.81 catanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.82 catanh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catanh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.83 catanhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catanhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.84 catanhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catanhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.85 catanl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catanl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.86 catclose

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catclose.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

9.87 catgets

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catgets.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

9.88 catopen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/catopen.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

9.89 cbrt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cbrt.html

Gnulib module: cbrt

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.

Portability problems not fixed by Gnulib:

9.90 cbrtf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cbrtf.html

Gnulib module: cbrtf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9, MSVC 9.
- This function is not declared on some platforms: IRIX 6.5.
- This function returns a wrong value for a minus zero on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.91 cbrtl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cbrtl.html

Gnulib module: cbrtl or cbrtl-ieee

Portability problems fixed by either Gnulib module `cbrtl` or `cbrtl-ieee`

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: IRIX 6.5.
- This function produces grossly wrong results on some platforms: OpenBSD 5.1/SPARC.

Portability problems fixed by Gnulib module `cbrtl-ieee`:

- This function returns a positive zero for a minus zero argument on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.92 ccos

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccos.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.93 ccosf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccosf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.94 ccosh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccosh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.95 ccoshf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccoshf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.96 ccoshl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccoshl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.97 ccosl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ccosl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.98 ceil

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ceil.html

Gnulib module: ceil or ceil-ieee

Portability problems fixed by either Gnulib module `ceil` or `ceil-ieee`:

Portability problems fixed by Gnulib module `ceil-ieee`:

- This function returns a positive zero for an argument between −1 and 0 on some platforms: AIX 7.1, OSF/1 5.1.
- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.99 ceilf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ceilf.html

Gnulib module: ceilf or ceilf-ieee

Portability problems fixed by either Gnulib module `ceilf` or `ceilf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module `ceilf-ieee`:

- This function returns a positive zero for an argument between −1 and 0 on some platforms: Mac OS X 10.5, AIX 7.1, OSF/1 5.1.
- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.100 ceill

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ceill.html

Gnulib module: ceill or ceill-ieee

Portability problems fixed by either Gnulib module ceill or ceill-ieee:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module ceill-ieee:

- This function returns a positive zero for an argument between −1 and 0 on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.101 cexp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cexp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.102 cexpf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cexpf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.103 cexpl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cexpl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.104 `cfgetispeed`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cfgetispeed.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.105 `cfgetospeed`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cfgetospeed.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.106 `cfsetispeed`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cfsetispeed.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.107 `cfsetospeed`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cfsetospeed.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.108 chdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/chdir.html

Gnulib module: —

Portability problems fixed by Gnulib:

- This function is declared in different header files (namely, <io.h> or <direct.h>) on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.109 chmod

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/chmod.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.110 chown

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/chown.html

Gnulib module: chown

Portability problems fixed by Gnulib:

- Some platforms fail to detect trailing slash on non-directories, as in chown("link-to-file/",uid,gid): FreeBSD 7.2, AIX 7.1, Solaris 9.
- Some platforms fail to update the change time when at least one argument was not −1, but no ownership changes resulted: OpenBSD 4.0.
- When passed an argument of −1, some implementations really set the owner user/group id of the file to this value, rather than leaving that id of the file alone.
- When applied to a symbolic link, some implementations don't dereference the symlink, i.e. they behave like lchown.
- This function is missing on some platforms; however, the replacement always fails with ENOSYS: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.111 cimag

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cimag.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.112 `cimagf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cimagf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.113 `cimagl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/cimagl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.114 `clearerr`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/clearerr.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.115 `clock`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/clock.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.116 clock_getcpuclockid

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / clock_getcpuclockid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.117 clock_getres

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clock_getres.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.118 clock_gettime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clock_gettime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.119 clock_nanosleep

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clock_nanosleep.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.120 clock_settime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clock_settime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.121 clog

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clog.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.122 clogf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clogf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.123 clogl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/clogl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.124 close

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/close.html

Gnulib module: close

Portability problems fixed by Gnulib:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.
- On Windows platforms (excluding Cygwin), `socket` and `accept` do not return file descriptors that can be closed by `close`. Instead, `closesocket` must be used.

Portability problems not fixed by Gnulib:

- On BeOS, `socket` and `accept` do not return file descriptors that can be closed by `close`. Instead, `closesocket` must be used.

9.125 closedir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/closedir.html

Gnulib module: closedir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.126 closelog

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/closelog.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.127 confstr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/confstr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Cygwin 1.5.x, mingw, MSVC 9.

9.128 conj

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/conj.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.129 conjf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/conjf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.130 conjl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/conjl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.131 connect

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/connect.html

Gnulib module: connect

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `connect` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.132 copysign

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/copysign.html

Gnulib module: copysign

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.

Portability problems not fixed by Gnulib:

9.133 copysignf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/copysignf.html

Gnulib module: copysignf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, older IRIX 6.5, Solaris 9, MSVC 9.
- This function is not declared on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.134 copysignl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/copysignl.html

Gnulib module: copysignl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

9.135 cos

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cos.html

Gnulib module: cos

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.136 cosf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cosf.html

Gnulib module: cosf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.137 cosh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cosh.html

Gnulib module: cosh

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.138 coshf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/coshf.html

Gnulib module: coshf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.139 coshl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/coshl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

9.140 cosl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cosl.html

Gnulib module: cosl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.141 cpow

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cpow.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.142 cpowf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cpowf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.143 cpowl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cpowl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.144 cproj

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cproj.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.
- The glibc implementation is or was broken.

9.145 cprojf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cprojf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.
- The glibc implementation is or was broken.

9.146 cprojl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/cprojl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- The glibc implementation is or was broken.

9.147 creal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/creal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.148 `crealf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/crealf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.149 `creall`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/creall.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.150 `creat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/creat.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows, this function returns a file handle in `O_TEXT` mode. If you need a file handle in `O_BINARY` mode, you need to use the function `open` instead.
- On platforms where `off_t` is a 32-bit type, `creat` may not work correctly to create files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.151 crypt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/crypt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, Cygwin, mingw, MSVC 9.
- This function is not declared in <unistd.h> (without -D_GNU_SOURCE) on some platforms: glibc (at least 2.11–2.13).

9.152 csin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csin.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.153 csinf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csinf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.154 csinh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csinh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.155 csinhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csinhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.156 csinhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csinhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.157 csinl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csinl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.158 csqrt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csqrt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.159 csqrtf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csqrtf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.160 csqrtl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/csqrtl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.161 ctan

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctan.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.162 ctanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.163 ctanh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctanh.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.164 ctanhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctanhf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

9.165 ctanhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctanhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.166 ctanl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctanl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.167 ctermid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctermid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.168 ctime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctime.html

Gnulib module: ctime

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable `TZ` has been set by Cygwin.

Portability problems not fixed by Gnulib:

- This function may overflow its internal buffer if an invalid year is passed.
- The `ctime` function need not be reentrant, and consequently is not required to be thread safe. Implementations of `ctime` typically write the timestamp into static buffer. If two threads call `ctime` at roughly the same time, you might end up with the wrong date in one of the threads, or some undefined string. There is a re-entrant interface `ctime_r`.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

A more flexible function is `strftime`. However, note that it is locale dependent.

9.169 ctime_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ctime_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function may put more than 26 bytes into the argument buffer if an invalid year is passed.

`ctime_r` takes a pre-allocated buffer and length of the buffer, and returns `NULL` on errors. The input buffer should be at least 26 bytes in size. The output string is locale-independent.

However, years can have more than 4 digits if `time_t` is sufficiently wide, so the length of the required output buffer is not easy to determine. Increasing the buffer size when `ctime_r` returns `NULL` is not necessarily sufficient. The `NULL` return value could mean some other error condition, which will not go away by increasing the buffer size.

A more flexible function is `strftime`. However, note that it is locale dependent.

9.170 daylight

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/daylight.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, IRIX 6.5, OSF/1 5.1.
- The address of this variable is not a compile-time constant on some platforms: Cygwin, mingw.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

A more portable way of getting the UTC offset is to use `strftime` with the `%z` format. See Section 9.1011 [strftime], page 364.

9.171 dbm_clearerr

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_clearerr.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, HP-UX 11.11, IRIX 5.3, OSF/1 5.1, Solaris 2.5.1, Cygwin, mingw, MSVC 9, BeOS.

9.172 dbm_close

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_close.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.173 dbm_delete

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_delete.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.174 dbm_error

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_error.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, HP-UX 11.11, IRIX 5.3, OSF/1 4.0, Solaris 2.5.1, Cygwin, mingw, MSVC 9, BeOS.

9.175 dbm_fetch

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_fetch.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.176 dbm_firstkey

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_firstkey.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.177 dbm_nextkey

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_nextkey.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.178 dbm_open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_open.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.179 dbm_store

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dbm_store.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Cygwin, mingw, MSVC 9, BeOS.

9.180 difftime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/difftime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.181 dirfd

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dirfd.html

Gnulib module: dirfd

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 7.1, HP-UX 11, OSF/1 5.1, Solaris 10, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function always fails on some platforms: mingw.

With the `dirfd` module, this functions always sets `errno` when it fails. (POSIX does not require that `dirfd` sets `errno` when it fails.)

9.182 dirname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dirname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: IRIX 6.5, Solaris 2.5.1, mingw, MSVC 9, BeOS.
- `dirname` assumes file names in POSIX syntax; it does not work with file names in Windows syntax.

The Gnulib module `dirname` provides similar API, with functions `dir_name` and `mdir_name`, that also works with Windows file names.

9.183 div

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/div.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.184 dlclose

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dlclose.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

9.185 dlerror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dlerror.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

9.186 dlopen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dlopen.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.
- If the file name argument is not absolute, the file is searched for. The search algorithm is system specific.

9.187 dlsym

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dlsym.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.
- The visibility of symbols loaded in dependent shared libraries or present in the main executable is system dependent.

9.188 dprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/dprintf.html

Gnulib module: dprintf or dprintf-posix

Portability problems fixed by either Gnulib module `dprintf` or `dprintf-posix`:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems fixed by Gnulib module `dprintf-posix`:

- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.189 drand48

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/drand48.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.190 dup

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/dup.html`

Gnulib module: dup

Portability problems fixed by Gnulib:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.191 dup2

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/dup2.html`

Gnulib module: dup2 or dup2-obsolete

Portability problems fixed by either Gnulib module `dup2` or `dup2-obsolete`:

- This function always returns 0 for success on some platforms: mingw, MSVC 9.
- This function can hang when duplicating an fd to itself on some platforms: mingw, MSVC 9.
- This function crashes when invoked with invalid arguments on some platforms: Cygwin 1.7.17, MSVC 9.

- This function crashes when invoked with valid arguments on some platforms: Cygwin 1.7.25.
- This function fails with `EINVAL` when duplicating an fd to itself: Android.
- This function resets the `FD_CLOEXEC` flag when duplicating an fd to itself on some platforms: Haiku.
- This function returns 0 for `dup2 (1, 1)` on some platforms: Cygwin 1.5.x.
- This function may return `-EBADF` instead of `-1` on some platforms: Linux releases between July 2008 and May 2009 (versions 2.6.27 to 2.6.29).
- This function returns `EMFILE` instead of `EBADF` for large targets, which interferes with using `dup2(fd,fd)==fd)` as the minimal `EBADF` filter: AIX 7.1, FreeBSD 6.1, Cygwin 1.5.

Portability problems fixed by Gnulib module `dup2-obsolete`:

- This function is missing on some older platforms.

Portability problems not fixed by Gnulib:

9.192 `duplocale`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/duplocale.html`

Gnulib module: duplocale

Portability problems fixed by Gnulib:

- The argument `LC_GLOBAL_LOCALE` is not supported on some platforms: glibc 2.11, AIX 7.1.

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.193 `encrypt`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/encrypt.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.
- This function is not declared in `<unistd.h>` (without `-D_GNU_SOURCE`) on some platforms: glibc (at least 2.11–2.13).

9.194 endgrent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endgrent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.195 endhostent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endhostent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.196 endnetent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endnetent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

9.197 endprotoent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endprotoent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.198 endpwent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endpwent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.199 endservent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endservent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.200 endutxent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/endutxent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.201 environ

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/environ.html

Gnulib module: environ

Portability problems fixed by Gnulib:

- POSIX does not require this variable to be declared, and it is indeed not declared on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, IRIX 6.5, Solaris 11 2011-11.
- On Mac OS X 10, this variable is not declared. Up to Mac OS X 10.4, one can use

  ```
  extern char **environ;
  ```

  to get the variable declared. This does not work any more, however, in shared libraries on Mac OS X 10.5. Here is a workaround: Instead, one can use

  ```
  #include <crt_externs.h>
  #define environ (*_NSGetEnviron())
  ```

  This works at all versions of Mac OS X.

Portability problems not fixed by Gnulib:

- The address of this variable is not a compile-time constant on some platforms: mingw.

9.202 erand48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/erand48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.203 `erf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/erf.html`

Gnulib module: erf

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.

9.204 `erfc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/erfc.html`

Gnulib module: erfc

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.

9.205 `erfcf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/erfcf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, MSVC 9.

9.206 `erfcl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/erfcl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.207 erff

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/erff.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, MSVC 9.

9.208 erfl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/erfl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.209 errno

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/errno.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows, the socket functions don't set `errno`; their error code is available through `WSAGetLastError()` instead.

9.210 execl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.
- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.211 execle

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execle.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.
- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.212 execlp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execlp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.
- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.213 execv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.
- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.214 execve

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execve.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.

- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.215 execvp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/execvp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On some platforms, a script without executable permission is still run: Cygwin 1.5.x.
- On Windows platforms (excluding Cygwin), this function operates by spawning and then by exiting the current process, which means the current process's parent may incorrectly proceed as if its child had exited.

9.216 exit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/exit.html

Gnulib module: stdlib

Portability problems fixed by Gnulib:

- Some problems with the macros EXIT_SUCCESS and EXIT_FAILURE, see Section 8.50 [stdlib.h], page 59.

Portability problems not fixed by Gnulib:

9.217 exp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/exp.html

Gnulib module: exp

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.218 exp2

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/exp2.html

Gnulib module: exp2

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, older IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: IRIX 6.5.
- This function returns grossly wrong results on some platforms: OpenBSD 4.9.

Portability problems not fixed by Gnulib:

9.219 exp2f

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/exp2f.html

Gnulib module: exp2f

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.220 exp2l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/exp2l.html

Gnulib module: exp2l or exp2l-ieee

Portability problems fixed by either Gnulib module `exp2l` or `exp2l-ieee`:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: IRIX 6.5.

Portability problems fixed by Gnulib module `exp2l-ieee`:

- This function returns a wrong value for a NaN argument on some platforms: OpenBSD 4.9.
- This function returns a wrong value for a negative infinity argument on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.221 expf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/expf.html

Gnulib module: expf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.222 expl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/expl.html

Gnulib module: expl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function returns NaN for small operands: OpenBSD 5.4.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.223 expm1

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/expm1.html

Gnulib module: expm1 or expm1-ieee

Portability problems fixed by either Gnulib module `expm1` or `expm1-ieee`:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

Portability problems fixed by Gnulib module `expm1-ieee`:

- This function has problems when the argument is minus zero on some platforms: AIX 7.1.

Portability problems not fixed by Gnulib:

9.224 expm1f

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/expm1f.html

Gnulib module: expm1f

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, mingw, MSVC 9.
- This function produces wrong results for arguments <= −17.32868 on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.225 expm1l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/expm1l.html

Gnulib module: expm1l

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.226 `fabs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fabs.html`

Gnulib module: fabs

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.227 `fabsf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fabsf.html`

Gnulib module: fabsf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.228 `fabsl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fabsl.html`

Gnulib module: fabsl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function returns a minus zero for a minus zero argument on some platforms: IRIX 6.5 with gcc 4.2.4.

Portability problems not fixed by Gnulib:

9.229 faccessat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/faccessat.html

Gnulib module: faccessat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. However, the replacement does not always take into account ACLs. Also, it is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

Other problems of this function:

- There is an inherent race between calling this function and performing some action based on the results; you should think twice before trusting this function, especially in a set-uid or set-gid program.

9.230 fattach

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fattach.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.231 fchdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fchdir.html

Gnulib module: fchdir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Tandem/NSK, mingw, MSVC 9, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.
- This function is not declared on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.232 fchmod

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fchmod.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.233 fchmodat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fchmodat.html

Gnulib module: fchmodat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

- Some platforms do not allow changing the access bits on symbolic links. POSIX states that `fchmodat(...,AT_SYMLINK_NOFOLLOW)` may fail with `EOPNOTSUPP` when called on a symlink, but some platforms, as well as the gnulib replacement, fail for any use of AT_SYMLINK_NOFOLLOW even if the target was not a symlink: glibc, Cygwin.

9.234 fchown

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fchown.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.235 fchownat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fchownat.html

Gnulib module: fchownat

Portability problems fixed by Gnulib:

- Some platforms fail to detect trailing slash on non-directories, as in `fchown(dir,"link-to-file/",uid,gid,flag)`: Solaris 9.
- Some platforms mistakenly dereference symlinks when using `AT_SYMLINK_NOFOLLOW`: Linux kernel 2.6.17.

- This function does not fail for an empty filename on some platforms: Linux with glibc < 2.11.
- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe. Also, the replacement may fail to change symlinks if `lchown` is unsupported, or fail altogether if `chown` is unsupported.

Portability problems not fixed by Gnulib:

9.236 `fclose`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fclose.html`

Gnulib module: fclose

Portability problems fixed by Gnulib:

- On some platforms, this function fails to set the file position of a seekable input stream to the byte after the last one actually read: glibc 2.13, FreeBSD.
- This function crashes if the stream's file descriptor has already been closed on some platforms: MSVC 9.
- On Windows platforms (excluding Cygwin), `socket` and `accept` followed by `fdopen` do not return streams that can be closed by `fclose`.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.237 `fcntl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fcntl.html`

Gnulib module: fcntl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function does not support `F_DUPFD_CLOEXEC` on some platforms: glibc with Linux kernels before 2.6.24, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 7.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11, Cygwin 1.7.1, Interix 3.5, BeOS. Note that the gnulib replacement code is functional but not atomic.
- The `F_DUPFD` action of this function does not reject out-of-range targets properly on some platforms: AIX 7.1, Cygwin 1.5.x, Haiku.
- The `F_DUPFD` action of this function mistakenly clears FD_CLOEXEC on the source descriptor on some platforms: Haiku.

Portability problems not fixed by Gnulib:

- The replacement function does not support `F_SETFD`, `F_GETFL`, `F_SETFL`, `F_GETOWN`, `F_SETOWN`, `F_GETLK`, `F_SETLK`, and `F_SETLKW` on some platforms: mingw, MSVC 9.

9.238 fdatasync

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdatasync.html

Gnulib module: fdatasync

Portability problems fixed by Gnulib:

- This function is present but not declared on some platforms: Mac OS X 10.7.
- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.239 fdetach

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdetach.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.240 fdim

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdim.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.241 fdimf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdimf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.242 fdiml

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdiml.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.243 fdopen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdopen.html

Gnulib module: fdopen

Portability problems fixed by Gnulib:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

Portability problems not fixed by Gnulib:

9.244 fdopendir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fdopendir.html

Gnulib module: fdopendir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe. Also, the replacement does not guarantee that '`dirfd(fdopendir(n))==n`' (dirfd might fail, or return a different file descriptor than n).
- This function exists but is not declared on some platforms: FreeBSD 7.3.
- This function does not reject non-directory file descriptors on some platforms: GNU/Hurd.
- This function mistakenly closes non-directory file descriptors on some platforms: FreeBSD 8.1.

Portability problems not fixed by Gnulib:

9.245 feclearexcept

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/feclearexcept.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.246 fegetenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fegetenv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.247 fegetexceptflag

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fegetexceptflag.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.248 fegetround

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fegetround.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.249 feholdexcept

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/feholdexcept.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.250 feof

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/feof.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.251 feraiseexcept

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/feraiseexcept.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.252 ferror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ferror.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.253 fesetenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fesetenv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.254 `fesetexceptflag`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fesetexceptflag.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.255 `fesetround`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fesetround.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.256 `fetestexcept`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fetestexcept.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.257 feupdateenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/feupdateenv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.258 fexecve

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fexecve.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.259 fflush

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fflush.html

Gnulib module: fflush

Portability problems fixed by Gnulib:

- `fflush` followed by `fseek` or `fseeko`, applied to an input stream, should have the effect of positioning the underlying file descriptor. It doesn't do this on some platforms.
- `fflush` on an input stream changes the position of the stream to the end of the previous buffer, on some platforms: mingw, MSVC 9.
- `fflush` on an input stream right after `ungetc` does not discard the `ungetc` buffer, on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Cygwin 1.5.25-10.

Portability problems not fixed by Gnulib:

- `fflush`, `ftell`, `ftello`, `fgetpos` behave incorrectly on input streams that are opened in `O_TEXT` mode and whose contents contains Unix line terminators (LF), on some platforms: mingw, MSVC 9.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- This function crashes if the stream's file descriptor has already been closed, if `MSVC_INVALID_PARAMETER_HANDLING` is `HAIRY_LIBRARY_HANDLING` or `SANE_LIBRARY_HANDLING`, on some platforms: MSVC 9.

- `fflush` on an input stream right after `ungetc` does not discard the `ungetc` buffer, on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11, mingw, MSVC 9.

9.260 `ffs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/ffs.html`

Gnulib module: ffs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.261 `fgetc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fgetc.html`

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- This function crashes if the stream's file descriptor has already been closed, if `MSVC_INVALID_PARAMETER_HANDLING` is `HAIRY_LIBRARY_HANDLING` or `SANE_LIBRARY_HANDLING`, on some platforms: MSVC 9.

9.262 `fgetpos`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fgetpos.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- `fflush`, `ftell`, `ftello`, `fgetpos` behave incorrectly on input streams that are opened in `O_TEXT` mode and whose contents contains Unix line terminators (LF), on some platforms: mingw, MSVC 9.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

- On platforms where `off_t` is a 64-bit type, but `fseeko` is not present, stream operations on files larger than 2 GB silently do the wrong thing. This affects BSD/OS, which is mostly obsolete.

9.263 `fgets`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fgets.html`

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.264 `fgetwc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fgetwc.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.265 `fgetws`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fgetws.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.266 fileno

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fileno.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.267 flockfile

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/flockfile.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.268 floor

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/floor.html

Gnulib module: floor or floor-ieee

Portability problems fixed by either Gnulib module `floor` or `floor-ieee`:

Portability problems fixed by Gnulib module `floor-ieee`:

- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.269 floorf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/floorf.html

Gnulib module: floorf or floorf-ieee

Portability problems fixed by either Gnulib module `floorf` or `floorf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module `floorf-ieee`:

- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.270 floorl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/floorl.html

Gnulib module: floorl or floorl-ieee

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.271 fma

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fma.html

Gnulib module: fma

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function produces wrong results on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4/x86, OSF/1 5.1, Cygwin 1.5, mingw.

Portability problems not fixed by Gnulib:

9.272 fmaf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmaf.html

Gnulib module: fmaf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function produces wrong results on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4/x86, OSF/1 5.1, Cygwin 1.5, mingw.

Portability problems not fixed by Gnulib:

9.273 fmal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmal.html

Gnulib module: fmal

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function produces wrong results on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4/x86, OSF/1 5.1, mingw.

Portability problems not fixed by Gnulib:

9.274 `fmax`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fmax.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.275 `fmaxf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fmaxf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.276 `fmaxl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fmaxl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.277 fmemopen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmemopen.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.278 fmin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmin.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.279 fminf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fminf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.280 fminl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fminl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.281 fmod

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmod.html

Gnulib module: fmod or fmod-ieee

Portability problems fixed by either Gnulib module `fmod` or `fmod-ieee`:

Portability problems fixed by Gnulib module `fmod-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.
- This function has problems when the first argument is minus zero on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.282 fmodf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmodf.html

Gnulib module: fmodf or fmodf-ieee

Portability problems fixed by either Gnulib module `fmodf` or `fmodf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module `fmodf-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.
- This function has problems when the first argument is minus zero on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.283 fmodl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fmodl.html

Gnulib module: fmodl or fmodl-ieee

Portability problems fixed by either Gnulib module `fmodl` or `fmodl-ieee`:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared and does not work on some platforms: AIX 5.1.

Portability problems fixed by Gnulib module `fmodl-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.

- This function has problems when the first argument is minus zero on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.284 `fmtmsg`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fmtmsg.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.285 `fnmatch`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fnmatch.html`

Gnulib module: fnmatch or fnmatch-gnu

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, mingw, MSVC 9.
- This function is broken in some versions of Solaris and glibc.

Portability problems not fixed by Gnulib:

9.286 `fopen`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fopen.html`

Gnulib module: fopen

Portability problems fixed by Gnulib:

- This function does not fail when the file name argument ends in a slash and (without the slash) names a nonexistent file or a file that is not a directory, on some platforms: HP-UX 11.00, AIX 7.1, Solaris 9, Irix 5.3.
- On platforms where `off_t` is a 32-bit type, `fopen` may not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- On Windows platforms (excluding Cygwin), this function does usually not recognize the `/dev/null` filename.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, this function returns a file stream in "text" mode by default; this means that it translates `'\n'` to CR/LF by default. Use the `"b"` flag if you need reliable binary I/O.

- On Windows platforms (excluding Cygwin), this function fails to open directories for reading. Such streams have implementation-defined semantics on other platforms. To avoid directory streams with a consistent error message, use `fstat` after `open` and `fdopen`, rather than `fopen` and `fileno`.

9.287 `fork`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fork.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- On some platforms, `fork` followed by a call of the `exec` family (`execl`, `execlp`, `execle`, `execv`, `execvp`, or `execve`) is less efficient than `vfork` followed by the same call. `vfork` is a variant of `fork` that has been introduced to optimize the `fork`/`exec` pattern.
- On Windows platforms (excluding Cygwin), this function is not implemented; use `spawnvp` instead.

9.288 `fpathconf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fpathconf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.289 `fpclassify`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fpclassify.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5.

9.290 `fprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fprintf.html`

Gnulib module: fprintf-posix or stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `fprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems fixed by Gnulib module `stdio` or `fprintf-posix`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio` or `fprintf-posix`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- Attempting to write to a read-only stream fails with `EOF` but does not set the error flag for `ferror` on some platforms: glibc 2.13, cygwin 1.7.9.

9.291 `fputc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fputc.html`

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.
- This function crashes if the stream's file descriptor has already been closed, if `MSVC_INVALID_PARAMETER_HANDLING` is `HAIRY_LIBRARY_HANDLING` or `SANE_LIBRARY_HANDLING`, on some platforms: MSVC 9.

9.292 `fputs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fputs.html`

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.293 `fputwc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fputwc.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.294 `fputws`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fputws.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.295 `fread`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fread.html`

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on

some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- This function crashes if the stream's file descriptor has already been closed, if `MSVC_INVALID_PARAMETER_HANDLING` is `HAIRY_LIBRARY_HANDLING` or `SANE_LIBRARY_HANDLING`, on some platforms: MSVC 9.

9.296 `free`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/free.html`

Gnulib module: free

Portability problems fixed by Gnulib:

- On old platforms such as SunOS4, `free (NULL)` fails. However, since all such systems are so old as to no longer be considered "reasonable portability targets," this module is no longer useful.

Portability problems not fixed by Gnulib:

9.297 `freeaddrinfo`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/freeaddrinfo.html`

Gnulib module: getaddrinfo

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.298 `freelocale`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/freelocale.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.299 freopen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/freopen.html

Gnulib module: freopen

Portability problems fixed by Gnulib:

- On some platforms, if `stream` does not already have an open file descriptor, `freopen` returns the stream without opening the file: glibc 2.24.
- On platforms where `off_t` is a 32-bit type, `freopen` may not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- On Windows platforms (excluding Cygwin), this function does usually not recognize the `/dev/null` filename.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- This function does not support a `NULL` file name argument on some platforms: OpenBSD 4.9, AIX 7.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9.
- This function does not fail when the file name argument ends in a slash and (without the slash) names a nonexistent file or a file that is not a directory, on some platforms: HP-UX 11.00, Solaris 9, Irix 5.3.
- Applications should not assume that `fileno(f)` will be the same before and after a call to `freopen(name,mode,f)`. However, the module freopen-safer can at least protect `stdin`, `stdout`, and `stderr`.

9.300 frexp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/frexp.html

Gnulib module: frexp

Portability problems fixed by Gnulib:

- This function does not work on denormalized numbers on some platforms: NetBSD 3.0.
- This function does not work on negative zero on some platforms: NetBSD 4.99, MSVC 9.
- This function does not work on infinite numbers on some platforms: IRIX 6.5, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.301 frexpf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/frexpf.html

Gnulib module: frexpf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function does not work on negative zero on some platforms: mingw.
- This function does not work on infinite numbers on some platforms: IRIX 6.5, mingw.

Portability problems not fixed by Gnulib:

9.302 `frexpl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/frexpl.html`

Gnulib module: frexpl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.
- This function does not work on finite numbers on some platforms: Mac OS X 10.4/PowerPC, AIX 5.1, MSVC 9, BeOS.
- This function does not work on denormalized numbers on some platforms: Mac OS X 10.5/i386.
- This function does not work on infinite numbers on some platforms: IRIX 6.5, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.303 `fscanf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fscanf.html`

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, this function doesn't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.304 fseek

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fseek.html

Gnulib module: fseek

Portability problems fixed by Gnulib:

- This function mistakenly succeeds on pipes on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On platforms where `long` is a 32-bit type, `fseek` does not work correctly with files larger than 2 GB, even when the `AC_SYS_LARGEFILE` macro is used. The fix is to use `fseeko` instead.

9.305 fseeko

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fseeko.html

Gnulib module: fseeko

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, OSF/1 4.0, Solaris 2.5.1, mingw, MSVC 9.
- The declaration of `fseeko` in `<stdio.h>` is not enabled by default on some platforms: glibc 2.3.6, OSF/1 5.1.
- This function fails on seekable stdin, stdout, and stderr: cygwin <= 1.5.24.
- On platforms where `off_t` is a 32-bit type, `fseeko` does not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

- On platforms where `off_t` is a 64-bit type, but `fseeko` is not present, stream operations on files larger than 2 GB silently do the wrong thing. This affects BSD/OS, which is mostly obsolete.

9.306 fsetpos

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fsetpos.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.307 fstat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fstat.html

Gnulib module: fstat

Portability problems fixed by Gnulib:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.
- On platforms where `off_t` is a 32-bit type, `fstat` may not correctly report the size of files or block devices larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- The `st_atime`, `st_ctime`, `st_mtime` fields are affected by the current time zone and by the DST flag of the current time zone on some platforms: mingw, MSVC 14 (when the environment variable `TZ` is set).

Portability problems not fixed by Gnulib:

- See Section 8.63 [sys/stat.h], page 63, for general portability problems with `struct stat`.
- On Cygwin, `fstat` applied to the file descriptors 0 and 1, returns different `st_ino` values, even if standard input and standard output are not redirected and refer to the same terminal.

9.308 fstatat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fstatat.html

Gnulib module: fstatat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.
- On platforms where `off_t` is a 32-bit type, `fstatat` may not correctly report the size of files or block devices larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- On some platforms, `fstatat(fd,"file/",buf,flag)` succeeds instead of failing with `ENOTDIR`. Solaris 9.
- For symlinks, when the argument ends in a slash, some platforms don't dereference the argument: Solaris 9.

Portability problems not fixed by Gnulib:

- See Section 8.63 [sys/stat.h], page 63, for general portability problems with `struct stat`.

9.309 fstatvfs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fstatvfs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, mingw, MSVC 9.
- On platforms where `f_blocks` in '`struct statvfs`' is a 32-bit value, this function may not work correctly on files systems larger than 4 TiB. The fix is to use the `AC_SYS_LARGEFILE` macro. This affects glibc/Hurd, HP-UX 11, Solaris.

9.310 fsync

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fsync.html

Gnulib module: fsync

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- If the argument is a read-only file descriptor, this function fails with `EBADF` on some platforms: AIX 7.1.

9.311 ftell

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftell.html

Gnulib module: ftell

Portability problems fixed by Gnulib:

- This function mistakenly succeeds on pipes on some platforms: mingw, MSVC 9.
- This function produces incorrect results after `putc` that followed a `getc` call that reached EOF on some platforms: Solaris 11 2010-11.

Portability problems not fixed by Gnulib:

- This function produces incorrect results immediately after `fseek` on some platforms: HP-UX 11.
- `fflush`, `ftell`, `ftello`, `fgetpos` behave incorrectly on input streams that are opened in `O_TEXT` mode and whose contents contains Unix line terminators (LF), on some platforms: mingw, MSVC 9.
- On platforms where `long` is a 32-bit type, `ftell` does not work correctly with files larger than 2 GB, even when the `AC_SYS_LARGEFILE` macro is used. The fix is to use `ftello` instead.

9.312 ftello

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftello.html

Gnulib module: ftello

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, OSF/1 4.0, Solaris 2.5.1, mingw, MSVC 9.
- The declaration of ftello in <stdio.h> is not enabled by default on some platforms: glibc 2.3.6, OSF/1 5.1.
- This function produces incorrect results after putc that followed a getc call that reached EOF on some platforms: Solaris 11 2010-11.
- This function fails on seekable stdin, stdout, and stderr: cygwin <= 1.5.24.
- On platforms where off_t is a 32-bit type, ftello does not work correctly with files larger than 2 GB. (Cf. AC_SYS_LARGEFILE.)

Portability problems not fixed by Gnulib:

- This function produces incorrect results immediately after fseek on some platforms: HP-UX 11.
- fflush, ftell, ftello, fgetpos behave incorrectly on input streams that are opened in O_TEXT mode and whose contents contains Unix line terminators (LF), on some platforms: mingw, MSVC 9.
- On platforms where off_t is a 64-bit type, but fseeko is not present, stream operations on files larger than 2 GB silently do the wrong thing. This affects BSD/OS, which is mostly obsolete.

9.313 ftok

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftok.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.314 ftruncate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftruncate.html

Gnulib module: ftruncate

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.
- On platforms where off_t is a 32-bit type, this function is not applicable to arbitrary lengths for files larger than 2 GB. The fix is to use the AC_SYS_LARGEFILE macro.

Portability problems not fixed by Gnulib:

9.315 ftrylockfile

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftrylockfile.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9.

9.316 ftw

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ftw.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 3.0, Minix 3.1.8, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not correctly report the size of files or block devices larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.317 funlockfile

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/funlockfile.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.318 futimens

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/futimens.html

Gnulib module: futimens

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. However, the replacement function may end up truncating timestamps to less resolution than supported by the file system.
- This function returns a bogus value instead of failing with `ENOSYS` on some platforms: Linux kernel 2.6.21.

- When using `UTIME_OMIT` or `UTIME_NOW`, some systems require the `tv_sec` argument to be 0, and don't necessarily handle all file permissions in the manner required by POSIX: Linux kernel 2.6.25.
- When using `UTIME_OMIT` for the modification time, but specifying an access time, some systems fail to update the change time: Linux kernel 2.6.32, Solaris 11.1.
- Passing `AT_FDCWD` as the fd argument does not properly fail with `EBADF` on some systems: glibc 2.11, Solaris 11.

Portability problems not fixed by Gnulib:

- Some platforms lack the ability to change the timestamps of a file descriptor, so the replacement can fail with `ENOSYS`; the gnulib module '`utimens`' provides a more reliable interface `fdutimens`.
- The mere act of using `stat` modifies the access time of directories on some platforms, so `utimensat` can only effectively change directory modification time: Cygwin 1.5.x.

9.319 `fwide`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fwide.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- `fwide` is not guaranteed to be able to change a file stream's mode to a different mode than the current one.

9.320 `fwprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/fwprintf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.321 fwrite

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fwrite.html

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module stdio, together with module nonblocking:

- When writing to a non-blocking pipe whose buffer is full, this function fails with errno being set to ENOSPC instead of EAGAIN on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module stdio, together with module sigpipe:

- When writing to a pipe with no readers, this function fails, instead of obeying the current SIGPIPE handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set errno upon failure.
- On some platforms, this function does not set errno or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.
- This function crashes if the stream's file descriptor has already been closed, if MSVC_INVALID_PARAMETER_HANDLING is HAIRY_LIBRARY_HANDLING or SANE_LIBRARY_HANDLING, on some platforms: MSVC 9.

9.322 fwscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/fwscanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, wchar_t is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.323 gai_strerror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gai_strerror.html

Gnulib module: getaddrinfo

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, Interix 3.5, BeOS.
- This function is only available in <ws2tcpip.h> on some platforms: mingw, MSVC 9.
- This function's return type is char * instead of const char * on some platforms: AIX 7.1, HP-UX 11, OSF/1 5.1, Solaris 9, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.324 getaddrinfo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getaddrinfo.html

Gnulib module: getaddrinfo

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- On Windows, this function is declared in <ws2tcpip.h> rather than in <netdb.h>.

Portability problems not fixed by Gnulib:

9.325 getc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getc.html

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module stdio, together with module nonblocking:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with errno being set to EINVAL instead of EAGAIN on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if feof would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set errno upon failure.

9.326 getc_unlocked

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getc_unlocked.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.327 getchar

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getchar.html

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module stdio, together with module nonblocking:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with errno being set to EINVAL instead of EAGAIN on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.328 `getchar_unlocked`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getchar_unlocked.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.329 `getcwd`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getcwd.html`

Gnulib module: getcwd or getcwd-lgpl

Portability problems fixed by either Gnulib module `getcwd` or `getcwd-lgpl`:

- This function is declared in different header files (namely, `<io.h>` or `<direct.h>`) on some platforms: mingw, MSVC 9.
- On glibc platforms, `getcwd (NULL, n)` allocates memory for the result. On some other platforms, this call is not allowed.
- On some platforms, the prototype for `getcwd` uses `int` instead of `size_t` for the size argument when using non-standard headers, and the declaration is missing from `<unistd.h>`: mingw, MSVC 9.
- On some platforms, `getcwd (buf, 0)` fails with `ERANGE` instead of the required `EINVAL`: mingw, MSVC 9.

Portability problems fixed by Gnulib module `getcwd`:

- This function is missing on some older platforms.
- This function does not handle long file names (greater than `PATH_MAX`) correctly on some platforms: glibc on Linux 2.4.20, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.1, OpenBSD 4.9, AIX 7.1.

Portability problems not fixed by Gnulib:

- When using `getcwd(NULL, nonzero)`, some platforms, such as glibc or cygwin, allocate exactly `nonzero` bytes and fail with `ERANGE` if it was not big enough, while other platforms, such as FreeBSD, mingw, or MSVC 9, ignore the size argument and allocate whatever size is necessary. If this call succeeds, an application cannot portably access beyond the string length of the result.

9.330 getdate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getdate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

Gnulib provides a module `parse-datetime` that contains a function `parse_datetime` that has similar functionality as the `getdate` function.

9.331 getdate_err

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getdate_err.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, BeOS.

9.332 getdelim

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getdelim.html

Gnulib module: getdelim

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5.
- This function is missing a declaration on some platforms: BeOS.
- This function crashes when passed a pointer to a NULL buffer together with a pointer to a non-zero buffer size on some platforms: FreeBSD 8.0.

Portability problems not fixed by Gnulib:

- This function has quadratic running time for long lines on some platforms: uClibc 0.9.31.

9.333 getegid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getegid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.334 getenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getenv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.335 geteuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/geteuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.336 getgid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.337 getgrent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgrent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.338 getgrgid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgrgid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.339 getgrgid_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgrgid_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.340 getgrnam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgrnam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.341 getgrnam_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgrnam_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.342 getgroups

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getgroups.html

Gnulib module: getgroups

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- On some platforms, this function fails to reject a negative count, even though that is less than the size that would be returned: FreeBSD 7.2.
- On Ultrix 4.3, `getgroups (0, NULL)` always fails. See macro '`AC_FUNC_GETGROUPS`'.
- On very old systems, this function operated on an array of '`int`', even though that was a different size than an array of '`gid_t`'.

Portability problems not fixed by Gnulib:

- This function is unsafe to call between `fork` and `exec` if the parent process is multi-threaded.
- It is unspecified whether the effective group id will be included in the returned list, nor whether the list will be sorted in any particular order. For that matter, some platforms include the effective group id twice, if it is also a member of the current supplemental group ids.

The Gnulib module `mgetgroups` provides a similar API.

9.343 gethostent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gethostent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

9.344 gethostid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gethostid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.345 gethostname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gethostname.html

Gnulib module: gethostname

Portability problems fixed by Gnulib:

- On mingw and MSVC 9, this function has a prototype that differs from that specified by POSIX, and it is defined only in the ws2_32 library.

Portability problems not fixed by Gnulib:

- This function's second argument type is `int` instead of `size_t` on some platforms: OSF/1 5.1, Solaris 10.
- If the given buffer is too small for the host name, some implementations fail with `EINVAL`, instead of returning a truncated host name.

9.346 getitimer

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getitimer.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.347 getline

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getline.html

Gnulib module: getline

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5.
- This function is missing a declaration on some platforms: AIX 7.1, BeOS.
- Some platforms provide a function by this name but with the wrong signature, for example in -linet.
- This function crashes when passed a pointer to a NULL buffer together with a pointer to a non-zero buffer size on some platforms: FreeBSD 8.0.

Portability problems not fixed by Gnulib:

- This function has quadratic running time for long lines on some platforms: uClibc 0.9.31.

9.348 getlogin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getlogin.html

Gnulib module: getlogin

Portability problems fixed by Gnulib:

- This function is missing on some platforms: older mingw, MSVC 9.
- This function is not declared unless `_POSIX` is defined on some platforms: mingw.

Portability problems not fixed by Gnulib:

- This function returns an empty string even when standard input is a tty on some platforms: HP-UX 11.11.

9.349 getlogin_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getlogin_r.html

Gnulib module: getlogin_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, Minix 3.1.8, mingw, MSVC 9.
- This function is not declared unless `_REENTRANT` is defined, on some platforms: HP-UX 11.
- This function returns a truncated result, instead of failing with error code `ERANGE`, when the buffer is not large enough, on some platforms: Mac OS X 10.12, OSF/1 5.1.

Portability problems not fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).
- This function fails even when standard input is a tty on some platforms: HP-UX 11.11.
- This function fails with error code `EINVAL` instead of `ERANGE` when the second argument is zero on some platforms: HP-UX 11.31.

9.350 getmsg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getmsg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.351 getnameinfo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getnameinfo.html

Gnulib module: getaddrinfo

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.352 getnetbyaddr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getnetbyaddr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

9.353 getnetbyname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getnetbyname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

9.354 getnetent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getnetent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

9.355 getopt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getopt.html

Gnulib module: getopt-posix or getopt-gnu

The module `getopt-gnu` has support for "long options" and for "options that take optional arguments". Compared to the API defined by POSIX, it adds a header file `<getopt.h>` and a function `getopt_long`.

Portability problems fixed by either Gnulib module `getopt-posix` or `getopt-gnu`:

- This function is missing on some platforms: MSVC 9.
- The value of `optind` after a missing required argument is wrong on some platforms: Mac OS X 10.5, AIX 7.1, mingw.

Portability problems fixed by Gnulib module `getopt-gnu`:

- The function `getopt` does not support the '`+`' flag in the options string on some platforms: Mac OS X 10.5, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11.
- The function `getopt` does not obey the combination of '`+`' and '`:`' flags in the options string on some platforms: glibc 2.11.
- The function `getopt` does not obey the '`-`' flag in the options string when `POSIXLY_CORRECT` is set on some platforms: Cygwin 1.7.0.
- The function `getopt` does not support options with optional arguments on some platforms: Mac OS X 10.5, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11, Cygwin 1.5.x.
- The function `getopt_long` is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, MSVC 9, Interix 3.5.
- The function `getopt_long` does not support abbreviated long options where all disambiguations are equivalent on some platforms: OpenBSD 5.0.
- The function `getopt_long_only` is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 5.0, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9, Interix 3.5.
- This function crashes if the option string includes `W;` on some platforms: glibc 2.14.

Portability problems not fixed by Gnulib:

- The default behavior of the glibc implementation of `getopt` allows mixing option and non-option arguments on the command line in any order. Other implementations, such as the one in Cygwin, enforce strict POSIX compliance: they require that the option arguments precede the non-option arguments. This is something to watch out in your program's testsuite.
- The glibc implementation allows a complete reset of the environment, including rechecking for `POSIXLY_CORRECT`, by setting `optind` to 0. Several BSD implementations provide `optreset`, causing a reset by setting it non-zero, although it does not necessarily re-read `POSIXLY_CORRECT`. Solaris `getopt` does not support either reset method, but does not maintain state that needs the extra level of reset.
- On some platforms, this function does not set the stream error indicator on attempts to write to a read-only stream: glibc 2.13, Cygwin 1.7.9.

9.356 `getpeername`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getpeername.html`

Gnulib module: getpeername

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `getpeername` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- Some platforms don't have a `socklen_t` type; in this case this function's third argument type is '`int *`'.

9.357 getpgid

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getpgid.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

9.358 getpgrp

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getpgrp.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.359 getpid

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getpid.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.360 getpmsg

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getpmsg.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.361 getppid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getppid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.362 getpriority

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpriority.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, BeOS.

9.363 getprotobyname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getprotobyname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.364 getprotobynumber

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getprotobynumber.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.365 getprotoent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getprotoent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.366 getpwent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpwent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.367 getpwnam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpwnam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.368 getpwnam_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpwnam_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function has an incompatible declaration, with fewer than five arguments, on some platforms: IRIX 5.3.

9.369 getpwuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpwuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is unsafe to call between `fork` and `exec` if the parent process is multi-threaded. Instead, use `getpwuid_r` prior to forking.
- This function is missing on some platforms: mingw, MSVC 9.

9.370 getpwuid_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getpwuid_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is unsafe to call between `fork` and `exec` if the parent process is multi-threaded. Use it prior to forking.
- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.371 getrlimit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getrlimit.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- On platforms where `rlim_t` is a 32-bit type, this function does not allow to retrieve limits larger than 4 GB, such as for RLIMIT_FSIZE. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.372 getrusage

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getrusage.html

Gnulib module: getrusage

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Many platforms don't fill in all the fields of `struct rusage` with meaningful values.

9.373 gets

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/gets.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function should never be used, because it can overflow any given buffer.
- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.374 getservbyname

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getservbyname.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.375 getservbyport

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getservbyport.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.376 getservent

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/getservent.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.377 getsid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getsid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

9.378 getsockname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getsockname.html

Gnulib module: getsockname

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `getsockname` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- Some platforms don't have a `socklen_t` type; in this case this function's third argument type is '`int *`'.

9.379 getsockopt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getsockopt.html

Gnulib module: getsockopt

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `getsockopt` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.
- Some platforms don't have a `socklen_t` type; in this case this function's fifth argument type is '`int *`'.
- Many socket options are not available on all platforms.
- BeOS has the `setsockopt` function, but not the `getsockopt` function.

9.380 getsubopt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getsubopt.html

Gnulib module: getsubopt

Portability problems fixed by Gnulib:

- This function is declared in `unistd.h` instead of `stdlib.h` on some platforms: Cygwin 1.7.1.

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.381 gettimeofday

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gettimeofday.html

Gnulib module: gettimeofday

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function is declared with a nonstandard function prototype (only one argument, or "..." after the first argument) on some platforms.
- On some platforms, the second argument has type `struct timezone*` rather than `void *`, making it an error to redeclare the function with the POSIX signature: glibc. However, rather than penalize these systems with a replacement function, gnulib defines `GETTIMEOFDAY_TIMEZONE` to the appropriate type for use in avoiding a compiler warning if assigning `gettimeofday` to a function pointer.
- On some platforms, `gettimeofday` clobbers the buffer in which `localtime` returns its result: Mac OS X 10.0.

Portability problems not fixed by Gnulib:

- Behavior is non-portable if the second argument to `gettimeofday` is not `NULL`.

9.382 getuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.383 getutxent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getutxent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.384 getutxid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getutxid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.385 getutxline

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getutxline.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.386 getwc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getwc.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.387 getwchar

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/getwchar.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.388 glob

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/glob.html

Gnulib module: glob

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, mingw, MSVC 9, BeOS.
- This function does not list symbolic links to nonexistent files among the results, on some platforms: glibc 2.14, AIX 7.1, HP-UX 11, Solaris 11 2011-11.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

- Some platforms may store additional flags in the `gl_flags` field.

9.389 globfree

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/globfree.html

Gnulib module: glob

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.390 gmtime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gmtime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.391 gmtime_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/gmtime_r.html

Gnulib module: time_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function is not declared unless `_REENTRANT` is defined, on some platforms: HP-UX 11.
- Some platforms define a function of this name that is incompatible to POSIX: HP-UX 10.

Portability problems not fixed by Gnulib:

9.392 grantpt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/grantpt.html

Gnulib module: grantpt

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- This function is not declared on some platforms: IRIX 5.3.
- This function reports success for invalid file descriptors on some platforms: OpenBSD, Cygwin 1.7.9, musl libc.

9.393 hcreate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hcreate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.394 hdestroy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hdestroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.395 hsearch

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hsearch.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.396 htonl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/htonl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, mingw, MSVC 9, BeOS.

9.397 htons

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/htons.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, mingw, MSVC 9, BeOS.

9.398 hypot

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hypot.html

Gnulib module: hypot or hypot-ieee

Portability problems fixed by either Gnulib module `hypot` or `hypot-ieee`:

Portability problems fixed by Gnulib module `hypot-ieee`:

- When the arguments are mixed NaN and Infinity, this function returns a wrong value on some platforms: OSF/1 5.1, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.399 hypotf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hypotf.html

Gnulib module: hypotf or hypotf-ieee

Portability problems fixed by either Gnulib module `hypotf` or `hypotf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, MSVC 9.
- This function produces wrong values on some platforms: NetBSD 5.1, OpenBSD 4.9.

Portability problems fixed by Gnulib module `hypot-ieee`:

- When the arguments are mixed NaN and Infinity, this function returns a wrong value on some platforms: OSF/1 5.1, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.400 hypotl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/hypotl.html

Gnulib module: hypotl or hypotl-ieee

Portability problems fixed by either Gnulib module `hypotl` or `hypotl-ieee`:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function produces very imprecise results on some platforms: OpenBSD 5.1/SPARC.

Portability problems fixed by Gnulib module `hypotl-ieee`:

- When the arguments are mixed NaN and Infinity, this function returns a wrong value on some platforms: OSF/1 5.1, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.401 iconv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iconv.html

Gnulib module: iconv

Portability problems fixed by Gnulib:

- GNU libiconv is not found if installed in `$PREFIX/lib`.
- Failures are not distinguishable from successful returns on some platforms: AIX 5.1, Solaris 10.
- A buffer overrun can occur on some platforms: AIX 6.1..7.1.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin, mingw, MSVC 9, BeOS, when GNU libiconv is not installed.
- This function was not correctly implemented in glibc versions before 2.2.
- When `iconv` encounters an input character that is valid but that cannot be converted to the output character set, glibc's and GNU libiconv's `iconv` stop the conversion. Some other implementations put an implementation-defined character into the output buffer. Gnulib provides higher-level facilities `striconv` and `striconveh` (wrappers around `iconv`) that deal with conversion errors in a platform independent way.
- This function returns a positive return value, instead of zero, when converting from ISO-8859-1 to UTF-8 on HP-UX 11.

9.402 iconv_close

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iconv_close.html

Gnulib module: iconv

Portability problems fixed by Gnulib:

- GNU libiconv is not found if installed in $PREFIX/lib.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin, mingw, MSVC 9, BeOS, when GNU libiconv is not installed.

9.403 iconv_open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iconv_open.html

Gnulib module: iconv, iconv_open, iconv_open-utf

Portability problems fixed by either Gnulib module iconv or iconv_open:

- GNU libiconv is not found if installed in $PREFIX/lib.
- No converter from EUC-JP to UTF-8 is provided on some platforms: HP-UX 11.

Portability problems fixed by Gnulib module iconv_open:

- This function recognizes only non-standard aliases for many encodings (not the IANA registered encoding names) on many platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2010-11.

Portability problems fixed by Gnulib module iconv_open-utf:

- This function does not support the encodings UTF-16BE, UTF-16LE, UTF-32BE, UTF-32LE on many platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 8.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin, mingw, MSVC 9, BeOS, when GNU libiconv is not installed.
- For some encodings A and B, this function cannot convert directly from A to B, although an indirect conversion from A through UTF-8 to B is possible. This occurs on some platforms: Solaris 11 2010-11. Gnulib provides a higher-level facility striconveh (a wrapper around iconv) that deals with this problem.
- The set of supported encodings and conversions is system dependent.

9.404 if_freenameindex

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/if_freenameindex.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11.23, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This is available only as a macro, rather than a function, on some platforms: OpenBSD 4.6, MirBSD 10.

9.405 `if_indextoname`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/if_indextoname.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.23, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.406 `if_nameindex`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/if_nameindex.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.23, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.407 `if_nametoindex`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/if_nametoindex.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.23, IRIX 6.5, OSF/1 4.0, Solaris 7, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.408 ilogb

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ilogb.html

Gnulib module: ilogb

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, MSVC 9.
- This function returns a wrong result for a zero argument on some platforms: OpenBSD 4.9, AIX 5.1.
- This function returns a wrong result for an infinite argument on some platforms: NetBSD 5.1, OpenBSD 4.9.
- This function returns a wrong result for a NaN argument on some platforms: OpenBSD 4.9.

Portability problems not fixed by Gnulib:

9.409 ilogbf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ilogbf.html

Gnulib module: ilogbf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, MSVC 9.
- This function returns a wrong result for a zero argument on some platforms: OpenBSD 4.9.
- This function returns a wrong result for an infinite argument on some platforms: NetBSD 5.1, OpenBSD 4.9.

Portability problems not fixed by Gnulib:

9.410 ilogbl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ilogbl.html

Gnulib module: ilogbl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.411 imaxabs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/imaxabs.html

Gnulib module: imaxabs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.412 imaxdiv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/imaxdiv.html

Gnulib module: imaxdiv

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.413 inet_addr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/inet_addr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- On some old platforms, this function returns a '`struct in_addr`' rather than a scalar type such as '`unsigned int`' or '`unsigned long`'.

9.414 inet_ntoa

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/inet_ntoa.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- The `inet_ntoa` function need not be reentrant, and consequently is not required to be thread safe. Implementations of `inet_ntoa` typically write the timestamp into static buffer. If two threads call `inet_ntoa` at roughly the same time, you might end up with the wrong date in one of the threads, or some undefined string.

Note: `inet_ntoa` is specific for IPv4 addresses. A protocol independent function is `inet_ntop`.

9.415 inet_ntop

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/inet_ntop.html`

Gnulib module: inet_ntop

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, OSF/1 4.0, Solaris 2.5.1, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is declared in `<netdb.h>` instead of `<arpa/inet.h>` on some platforms: NonStop Kernel.
- This function is declared in `<ws2tcpip.h>`, with a POSIX incompatible declaration, on some platforms: MSVC 9 on Windows >= Vista.

Portability problems not fixed by Gnulib:

- This function's fourth argument type is `size_t` instead of `socklen_t` on some platforms: OSF/1 5.1, Solaris 10.

9.416 inet_pton

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/inet_pton.html`

Gnulib module: inet_pton

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, OSF/1 4.0, Solaris 2.5.1, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is declared in `<netdb.h>` instead of `<arpa/inet.h>` on some platforms: NonStop Kernel.
- This function is declared in `<ws2tcpip.h>`, with a POSIX incompatible declaration, on some platforms: MSVC 9 on Windows >= Vista.

Portability problems not fixed by Gnulib:

9.417 initstate

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/initstate.html`

Gnulib module: random

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.418 insque

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/insque.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.419 ioctl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ioctl.html

Gnulib module: ioctl

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), `ioctl` is called `ioctlsocket`, and error codes for this function are not placed in `errno`, and `WSAGetLastError` must be used instead.
- On glibc platforms, the second parameter is of type `unsigned long` rather than `int`.

Portability problems not fixed by Gnulib:

- Most `ioctl` requests are platform and hardware specific.

9.420 isalnum

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isalnum.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isalnum`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswalnum`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isalnum`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_alnum`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-alnum`'.

9.421 `isalnum_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isalnum_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.422 `isalpha`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isalpha.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isalpha`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswalpha`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isalpha`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_alpha`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-alpha`'.

9.423 isalpha_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isalpha_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.424 isascii

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isascii.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but requires special handling for the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are two alternative APIs:

`c_isascii`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`mb_isascii`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

9.425 isastream

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isastream.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.426 isatty

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isatty.html

Gnulib module: isatty

Portability problems fixed by Gnulib:

- On native Windows, this function also returns true for character devices such as NUL.
- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.427 isblank

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isblank.html

Gnulib module: isblank

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 4.3.2, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with MB_CUR_MAX > 1 (this includes all the common UTF-8 locales). There are four alternative APIs:

c_isblank
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module 'c-ctype'.

iswblank
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the mbrtowc function. It is provided by the Gnulib module 'wctype'.

mb_isblank
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module 'mbchar'.

uc_is_blank
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module 'unictype/ctype-blank'.

9.428 isblank_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isblank_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.429 iscntrl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iscntrl.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_iscntrl`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswcntrl`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_iscntrl`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_cntrl`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-cntrl`'.

9.430 iscntrl_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iscntrl_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.431 `isdigit`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isdigit.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isdigit`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswdigit`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isdigit`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_digit`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-digit`'.

9.432 `isdigit_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isdigit_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.433 isfinite

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isfinite.html

Gnulib module: isfinite

Portability problems fixed by Gnulib:

- This macro is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5.
- This macro incorrectly yields true for some '`double`' arguments, on some platforms: Linux/ia64 (signalling NaNs).

Portability problems not fixed by Gnulib:

- It is implementation-dependent whether `isfinite` raises an exception given a signaling NaN operand.
- This macro returns an unspecified result when given noncanonical values such as unnormalized numbers, pseudo-denormals, pseudo-NaNs, pseudo-Infinities, and pseudo-zeroes.

9.434 isgraph

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isgraph.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isgraph`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswgraph`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isgraph`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_graph`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-graph`'.

9.435 isgraph_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isgraph_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.436 isgreater

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isgreater.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.437 isgreaterequal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isgreaterequal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.438 isinf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isinf.html

Gnulib module: isinf

Portability problems fixed by Gnulib:

- This macro is missing on some platforms: AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

- This macro returns an unspecified result when given noncanonical values such as unnormalized numbers, pseudo-denormals, pseudo-NaNs, pseudo-Infinities, and pseudo-zeroes.

9.439 isless

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isless.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.440 islessequal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/islessequal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.441 islessgreater

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/islessgreater.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.442 islower

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/islower.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multi-byte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_islower`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswlower` This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_islower`
This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_lower`
This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-lower`'.

9.443 `islower_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/islower_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.444 `isnan`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isnan.html`

Gnulib module: isnan

Portability problems fixed by Gnulib:

- This macro is missing on some platforms: MSVC 9.
- `isnan` was introduced with C99 and is thus commonly not present on pre-C99 systems.
- `isnan` is not a macro on some platforms: IRIX 6.5, OSF/1 5.1 with gcc, Solaris 11 2011-11.
- On IRIX 6.5 with `cc`, `isnan` does not recognize some NaNs.

Portability problems not fixed by Gnulib:

- This macro returns an unspecified result when given noncanonical values such as unnormalized numbers, pseudo-denormals, pseudo-NaNs, pseudo-Infinities, and pseudo-zeroes.

9.445 `isnormal`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isnormal.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5.

9.446 isprint

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isprint.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isprint`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswprint`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isprint`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_print`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-print`'.

9.447 isprint_l

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isprint_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.448 ispunct

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ispunct.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_ispunct`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswpunct`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_ispunct`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_punct`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-punct`'.

9.449 ispunct_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ispunct_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.450 isspace

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isspace.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isspace`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswspace`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isspace`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_space`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-space`'.

9.451 `isspace_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isspace_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.452 `isunordered`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/isunordered.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Interix 3.5, BeOS.

9.453 isupper

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isupper.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isupper`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswupper`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isupper`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_upper`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-upper`'.

9.454 isupper_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isupper_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.455 iswalnum

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswalnum.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.

- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.456 `iswalnum_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswalnum_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.457 `iswalpha`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswalpha.html`

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.458 `iswalpha_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswalpha_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.459 `iswblank`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswblank.html`

Gnulib module: iswblank

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9.
- This function is declared but not defined on some platforms: IRIX 6.5.30.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.8.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.460 `iswblank_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswblank_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.461 `iswcntrl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/iswcntrl.html`

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.462 iswcntrl_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswcntrl_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.463 iswctype

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswctype.html

Gnulib module: iswctype

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function is declared in `<wchar.h>`, not in `<wctype.h>`, on some platforms: HP-UX 11.00.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.464 iswctype_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswctype_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.465 iswdigit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswdigit.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.466 iswdigit_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswdigit_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.467 iswgraph

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswgraph.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.468 iswgraph_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswgraph_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.469 iswlower

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswlower.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.470 iswlower_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswlower_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.471 iswprint

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswprint.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.472 iswprint_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswprint_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.473 iswpunct

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswpunct.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.474 iswpunct_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswpunct_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.475 iswspace

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswspace.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.476 iswspace_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswspace_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.477 iswupper

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswupper.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.478 iswupper_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswupper_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.479 iswxdigit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswxdigit.html

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.
- This function returns 0 for all possible arguments on some platforms: Linux libc5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.480 iswxdigit_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/iswxdigit_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.481 isxdigit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isxdigit.html

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

Note: This function's behaviour depends on the locale, but does not support the multibyte characters that occur in strings in locales with `MB_CUR_MAX > 1` (this includes all the common UTF-8 locales). There are four alternative APIs:

`c_isxdigit`
: This function operates in a locale independent way and returns true only for ASCII characters. It is provided by the Gnulib module '`c-ctype`'.

`iswxdigit`
: This function operates in a locale dependent way, on wide characters. In order to use it, you first have to convert from multibyte to wide characters, using the `mbrtowc` function. It is provided by the Gnulib module '`wctype`'.

`mb_isxdigit`
: This function operates in a locale dependent way, on multibyte characters. It is provided by the Gnulib module '`mbchar`'.

`uc_is_xdigit`
: This function operates in a locale independent way, on Unicode characters. It is provided by the Gnulib module '`unictype/ctype-xdigit`'.

9.482 isxdigit_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/isxdigit_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.483 j0

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/j0.html

Gnulib module: j0

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

9.484 j1

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/j1.html

Gnulib module: j1

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

9.485 jn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/jn.html

Gnulib module: jn

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

9.486 jrand48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/jrand48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.487 kill

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/kill.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.488 killpg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/killpg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, BeOS.

9.489 l64a

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/l64a.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function was not correctly implemented in glibc versions before 2.2.5.

9.490 labs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/labs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.491 lchown

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lchown.html

Gnulib module: lchown

Portability problems fixed by Gnulib:

- Some platforms fail to detect trailing slash on non-directories, as in `lchown("link-to-file/",uid,gid)`: FreeBSD 7.2, Solaris 9.
- Some platforms fail to update the change time when at least one argument was not -1, but no ownership changes resulted. However, without `lchmod`, the replacement only fixes this for non-symlinks: OpenBSD 4.0.
- This function is missing on some platforms; however, the replacement fails on symlinks if `chown` is supported, and fails altogether with `ENOSYS` otherwise: Mac OS X 10.3, Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.492 lcong48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lcong48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.493 ldexp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ldexp.html

Gnulib module: ldexp

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.494 ldexpf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ldexpf.html

Gnulib module: ldexpf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.495 ldexpl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ldexpl.html

Gnulib module: ldexpl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function has no prototype in <math.h> on some platforms: Mac OS X.
- This function does not work on finite numbers on some platforms: AIX 5.1.

Portability problems not fixed by Gnulib:

9.496 ldiv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ldiv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.497 lfind

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lfind.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

9.498 lgamma

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lgamma.html

Gnulib module: lgamma

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.
- This function is not declared on some platforms: IRIX 5.3.

9.499 lgammaf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lgammaf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, MSVC 9.

9.500 lgammal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lgammal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.501 link

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/link.html

Gnulib module: link

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function fails to reject trailing slashes on non-directories on some platforms: FreeBSD 7.2, Solaris 11 2011-11, Cygwin 1.5.x.
- When the second argument is a dangling symlink, some platforms follow that link and create the destination rather than failing: IRIX 6.5.

Portability problems not fixed by Gnulib:

- When the first argument is a symlink, some platforms create a hard-link to what the symlink referenced, rather than to the symlink itself. Use '`linkat`' to force a particular behavior.

9.502 linkat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/linkat.html

Gnulib module: linkat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X < 10.10, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1

5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

- This function fails to directly hardlink symlinks on some platforms: Mac OS X 10.10.
- This function fails to reject trailing slashes on non-directories on some platforms: AIX 7.1, Solaris 11 2011-11, Mac OS X 10.10.
- This functions does not support `AT_SYMLINK_FOLLOW` on some platforms: Linux kernel 2.6.17.

Portability problems not fixed by Gnulib:

9.503 `lio_listio`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lio_listio.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.504 `listen`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/listen.html`

Gnulib module: listen

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `listen` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.505 `llabs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/llabs.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.23, OSF/1 5.1, MSVC 9, Interix 3.5.

9.506 lldiv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lldiv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11.23, OSF/1 5.1, MSVC 9, Interix 3.5.

9.507 llrint

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/llrint.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.

9.508 llrintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/llrintf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.

9.509 llrintl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/llrintl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.

9.510 `llround`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/llround.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.511 `llroundf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/llroundf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.7.7, MSVC 9, Interix 3.5.

9.512 `llroundl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/llroundl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.513 `localeconv`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/localeconv.html`

Gnulib module: localeconv

Portability problems fixed by Gnulib:

- The `struct lconv` type does not contain any members on some platforms: Android.
- The `struct lconv` type does not contain the members `int_p_cs_precedes`, `int_p_sign_posn`, `int_p_sep_by_space`, `int_n_cs_precedes`, `int_n_sign_posn`, `int_n_sep_by_space` on some platforms: glibc, OpenBSD 4.9, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.514 localtime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/localtime.html

Gnulib module: localtime

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable TZ has been set by Cygwin.

Portability problems not fixed by Gnulib:

- On some platforms, this function returns nonsense values for unsupported arguments (like 2^56), rather than failing: FreeBSD 10.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

9.515 localtime_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/localtime_r.html

Gnulib module: time_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function is not declared unless _REENTRANT is defined, on some platforms: HP-UX 11.
- Some platforms define a function of this name that is incompatible to POSIX: HP-UX 10.

Portability problems not fixed by Gnulib:

- On some platforms, this function returns nonsense values for unsupported arguments (like 2^56), rather than failing: FreeBSD 10.

9.516 lockf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lockf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- On platforms where off_t is a 32-bit type, this function may not work correctly across the entire data range of files larger than 2 GB. The fix is to use the AC_SYS_LARGEFILE macro.

9.517 log

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log.html

Gnulib module: log or log-ieee

Portability problems fixed by either Gnulib module log or log-ieee:

- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems fixed by Gnulib module log-ieee:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.518 log10

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log10.html

Gnulib module: log10 or log10-ieee

Portability problems fixed by either Gnulib module log10 or log10-ieee:

- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems fixed by Gnulib module log10-ieee:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.519 log10f

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log10f.html

Gnulib module: log10f or log10f-ieee

Portability problems fixed by either Gnulib module log10f or log10f-ieee:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems fixed by Gnulib module log10f-ieee:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1.

Portability problems not fixed by Gnulib:

9.520 log10l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log10l.html

Gnulib module: log10l

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, older IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared and does not work on some platforms: AIX 5.1.
- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.
- This function returns an unnormalized negative infinity for a minus zero argument on some platforms: IRIX 6.5.
- This function returns an unnormalized positive infinity for a positive infinite argument on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.521 log1p

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log1p.html

Gnulib module: log1p or log1p-ieee

Portability problems fixed by either Gnulib module `log1p` or `log1p-ieee`:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.

Portability problems fixed by Gnulib module `log1p-ieee`:

- This function has problems when the argument is minus zero on some platforms: AIX 7.1, HP-UX 11.

Portability problems not fixed by Gnulib:

9.522 log1pf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log1pf.html

Gnulib module: log1pf or log1pf-ieee

Portability problems fixed by either Gnulib module `log1pf` or `log1pf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, MSVC 9.
- This function returns a wrong value for the argument `-1.0f` on some platforms: IRIX 6.5.

Portability problems fixed by Gnulib module `log1pf-ieee`:

- This function has problems when the argument is minus zero on some platforms: OpenBSD 4.9, AIX 7.1.

Portability problems not fixed by Gnulib:

9.523 log1pl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log1pl.html

Gnulib module: log1pl or log1pl-ieee

Portability problems fixed by either Gnulib module log1pl or log1pl-ieee:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

Portability problems fixed by Gnulib module log1pl-ieee:

- This function has problems when the argument is minus zero on some platforms: AIX 7.1, IRIX 6.5.

Portability problems not fixed by Gnulib:

9.524 log2

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log2.html

Gnulib module: log2 or log2-ieee

Portability problems fixed by either Gnulib module log2 or log2-ieee:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, older IRIX 6.5, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: IRIX 6.5.
- This function is only provided as a macro on some platforms: Cygwin 1.5.x.
- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.
- This function returns slightly wrong values for exact powers of 2 on some platforms: Cygwin 1.7.9.

Portability problems fixed by Gnulib module log2-ieee:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.525 log2f

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/log2f.html

Gnulib module: log2f or log2f-ieee

Portability problems fixed by either Gnulib module log2f or log2f-ieee:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, older IRIX 6.5, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: IRIX 6.5.
- This function is only provided as a macro on some platforms: Cygwin 1.5.x.

- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.
- This function returns slightly wrong values for exact powers of 2 on some platforms: Cygwin 1.7.9.

Portability problems fixed by Gnulib module `log2f-ieee`:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.526 `log2l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/log2l.html`

Gnulib module: log2l

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: IRIX 6.5.
- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.527 `logb`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/logb.html`

Gnulib module: logb

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.
- This function is missing a declaration on some platforms: Cygwin 1.5.x.
- This function produces wrong results for subnormal numbers on some platforms: glibc 2.11/ppc, glibc 2.7/sparc, glibc 2.7/hppa, Solaris 11 2011-11, Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

9.528 `logbf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/logbf.html`

Gnulib module: logbf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, MSVC 9.

- This function produces wrong results for subnormal numbers on some platforms: glibc 2.11/ppc, glibc 2.7/sparc, glibc 2.7/hppa, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.529 `logbl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/logbl.html`

Gnulib module: logbl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function produces wrong results for subnormal numbers on some platforms: glibc 2.11/ppc, glibc 2.7/sparc, glibc 2.7/hppa, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.530 `logf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/logf.html`

Gnulib module: logf or logf-ieee

Portability problems fixed by either Gnulib module `logf` or `logf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems fixed by Gnulib module `logf-ieee`:

- This function returns a wrong value for a negative argument on some platforms: NetBSD 5.1.

Portability problems not fixed by Gnulib:

9.531 `logl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/logl.html`

Gnulib module: logl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.
- This function returns wrong results on some platforms: glibc 2.7 on Linux/SPARC64.

- This function returns a wrong value for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.532 longjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/longjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- The effects of this call are system and compiler optimization dependent, since it restores the contents of register-allocated variables but not the contents of stack-allocated variables.
- When longjumping out of a signal handler that was being executed on an alternate stack (installed through `sigaltstack`), on FreeBSD, NetBSD, OpenBSD, you need to clear the `SS_ONSTACK` flag in the `stack_t` structure managed by the kernel.

9.533 lrand48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lrand48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.534 lrint

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lrint.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.535 lrintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/lrintf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.536 `lrintl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lrintl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.

9.537 `lround`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lround.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.538 `lroundf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lroundf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.539 `lroundl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lroundl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.540 `lsearch`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lsearch.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

9.541 `lseek`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lseek.html`

Gnulib module: lseek

Portability problems fixed by Gnulib:

- On platforms where `off_t` is a 32-bit type, `lseek` does not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- This function mistakenly succeeds on pipes on some platforms: mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- POSIX does not specify which file descriptors support seeking and which don't. In practice, regular files and block devices support seeking, and ttys, pipes, and most character devices don't support it.
- When the third argument is invalid, POSIX says that `lseek` should set `errno` to `EINVAL` and return −1, but in this situation a `SIGSYS` signal is raised on some platforms: IRIX 6.5.
- When the `lseek` function fails, POSIX says that the file offset remains unchanged. But on some platforms, attempting to set a negative file offset fails and sets the file offset to 0: BeOS.

9.542 `lstat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/lstat.html`

Gnulib module: lstat

Portability problems fixed by Gnulib:

- On platforms where `off_t` is a 32-bit type, `lstat` may not correctly report the size of files or block devices larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

- For symlinks, when the argument ends in a slash, some platforms don't dereference the argument: Solaris 9.
- On some platforms, `lstat("file/",buf)` succeeds instead of failing with `ENOTDIR`. Solaris 9.
- On Windows platforms (excluding Cygwin), symlinks are not supported, so `lstat` does not exist.

Portability problems not fixed by Gnulib:

- See Section 8.63 [sys/stat.h], page 63, for general portability problems with `struct stat`.

9.543 `malloc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/malloc.html`

Gnulib module: malloc-posix

Portability problems fixed by Gnulib:

- Upon failure, the function does not set `errno` to `ENOMEM` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- `malloc (0)` always returns a NULL pointer on some platforms: AIX 5.1, OSF/1 5.1.

Extension: Gnulib provides a module '`malloc-gnu`' that substitutes a `malloc` implementation that behaves more like the glibc implementation, regarding the result of `malloc (0)`.

9.544 `mblen`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mblen.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.545 `mbrlen`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mbrlen.html`

Gnulib module: mbrlen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, mingw, Interix 3.5.
- In the C or POSIX locales, this function can return `(size_t) -1` and set `errno` to `EILSEQ`: glibc 2.23.

- This function returns 0 instead of `(size_t) -2` when the input is empty: glibc 2.19.
- This function returns `(size_t) -1` instead of `(size_t) -2` when the input is empty: AIX 5.1.
- This function does not put the state into non-initial state when parsing an incomplete multibyte character on some platforms: AIX 5.1, OSF/1 5.1.
- This function returns the total number of bytes that make up the multibyte character, not the number of bytes that were needed to complete the multibyte character, on some platforms: HP-UX 11.11, Solaris 11 2010-11.
- This function may not return 0 when parsing the NUL character on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

9.546 `mbrtoc16`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.547 `mbrtoc32`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.548 `mbrtowc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mbrtowc.html`

Gnulib module: mbrtowc

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, mingw, Interix 3.5.
- In the C or POSIX locales, this function can return `(size_t) -1` and set `errno` to `EILSEQ`: glibc 2.23.
- This function returns 0 instead of `(size_t) -2` when the input is empty: glibc 2.19.
- This function returns `(size_t) -1` instead of `(size_t) -2` when the input is empty: AIX 5.1.

- This function does not put the state into non-initial state when parsing an incomplete multibyte character on some platforms: AIX 5.1, OSF/1 5.1.
- This function does not produce correct results in the zh_CN.GB18030 locale on some platforms: Solaris 8.
- This function fails if the `pwc` argument is NULL on some platforms: Solaris 7.
- This function does not ignore the `pwc` argument if the string argument is NULL on some platforms: OSF/1 5.1.
- This function returns the total number of bytes that make up the multibyte character, not the number of bytes that were needed to complete the multibyte character, on some platforms: HP-UX 11.11, Solaris 11 2010-11, mingw, possibly MSVC 9.
- This function may not return 0 when parsing the NUL character on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.549 `mbsinit`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mbsinit.html`

Gnulib module: mbsinit

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.
- This function always returns 1, even in multibyte locales, on some platforms: mingw.

Portability problems not fixed by Gnulib:

9.550 `mbsnrtowcs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mbsnrtowcs.html`

Gnulib module: mbsnrtowcs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- The specification is not clear about whether this function should update the conversion state when the first argument (the destination pointer) is NULL. The glibc, Mac OS X, FreeBSD implementations do update the state in this case. For portability, when passing a NULL destination argument, it is best to pass a pointer to a temporary copy of the conversion state.

9.551 mbsrtowcs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mbsrtowcs.html

Gnulib module: mbsrtowcs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, mingw, Interix 3.5.
- This function does not work on some platforms: HP-UX 11, Solaris 11 2010-11.
- This function does not work when the first argument is NULL on some platforms: mingw.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- The specification is not clear about whether this function should update the conversion state when the first argument (the destination pointer) is NULL. The glibc implementation does not update the state in this case; the Mac OS X and FreeBSD implementations do. For portability, when passing a NULL destination argument, it is best to pass a pointer to a temporary copy of the conversion state.

9.552 mbstowcs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mbstowcs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.553 mbtowc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mbtowc.html

Gnulib module: mbtowc

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function accumulates hidden state on some platforms: glibc 2.8 (see `http://sourceware.org/bugzilla/show_bug.cgi?id=9674`).
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.554 memccpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memccpy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

9.555 memchr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memchr.html

Gnulib module: memchr or memchr-obsolete

Portability problems fixed by either Gnulib module `memchr` or `memchr-obsolete`:

- This function dereferences too much memory on some platforms: glibc 2.10 on x86_64, IA-64; glibc 2.11 on Alpha.

Portability problems fixed by Gnulib module `memchr-obsolete`:

- This function is missing on some older platforms.

Portability problems not fixed by Gnulib:

9.556 memcmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memcmp.html

Gnulib module: memcmp

Portability problems fixed by Gnulib:

- This function is missing on some older platforms.
- This function does not work on 8-bit data on some older platforms: SunOS 4.1.3.
- This function fails when comparing 16 bytes or more and with at least one buffer not starting on a 4-byte boundary on some older platforms: NeXTstep/x86.

Portability problems not fixed by Gnulib:

9.557 memcpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memcpy.html

Gnulib module: memcpy

Portability problems fixed by Gnulib:

- This function is missing on some older platforms.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.558 memmove

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memmove.html

Gnulib module: memmove

Portability problems fixed by Gnulib:

- This function is missing on some older platforms.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.559 memset

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/memset.html

Gnulib module: memset

Portability problems fixed by Gnulib:

- This function is missing on some older platforms.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.560 mkdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkdir.html

Gnulib module: mkdir

Portability problems fixed by Gnulib:

- This function is declared in different header files (namely, `<io.h>` or `<direct.h>`) on some platforms: mingw, MSVC 9.
- When the argument ends in a slash, the function call fails on some platforms.
- This function mistakenly succeeds on '`mkdir("d/./",mode)`' on some platforms: Cygwin 1.5.x, mingw, MSVC 9.
- On Windows platforms (excluding Cygwin), this function is called `_mkdir` and takes only one argument. The fix (without Gnulib) is to define a macro like this:

```
#define mkdir ((int (*)()) _mkdir)
```

  or

```
#define mkdir(path,mode) _mkdir (path)
```

Portability problems not fixed by Gnulib:

9.561 mkdirat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkdirat.html

Gnulib module: mkdirat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

9.562 mkdtemp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkdtemp.html

Gnulib module: mkdtemp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.563 mkfifo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkfifo.html

Gnulib module: mkfifo

Portability problems fixed by Gnulib:

- This function mishandles trailing slash on some platforms: FreeBSD 7.2, Solaris 9.
- This function is missing on some platforms; however, the replacement always fails with ENOSYS: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- If the argument exists and is a directory, this function fails with EISDIR instead of the correct EEXIST: HP-UX 11.11.

9.564 mkfifoat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkfifoat.html

Gnulib module: mkfifoat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

- The gnulib replacement function always fails with '`ENOSYS`' on some platforms: mingw, MSVC 9.
- If the argument exists and is a directory, the gnulib replacement function fails with `EISDIR` instead of the correct `EEXIST`: HP-UX 11.11.

9.565 `mknod`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mknod.html`

Gnulib module: mknod

Portability problems fixed by Gnulib:

- This function requires super-user privileges to create a fifo: FreeBSD 7.2, OpenBSD 3.8.
- This function mishandles trailing slash on some platforms: FreeBSD 7.2, Solaris 9.
- This function is missing on some platforms; however, the replacement always fails with `ENOSYS`: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Use of this function for anything except fifos is not portable, generally requiring super-user privileges and knowledge of supported device numbers.
- If the argument exists and is a directory, this function fails with `EISDIR` instead of the correct `EEXIST`: HP-UX 11.11.

9.566 `mknodat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/mknodat.html`

Gnulib module: mkfifoat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

- The gnulib replacement function always fails with '`ENOSYS`' on some platforms: mingw, MSVC 9.
- If the argument exists and is a directory, the gnulib replacement function fails with `EISDIR` instead of the correct `EEXIST`: HP-UX 11.11.

9.567 mkstemp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mkstemp.html

Gnulib module: mkstemp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function is declared in <unistd.h> instead of <stdlib.h> on some platforms: Mac OS X 10.3.
- On some platforms (HP-UX 10.20, SunOS 4.1.4, Solaris 2.5.1), mkstemp has a silly limit that it can create no more than 26 files from a given template. On OSF/1 4.0f, it can create only 32 files per process.
- On platforms where off_t is a 32-bit type, mkstemp may not work correctly to create files larger than 2 GB. (Cf. AC_SYS_LARGEFILE.)
- On some older platforms, mkstemp can create a world or group writable or readable file, if you haven't set the process umask to 077. This is a security risk.

Portability problems not fixed by Gnulib:

The gnulib module clean-temp can create temporary files that will not be left behind after signals such as SIGINT.

9.568 mktime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mktime.html

Gnulib module: mktime

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable TZ has been set by Cygwin.
- mktime may go into an endless loop on some platforms.
- mktime may occasionally return wrong results on some platforms.

Portability problems not fixed by Gnulib:

- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

9.569 mlock

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, OSF/1 4.0, mingw, MSVC 9, Interix 3.5, BeOS.

9.570 mlockall

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mlockall.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, OSF/1 4.0, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.571 mmap

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mmap.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly across the entire data range of files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.
- To get anonymous memory, on some platforms, you can use the flags `MAP_ANONYMOUS | MAP_PRIVATE` and `-1` instead of a file descriptor; on others you have to use a read-only file descriptor of `/dev/zero`.
- On HP-UX, passing a non-NULL first argument, as a hint for the address (even without `MAP_FIXED`, often causes `mmap` to fail. Better pass NULL in this case.
- On HP-UX, `MAP_FIXED` basically never works. On other platforms, it depends on the circumstances whether memory can be returned at a given address.

9.572 modf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/modf.html

Gnulib module: modf or modf-ieee

Portability problems fixed by either Gnulib module `modf` or `modf-ieee`:

Portability problems fixed by Gnulib module `modf-ieee`:

- This function has problems with a NaN argument on some platforms: NetBSD 5.1, Cygwin.
- This function has problems with infinite arguments on some platforms: FreeBSD 6.4, OpenBSD 4.9, IRIX 6.5, OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.573 modff

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/modff.html

Gnulib module: modff or modff-ieee

Portability problems fixed by either Gnulib module `modff` or `modff-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.
- This function is only defined as a buggy macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module `modff-ieee`:

- This function has problems with a NaN argument on some platforms: NetBSD 5.1, OpenBSD 4.9, Solaris 9, Cygwin.
- This function has problems with infinite arguments on some platforms: IRIX 6.5, OSF/1 5.1, mingw.

Portability problems not fixed by Gnulib:

9.574 modfl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/modfl.html

Gnulib module: modfl or modfl-ieee

Portability problems fixed by either Gnulib module `modfl` or `modfl-ieee`:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems fixed by Gnulib module `modfl-ieee`:

- This function has problems with infinite arguments on some platforms: IRIX 6.5, OSF/1 5.1, mingw.

Portability problems not fixed by Gnulib:

9.575 mprotect

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mprotect.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function does not set `errno` on some platforms: mingw.
- On AIX, it is not possible to use `mprotect` on memory regions allocated with `malloc`.

9.576 mq_close

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_close.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.577 mq_getattr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_getattr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.578 mq_notify

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_notify.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.579 mq_open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_open.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.580 mq_receive

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_receive.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.581 mq_send

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_send.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.582 mq_setattr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_setattr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.583 mq_timedreceive

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_timedreceive.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.584 mq_timedsend

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_timedsend.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.585 mq_unlink

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mq_unlink.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.586 mrand48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/mrand48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.587 msgctl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/msgctl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.588 msgget

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/msgget.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.589 msgrcv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/msgrcv.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.590 msgsnd

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/msgsnd.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.591 msync

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/msync.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- On NetBSD, `msync` takes only two arguments.

9.592 munlock

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/munlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, OSF/1 4.0, mingw, MSVC 9, Interix 3.5, BeOS.

9.593 munlockall

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/munlockall.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, OSF/1 4.0, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.594 munmap

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/munmap.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.595 nan

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nan.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.596 nanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.597 nanl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nanl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.598 nanosleep

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nanosleep.html

Gnulib module: nanosleep

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.
- This function reports failure when called with small arguments such as 1 ns on some platforms: AIX 4.3.2.
- This function mishandles large arguments when interrupted by a signal on some platforms: Linux 64-bit, Solaris 64-bit.
- This function cannot sleep longer than 49.7 days on some platforms: Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

9.599 nearbyint

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nearbyint.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.600 nearbyintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nearbyintf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.601 nearbyintl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nearbyintl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.602 newlocale

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/newlocale.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.603 nextafter

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nextafter.html

Gnulib module: nextafter

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, MSVC 9.
- This function is not declared on some platforms: IRIX 5.3.

9.604 nextafterf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nextafterf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, IRIX 6.5, Solaris 9, MSVC 9.

9.605 nextafterl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nextafterl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.606 nexttoward

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nexttoward.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.607 nexttowardf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nexttowardf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.608 nexttowardl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nexttowardl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.609 nftw

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nftw.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 3.0, Minix 3.1.8, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not correctly report the size of files or block devices larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.610 nice

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nice.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- In glibc before glibc 2.2.4, `nice` returned 0 upon success.

9.611 nl_langinfo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/nl_langinfo.html

Gnulib module: nl_langinfo

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- The constant `CODESET` is not supported on some platforms: glibc 2.0.6, OpenBSD 3.8.
- The constants `ERA`, `ERA_D_FMT`, `ERA_D_T_FMT`, `ERA_T_FMT`, `ALT_DIGITS` are not supported on some platforms: OpenBSD 3.8.

- The constants `T_FMT_AMPM`, `YESEXPR`, `NOEXPR` are not supported on some platforms: IRIX 5.3.
- The constants `YESEXPR` and `NOEXPR` do not return a valid string on some platforms: Irix 6.5.

Portability problems not fixed by Gnulib:

- On Cygwin 1.5.x, which doesn't have locales, `nl_langinfo(CODESET)` always returns `"US-ASCII"`.
- On Cygwin 1.7.0, only the charset portion of a locale designation is honored.
- On NetBSD 5.0, in some locales, `nl_langinfo(CRNCYSTR)` returns the empty string, although the local currency symbol, as returned by `localeconv()->currency_symbol`, is non-empty.
- On NetBSD 5.1, in the `"C"` locale, the results of `nl_langinfo(ABMON_1)` ... `nl_langinfo(ABMON_12)` are full month names, not abbreviated month names.

9.612 nl_langinfo_l

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/nl_langinfo_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.613 nrand48

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/nrand48.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.614 ntohl

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/ntohl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, mingw, MSVC 9, BeOS.

9.615 ntohs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ntohs.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, mingw, MSVC 9, BeOS.

9.616 open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/open.html

Gnulib module: open, fchdir

Portability problems fixed by the Gnulib module open:

- On platforms where `off_t` is a 32-bit type, `open` may not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- This function does not fail when the file name argument ends in a slash and (without the slash) names a nonexistent file or a file that is not a directory, on some platforms: FreeBSD 7.2, AIX 7.1, HP-UX 11.00, Solaris 9, Irix 5.3.
- This function does not support the `O_NONBLOCK` flag when it is defined by the gnulib module `nonblocking` on some platforms: mingw, MSVC 9.
- On Windows platforms (excluding Cygwin), this function does usually not recognize the `/dev/null` filename.

Portability problems fixed by the Gnulib module fchdir:

- On Windows platforms (excluding Cygwin), this function fails to open a read-only descriptor for directories.

Portability problems not fixed by Gnulib:

- `open ("symlink", O_NOFOLLOW ...)` fails with `errno` set to `EMLINK` instead of the POSIX-required `ELOOP` on some platforms: FreeBSD 10.1.
- `open ("symlink", O_NOFOLLOW ...)` fails with `errno` set to `EFTYPE` instead of the POSIX-required `ELOOP` on some platforms: NetBSD 6.1.
- On Windows, this function returns a file handle in `O_TEXT` mode by default; this means that it translates `'\n'` to CR/LF by default. Use the `O_BINARY` flag if you need reliable binary I/O.

9.617 openat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/openat.html

Gnulib module: openat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1,

Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

- On platforms where `off_t` is a 32-bit type, `open` may not work correctly with files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- This function does not fail when the file name argument ends in a slash and (without the slash) names a nonexistent file or a file that is not a directory, on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

- `openat (fd, "symlink", O_NOFOLLOW ...)` fails with `errno` set to `EMLINK` instead of the POSIX-required `ELOOP` on some platforms: FreeBSD 10.1.
- `openat (fd, "symlink", O_NOFOLLOW ...)` fails with `errno` set to `EFTYPE` instead of the POSIX-required `ELOOP` on some platforms: NetBSD 6.1.

9.618 `opendir`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/opendir.html`

Gnulib module: opendir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

9.619 `openlog`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/openlog.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.620 `open_memstream`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/open_memstream.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.621 open_wmemstream

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/open_wmemstream.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.622 optarg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/optarg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, IRIX 6.5, OSF/1 5.1, MSVC 9.

9.623 opterr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/opterr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: IRIX 6.5, OSF/1 5.1, MSVC 9.

9.624 optind

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/optind.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: IRIX 6.5, OSF/1 5.1, MSVC 9.

9.625 optopt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/optopt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, IRIX 6.5, OSF/1 5.1, MSVC 9.

9.626 pathconf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pathconf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.627 pause

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pause.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.628 pclose

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pclose.html

Gnulib module: pclose

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.629 perror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/perror.html

Gnulib module: perror

Portability problems fixed by Gnulib:

- This function does not support the error values that are specified by POSIX but not defined by the system, on some platforms: OpenBSD 4.0, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9.
- This function treats `errno` of 0 like failure, although POSIX requires that the message declare it as a success, on some platforms: FreeBSD 8.2, OpenBSD 4.7, Mac OS X 10.5.
- This function clobbers the `strerror` buffer on some platforms: Cygwin 1.7.9.
- This function fails to print a useful a string for out-of-range integers on some platforms: HP-UX 11, IRIX 6.5, Solaris 8.

Portability problems not fixed by Gnulib:

- POSIX requires that this function set the stream error bit (detected by `ferror`) on write failure, but not all platforms do this: glibc 2.13, cygwin 1.7.9.
- POSIX requires that this function not alter stream orientation, but the gnulib replacement locks in byte orientation and fails on wide character streams.

9.630 pipe

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pipe.html

Gnulib module: pipe-posix

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function crashes rather than failing with `EMFILE` if no resources are left on some platforms: Cygwin 1.7.9.

9.631 poll

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/poll.html

Gnulib module: poll

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS, HP NonStop.
- This function doesn't work on special files like `/dev/null` and ttys like `/dev/tty` on some platforms: Mac OS X 10.4.0, AIX 5.3.

Portability problems not fixed by Gnulib:

- Under BeOS, Gnulib's `poll` replacement can only be called on descriptors created by the `socket` function, not on regular file descriptors.

- Under Windows, when passing a pipe, Gnulib's `poll` replacement might return 0 even before the timeout has passed. Programs using it with pipes can thus busy wait.
- Under HP NonStop, file descriptors other than sockets do not support POLLHUP; they will return a "readable" status instead.

9.632 popen

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/popen.html`

Gnulib module: popen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.
- Some platforms start the child with closed stdin or stdout if the standard descriptors were closed in the parent: Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

- On native Windows platforms, this functions terminates the current process with exit code 127 if the environment variable `COMSPEC` is not set.
- Some platforms mistakenly set the close-on-exec bit, then if it is cleared by the application, the platform then leaks file descriptors from earlier `popen` calls into subsequent `popen` children: Cygwin 1.5.x.

9.633 posix_fadvise

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_fadvise.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly across the entire data range of files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.634 posix_fallocate

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_fallocate.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- POSIX specifies that EINVAL should be returned when the file system doesn't support the allocation operation directly. glibc however emulates the file system allocation with writes where unsupported, and apps have depended on that long term implementation. This is both inefficient, and as of glibc 2.21 at least, buggy on certain NFS setups.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly across the entire data range of files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.635 posix_madvise

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_madvise.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.636 posix_mem_offset

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_mem_offset.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.637 posix_memalign

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_memalign.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

The Gnulib module `pagealign_alloc` provides a similar API that returns memory aligned on a system page boundary.

9.638 posix_openpt

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_openpt.html`

Gnulib module: posix_openpt

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. However, the replacement may fail with `ENOSYS` or `ENOENT` on some platforms.

Portability problems not fixed by Gnulib:

Note that when using this function to open the master side of a pseudo-terminal, you still need platform dependent code to open the corresponding slave side. The Gnulib module `openpty` provides an easy-to-use API that does both at once.

9.639 posix_spawn

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawn.html`

Gnulib module: posix_spawn

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- When this function fails, it causes the stdio buffer contents to be output twice on some platforms: AIX 6.1.

Portability problems not fixed by Gnulib:

- This function does not work on some platforms: AIX 6.1 (under particular circumstances), mingw.

9.640 posix_spawn_file_actions_addclose

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawn_file_actions_addclose.html`

Gnulib module: posix_spawn_file_actions_addclose

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

- This function does not reject a too large file descriptor on some platforms: Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.641 posix_spawn_file_actions_adddup2

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawn_file_actions_adddup2.html`

Gnulib module: posix_spawn_file_actions_adddup2

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function does not reject a too large file descriptor on some platforms: Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.642 posix_spawn_file_actions_addopen

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawn_file_actions_addopen.html`

Gnulib module: posix_spawn_file_actions_addopen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function does not reject a too large file descriptor on some platforms: Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

9.643 posix_spawn_file_actions_destroy

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawn_file_actions_destroy.html`

Gnulib module: posix_spawn_file_actions_destroy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.644 posix_spawn_file_actions_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawn_file_actions_init.html

Gnulib module: posix_spawn_file_actions_init

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.645 posix_spawnattr_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_destroy.html

Gnulib module: posix_spawnattr_destroy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.646 posix_spawnattr_getflags

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_getflags.html

Gnulib module: posix_spawnattr_getflags

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.647 posix_spawnattr_getpgroup

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_getpgroup.html

Gnulib module: posix_spawnattr_getpgroup

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.648 posix_spawnattr_getschedparam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_getschedparam.html

Gnulib module: posix_spawnattr_getschedparam

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.649 posix_spawnattr_getschedpolicy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_getschedpolicy.html

Gnulib module: posix_spawnattr_getschedpolicy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.650 posix_spawnattr_getsigdefault

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_getsigdefault.html

Gnulib module: posix_spawnattr_getsigdefault

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.651 posix_spawnattr_getsigmask

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_getsigmask.html

Gnulib module: posix_spawnattr_getsigmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.652 posix_spawnattr_init

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_init.html`

Gnulib module: posix_spawnattr_init

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.653 posix_spawnattr_setflags

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_setflags.html`

Gnulib module: posix_spawnattr_setflags

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.654 posix_spawnattr_setpgroup

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnattr_setpgroup.html`

Gnulib module: posix_spawnattr_setpgroup

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.655 posix_spawnattr_setschedparam

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_setschedparam.html

Gnulib module: posix_spawnattr_setschedparam

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.656 posix_spawnattr_setschedpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_setschedpolicy.html

Gnulib module: posix_spawnattr_setschedpolicy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.657 posix_spawnattr_setsigdefault

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_setsigdefault.html

Gnulib module: posix_spawnattr_setsigdefault

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.658 posix_spawnattr_setsigmask

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_spawnattr_setsigmask.html

Gnulib module: posix_spawnattr_setsigmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.659 posix_spawnp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_spawnp.html

Gnulib module: posix_spawnp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- When this function fails, it causes the stdio buffer contents to be output twice on some platforms: AIX 6.1.

Portability problems not fixed by Gnulib:

- This function does not work on some platforms: AIX 6.1 (under particular circumstances), mingw.

9.660 posix_trace_attr_destroy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.661 posix_trace_attr_getclockres

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_getclockres.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.662 posix_trace_attr_getcreatetime

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getcreatetime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.663 posix_trace_attr_getgenversion

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getgenversion.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.664 posix_trace_attr_getinherited

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getinherited.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.665 posix_trace_attr_getlogfullpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getlogfullpolicy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.666 posix_trace_attr_getlogsize

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_getlogsize.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.667 posix_trace_attr_getmaxdatasize

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_getmaxdatasize.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.668 posix_trace_attr_getmaxsystemeventsize

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_getmaxsystemeventsize.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.669 posix_trace_attr_getmaxusereventsize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getmaxusereventsize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.670 posix_trace_attr_getname

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.671 posix_trace_attr_getstreamfullpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getstreamfullpolicy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.672 posix_trace_attr_getstreamsize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_getstreamsize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.673 posix_trace_attr_init

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_init.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.674 posix_trace_attr_setinherited

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_setinherited.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.675 posix_trace_attr_setlogfullpolicy

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_attr_setlogfullpolicy.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.676 posix_trace_attr_setlogsize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_setlogsize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.677 posix_trace_attr_setmaxdatasize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_setmaxdatasize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.678 posix_trace_attr_setname

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_setname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.679 posix_trace_attr_setstreamfullpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_setstreamfullpolicy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.680 posix_trace_attr_setstreamsize

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_attr_setstreamsize.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.681 posix_trace_clear

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_clear.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.682 posix_trace_close

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_close.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.683 posix_trace_create

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_create.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.684 posix_trace_create_withlog

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_create_withlog.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.685 posix_trace_event

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_event.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.686 posix_trace_eventid_equal

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_eventid_equal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.687 posix_trace_eventid_get_name

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_eventid_get_name.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.688 posix_trace_eventid_open

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_eventid_open.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.689 posix_trace_eventset_add

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_eventset_add.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.690 posix_trace_eventset_del

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_eventset_del.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.691 posix_trace_eventset_empty

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_eventset_empty.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.692 posix_trace_eventset_fill

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_eventset_fill.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.693 posix_trace_eventset_ismember

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_eventset_ismember.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.694 posix_trace_eventtypelist_getnext_id

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_eventtypelist_getnext_id.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.695 posix_trace_eventtypelist_rewind

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_eventtypelist_rewind.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.696 posix_trace_flush

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_flush.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.697 posix_trace_get_attr

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_get_attr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.698 posix_trace_get_filter

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_get_filter.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.699 posix_trace_get_status

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_get_status.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.700 posix_trace_getnext_event

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_getnext_event.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.701 posix_trace_open

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_open.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.702 posix_trace_rewind

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_rewind.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.703 posix_trace_set_filter

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_set_filter.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.704 posix_trace_shutdown

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_shutdown.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.705 posix_trace_start

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_start.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.706 posix_trace_stop

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_stop.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.707 posix_trace_timedgetnext_event

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_trace_timedgetnext_event.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.708 posix_trace_trid_eventid_open

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_trid_eventid_open.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.709 posix_trace_trygetnext_event

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_trace_trygetnext_event.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.710 posix_typed_mem_get_info

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/posix_typed_mem_get_info.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.711 posix_typed_mem_open

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / posix_typed_mem_open.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.712 pow

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pow.html

Gnulib module: pow

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.713 powf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/powf.html

Gnulib module: powf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.714 powl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/powl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

9.715 pread

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pread.html

Gnulib module: pread

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 10, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- This function returns zero instead of positive values when large file support is enabled on some platforms: HP-UX 11.11.
- This function does not fail on pipes on some platforms: HP-UX 11.31.

Portability problems not fixed by Gnulib:

9.716 printf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/printf.html

Gnulib module: printf-posix or stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `printf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.

- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems fixed by Gnulib module `stdio` or `printf-posix`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio` or `printf-posix`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the "C" locale on some platforms: NetBSD 5.1.
- Attempting to write to a read-only stream fails with `EOF` but does not set the error flag for `ferror` on some platforms: glibc 2.13, cygwin 1.7.9.

9.717 `pselect`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/pselect.html`

Gnulib module: —

Portability problems fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9, Interix 3.5, BeOS.
- On some platforms, this function fails to detect invalid fds with EBADF, but only if they lie beyond the current maximum open fd: FreeBSD 8.2.

Portability problems not fixed by Gnulib:

- When the *sigmask* argument is nonnull on platforms that do not natively support this function, race conditions are possible when its gnulib implementation temporarily modifies the signal mask, and the behavior is unspecified in a multi-threaded process.

9.718 psiginfo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/psiginfo.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.719 psignal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/psignal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.720 pthread_atfork

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_atfork.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.721 pthread_attr_destroy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_attr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.722 pthread_attr_getdetachstate

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getdetachstate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.723 pthread_attr_getguardsize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getguardsize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.724 pthread_attr_getinheritsched

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getinheritsched.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.725 pthread_attr_getschedparam

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getschedparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.726 pthread_attr_getschedpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getschedpolicy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.727 pthread_attr_getscope

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getscope.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.728 pthread_attr_getstack

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getstack.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.729 pthread_attr_getstacksize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_getstacksize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.730 pthread_attr_init

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_attr_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.731 pthread_attr_setdetachstate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_attr_setdetachstate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.732 pthread_attr_setguardsize

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_attr_setguardsize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.733 pthread_attr_setinheritsched

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_attr_setinheritsched.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.734 pthread_attr_setschedparam

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_setschedparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.735 pthread_attr_setschedpolicy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_setschedpolicy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.736 pthread_attr_setscope

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_setscope.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.737 pthread_attr_setstack

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_setstack.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.738 pthread_attr_setstacksize

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_attr_setstacksize.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.739 pthread_barrier_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrier_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.740 pthread_barrier_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrier_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.741 pthread_barrier_wait

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrier_wait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.742 pthread_barrierattr_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrierattr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.743 pthread_barrierattr_getpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrierattr_getpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.744 pthread_barrierattr_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrierattr_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.745 pthread_barrierattr_setpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_barrierattr_setpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.746 pthread_cancel

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_cancel.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.747 pthread_cleanup_pop

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_cleanup_pop.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.748 pthread_cleanup_push

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_cleanup_push.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.749 pthread_cond_broadcast

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_cond_broadcast.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.750 pthread_cond_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_cond_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.751 pthread_cond_init

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_cond_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.752 pthread_cond_signal

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_cond_signal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.753 pthread_cond_timedwait

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_cond_timedwait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.754 pthread_cond_wait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_cond_wait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.755 pthread_condattr_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.756 pthread_condattr_getclock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_getclock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.757 pthread_condattr_getpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_getpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, BeOS.

9.758 pthread_condattr_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.759 pthread_condattr_setclock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_setclock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.760 pthread_condattr_setpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_condattr_setpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, BeOS.

9.761 pthread_create

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_create.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.
- On Linux/glibc platforms before the advent of NPTL, signals could only be sent to one particular thread. In POSIX, signals are sent to the entire process and executed by any thread of the process that happens to have the particular signal currently unblocked.

9.762 pthread_detach

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_detach.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.763 pthread_equal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_equal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.764 pthread_exit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_exit.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.765 pthread_getconcurrency

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_getconcurrency.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, HP-UX 11, Solaris 2.6, mingw, MSVC 9, BeOS.

9.766 pthread_getcpuclockid

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_getcpuclockid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

9.767 pthread_getschedparam

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_getschedparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.768 pthread_getspecific

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_getspecific.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.769 pthread_join

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_join.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.770 pthread_key_create

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_key_create.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.771 pthread_key_delete

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_key_delete.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.772 pthread_kill

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_kill.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.773 pthread_mutex_consistent

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_consistent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.774 pthread_mutex_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.775 pthread_mutex_getprioceiling

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_getprioceiling.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.776 pthread_mutex_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.777 pthread_mutex_lock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_lock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.778 pthread_mutex_setprioceiling

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_setprioceiling.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.779 pthread_mutex_timedlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_timedlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, BeOS.

9.780 pthread_mutex_trylock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_trylock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.781 pthread_mutex_unlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutex_unlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.782 pthread_mutexattr_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.783 pthread_mutexattr_getprioceiling

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_getprioceiling.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.784 pthread_mutexattr_getprotocol

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_getprotocol.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.785 pthread_mutexattr_getpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_getpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, BeOS.

9.786 pthread_mutexattr_getrobust

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_getrobust.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.787 pthread_mutexattr_gettype

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_gettype.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.6, mingw, MSVC 9, BeOS.

9.788 pthread_mutexattr_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.789 pthread_mutexattr_setprioceiling

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_setprioceiling.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.790 pthread_mutexattr_setprotocol

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_setprotocol.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.791 pthread_mutexattr_setpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_setpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.4, mingw, MSVC 9, BeOS.

9.792 pthread_mutexattr_setrobust

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_setrobust.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.793 pthread_mutexattr_settype

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_mutexattr_settype.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.6, mingw, MSVC 9, BeOS.

9.794 pthread_once

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_once.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.795 pthread_rwlock_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.796 pthread_rwlock_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.797 pthread_rwlock_rdlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_rdlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.798 pthread_rwlock_timedrdlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_timedrdlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, BeOS.

9.799 pthread_rwlock_timedwrlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_timedwrlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, BeOS.

9.800 pthread_rwlock_tryrdlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_tryrdlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.801 pthread_rwlock_trywrlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_trywrlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.802 pthread_rwlock_unlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_unlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.803 pthread_rwlock_wrlock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlock_wrlock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.804 pthread_rwlockattr_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlockattr_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.805 pthread_rwlockattr_getpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlockattr_getpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.806 pthread_rwlockattr_init

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlockattr_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.807 pthread_rwlockattr_setpshared

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_rwlockattr_setpshared.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, HP-UX 11, OSF/1 4.0, Solaris 2.6, mingw, MSVC 9, BeOS.

9.808 pthread_self

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_self.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.809 pthread_setcancelstate

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_setcancelstate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.810 pthread_setcanceltype

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_setcanceltype.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.811 pthread_setconcurrency

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_setconcurrency.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, HP-UX 11, Solaris 2.6, mingw, MSVC 9, BeOS.

9.812 pthread_setschedparam

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_setschedparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 2.4, mingw, MSVC 9, BeOS.

9.813 pthread_setschedprio

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_setschedprio.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.814 pthread_setspecific

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_setspecific.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.815 pthread_sigmask

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_sigmask.html

Gnulib module: pthread_sigmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.
- This function is declared in `<pthread.h>` instead of `<signal.h>` on some platforms: Mac OS X 10.3, FreeBSD 6.4, OpenBSD 3.8, OSF/1 4.0, Solaris 2.6.
- This function does nothing and always returns 0 in programs that are not linked with `-lpthread` on some platforms: FreeBSD 6.4, HP-UX 11.31, Solaris 9.
- When it fails, this functions returns −1 instead of the error number on some platforms: Cygwin 1.7.5.
- This function does not immediately raise signals that were pending before the call and unblocked by the call on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

- On platforms that do not natively support this function, it has unspecified behavior in a multi-threaded process.

9.816 pthread_spin_destroy

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_spin_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.817 pthread_spin_init

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_spin_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.818 pthread_spin_lock

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pthread_spin_lock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.819 pthread_spin_trylock

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_spin_trylock.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.820 pthread_spin_unlock

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_spin_unlock.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

9.821 pthread_testcancel

POSIX specification:
`http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / pthread_testcancel.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.822 ptsname

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/ptsname.html`

Gnulib module: ptsname

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function fails to set errno on failure on some platforms: FreeBSD 8.2.

Portability problems not fixed by Gnulib:

- This function is not declared on some platforms: IRIX 5.3.
- On Solaris 11 2010-11, this function fails on all BSD-style `/dev/pty*` device files.
- This function is not thread-safe on some platforms: Cygwin 1.7.9. Likewise, the gnulib replacement is not thread-safe.

Note that the Gnulib module `ptsname_r` is a version of this function that is more likely to be thread-safe.

9.823 putc

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putc.html`

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.824 putc_unlocked

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putc_unlocked.html`

Gnulib module: —

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.825 putchar

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putchar.html`

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.826 putchar_unlocked

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putchar_unlocked.html`

Gnulib module: —

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.827 putenv

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putenv.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

Extension: Gnulib provides a module '`putenv`' that substitutes a `putenv` implementation that can also be used to remove environment variables.

9.828 putmsg

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putmsg.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.829 putpmsg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/putpmsg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.830 puts

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/puts.html

Gnulib module: stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.831 pututxline

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/pututxline.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.832 putwc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/putwc.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.833 putwchar

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/putwchar.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.834 pwrite

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/pwrite.html`

Gnulib module: pwrite

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 10, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)
- This function does not fail when an invalid (negative) offset is passed when large file support is enabled on some platforms: HP-UX 11.11.
- This function uses an arbitrary offset instead of the `off_t` argument when large file support is enabled on some platforms: HP-UX 11.11.

Portability problems not fixed by Gnulib:

9.835 qsort

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/qsort.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.836 quick_exit

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.837 raise

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/raise.html

Gnulib module: raise

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.
- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.838 rand

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rand.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.839 rand_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rand_r.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.840 random

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/random.html

Gnulib module: random

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.841 read

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/read.html

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.
- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function may fail with error `EINTR`, even in programs that don't install any signal handlers, on some platforms: Mac OS X 10.5.

For handling `EINTR`, Gnulib provides a module '`safe-read`' with a function `safe_read`.

9.842 readdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/readdir.html

Gnulib module: readdir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

9.843 readdir_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/readdir_r.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function is planned to be removed from POSIX and to be deprecated in glibc. Portable applications should use `readdir`.

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.844 `readlink`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/readlink.html`

Gnulib module: readlink

Portability problems fixed by Gnulib:

- Some platforms mistakenly succeed on `readlink("link/",buf,len)`: FreeBSD 7.2, Solaris 9, Mac OS X 10.10.
- On some platforms, `readlink` returns `int` instead of `ssize_t`: glibc 2.4, FreeBSD 6.0, OpenBSD 3.8, Cygwin 1.5.x, AIX 7.1.
- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- When `readlink` is called on a directory: In the case of NFS mounted directories, Cygwin sets `errno` to `ENOENT` or `EIO` instead of `EINVAL`. To avoid this problem, check for a directory before calling `readlink`.
- When `readlink` is called on a file that is not a symbolic link: Irix may set `errno` to `ENXIO` instead of `EINVAL`. Cygwin may set errno to `EACCES` instead of `EINVAL`.
- Symlink contents do not always have a trailing null byte, and there is no indication if symlink contents were truncated if the return value matches the length. Furthermore, AIX 5.1 and HP-UX 11 set `errno` to `ERANGE` rather than returning truncated contents, and Linux sets `errno` to `EINVAL` if the requested length is zero. Use the gnulib module areadlink for improved ability to read symlink contents.

9.845 `readlinkat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/readlinkat.html`

Gnulib module: readlinkat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X < 10.10, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.
- Some platforms mistakenly succeed on `readlink("link/",buf,len)`: Mac OS X 10.10.

- On some platforms, `readlinkat` returns `int` instead of `ssize_t`: AIX 7.1.
-

Portability problems not fixed by Gnulib:

- This function always fails on platforms that don't support symlinks: mingw, MSVC 9.
- When `readlink` is called on a directory: In the case of NFS mounted directories, Cygwin sets `errno` to `ENOENT` or `EIO` instead of `EINVAL`. To avoid this problem, check for a directory before calling `readlink`.
- When `readlink` is called on a file that is not a symbolic link: Irix may set `errno` to `ENXIO` instead of `EINVAL`. Cygwin may set errno to `EACCES` instead of `EINVAL`.
- Symlink contents do not always have a trailing null byte, and there is no indication if symlink contents were truncated if the return value matches the length. Furthermore, AIX 5.1 and HP-UX 11 set `errno` to `ERANGE` rather than returning truncated contents, and Linux sets `errno` to `EINVAL` if the requested length is zero. Use the gnulib module areadlink for improved ability to read symlink contents.

9.846 `readv`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/readv.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.847 `realloc`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/realloc.html`

Gnulib module: realloc-posix

Portability problems fixed by Gnulib:

- Upon failure, the function does not set `errno` to `ENOMEM` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- It is not portable to call `realloc` with a size of 0. With a NULL pointer argument, this is the same ambiguity as `malloc (0)` on whether a unique zero-size object is created. With a non-NULL pointer argument, C99 requires that if `realloc (p, 0)` returns `NULL` then `p` is still valid. Among implementations that obey C99, behavior varies on whether `realloc (p, 0)` always fails and leaves `p` valid, or usually succeeds and returns a unique zero-size object; either way, a program not suspecting these semantics will leak memory (either the still-valid `p`, or the non-NULL return value). Meanwhile, several implementations violate C99, by always calling `free (p)` but returning NULL: glibc, Cygwin

Extension: Gnulib provides a module '`realloc-gnu`' that substitutes a `realloc` implementation that behaves more like the glibc implementation.

9.848 realpath

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/realpath.html

Gnulib module: canonicalize-lgpl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- This function does not allow for a NULL '`resolved`' parameter on some platforms: Mac OS X 10.5, FreeBSD 6.4, OpenBSD 4.4, Solaris 10.
- This function does not always return an absolute path on some platforms: Solaris 10.
- This function fails to detect trailing slashes on non-directories on some platforms: glibc 2.3.5.
- This function fails to recognize non-directories followed '`..`' on some platforms: cygwin.
- This function misbehaves on consecutive slashes on some platforms: AIX 7.

Portability problems not fixed by Gnulib:

- This function does not allow to determine the required size of output buffer; the use of a non-NULL '`resolved`' buffer is non-portable, since PATH_MAX, if it is defined, is nothing more than a guess.

9.849 recv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/recv.html

Gnulib module: recv

Portability problems fixed by Gnulib:

- This function has the return type `int` instead of `ssize_t` on some platforms: OSF/1 5.1.
- On Windows platforms (excluding Cygwin), error codes for `recv` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.850 recvfrom

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/recvfrom.html

Gnulib module: recvfrom

Portability problems fixed by Gnulib:

- This function has the return type `int` instead of `ssize_t` on some platforms: OSF/1 5.1.
- On Windows platforms (excluding Cygwin), error codes for `recvfrom` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- Some platforms don't have a `socklen_t` type; in this case this function's sixth argument type is '`int *`'.

9.851 recvmsg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/recvmsg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, Interix 3.5, BeOS.

9.852 regcomp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/regcomp.html

Gnulib module: regex

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- Many regular expression implementations have bugs.

Portability problems not fixed by Gnulib:

9.853 regerror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/regerror.html

Gnulib module: regex

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.854 regexec

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/regexec.html

Gnulib module: regex

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- Many regular expression implementations have bugs.

Portability problems not fixed by Gnulib:

9.855 regfree

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/regfree.html

Gnulib module: regex

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.856 remainder

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remainder.html

Gnulib module: remainder or remainder-ieee

Portability problems fixed by either Gnulib module `remainder` or `remainder-ieee`:

- This function is missing on some platforms: MSVC 9.
- This function is not declared on some platforms: IRIX 5.3.

Portability problems fixed by Gnulib module `remainder-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.857 remainderf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remainderf.html

Gnulib module: remainderf or remainderf-ieee

Portability problems fixed by either Gnulib module `remainderf` or `remainderf-ieee`:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, MSVC 9.
- This function is not declared on some platforms: IRIX 6.5.
- This function may go into an endless loop on some platforms: IRIX 6.5.

Portability problems fixed by Gnulib module `remainderf-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.858 remainderl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remainderl.html

Gnulib module: remainderl or remainderl-ieee

Portability problems fixed by either Gnulib module `remainderl` or `remainderl-ieee`:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: IRIX 6.5.
- This function returns completely wrong values on some platforms: OpenBSD 5.1/SPARC.

Portability problems fixed by Gnulib module `remainderl-ieee`:

- This function has problems when the second argument is zero on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.859 remove

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remove.html

Gnulib module: remove

Portability problems fixed by Gnulib:

- This function fails to reject trailing slashes on non-directories on some platforms: FreeBSD 7.2, Solaris 9.
- This function mistakenly removes a directory with `remove("dir/./")` on some platforms: Cygwin 1.5.x.
- This function does not remove empty directories on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.860 remque

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remque.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.861 remquo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remquo.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.862 remquof

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remquof.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.863 remquol

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/remquol.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.864 rename

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rename.html

Gnulib module: rename

Portability problems fixed by Gnulib:

- This function does not allow trailing slashes when creating a destination directory, as in `rename("dir","new/")`: NetBSD 1.6.
- This function does not reject trailing slashes on the destination for non-directories on some platforms, as in `rename("file","new/")`: AIX 7.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.

- This function does not reject trailing slashes on symlinks to non-directories on some platforms, as in `rename("link-to-file/","f")`: FreeBSD 7.2.
- This function ignores trailing slashes on symlinks on some platforms, such that `rename("link/","new")` corrupts `link`: Solaris 9.
- This function incorrectly reduces the link count when comparing two spellings of a hard link on some platforms: NetBSD 1.6, Cygwin 1.5.x.
- This function will not always replace an existing destination on some platforms: Cygwin 1.5.x, mingw, MSVC 9. However, the replacement is not atomic for directories, and may end up losing the empty destination if the source could not be renamed.
- This function mistakenly allows names ending in '`.`' or '`..`' on some platforms: Cygwin 1.5.x, mingw, MSVC 9.
- This function does not reject attempts to rename existing directories and non-directories onto one another on some platforms: Cygwin 1.5.x, mingw, MSVC 9.
- This function does not allow trailing slashes on source directories on older platforms, as in '`rename("dir/","new")`': SunOS 4.1.

Portability problems not fixed by Gnulib:

- POSIX requires that `rename("symlink-to-dir/","dir2")` rename `dir` and leave `symlink-to-dir` dangling; likewise, it requires that `rename("dir","dangling/")` rename `dir` so that `dangling` is no longer a dangling symlink. This behavior is counter-intuitive, so on some systems, `rename` fails with `ENOTDIR` if either argument is a symlink with a trailing slash: glibc, OpenBSD, Cygwin 1.7.
- After renaming a non-empty directory over an existing empty directory, the old directory name is still visible through the `stat` function for 30 seconds after the rename, on NFS file systems, on some platforms: Linux 2.6.18.
- This function will not rename a source that is currently opened by any process: mingw, MSVC 9.

9.865 `renameat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/renameat.html`

Gnulib module: renameat

Portability problems fixed by Gnulib:

- This function does not reject trailing slashes on non-directories on some platforms, as in `renameat(fd,"file",fd,"new/")`: Solaris 11 2011-11.
- This function ignores trailing slashes on symlinks on some platforms, such that `renameat(fd,"link/",fd,"new")` corrupts `link`: Solaris 9.
- This function is declared in `<unistd.h>` instead of `<stdio.h>` on some platforms: Solaris 11 2011-11.
- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.

Portability problems not fixed by Gnulib:

- POSIX requires that `renameat(fd,"symlink-to-dir/",fd,"dir2")` rename `dir` and leave `symlink-to-dir` dangling; likewise, it requires that `renameat(fd,"dir",fd,"dangling/")` rename `dir` so that `dangling` is no longer a dangling symlink. This behavior is counter-intuitive, so on some systems, `renameat` fails with `ENOTDIR` if either argument is a symlink with a trailing slash: glibc, OpenBSD, Cygwin 1.7.
- After renaming a non-empty directory over an existing empty directory, the old directory name is still visible through the `stat` function for 30 seconds after the rename, on NFS file systems, on some platforms: Linux 2.6.18.
- This function will not rename a source that is currently opened by any process: mingw, MSVC 9.

9.866 `rewind`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/rewind.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.867 `rewinddir`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/rewinddir.html`

Gnulib module: rewinddir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.
- On Mac OS X platforms where `long int` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

9.868 `rint`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/rint.html`

Gnulib module: rint

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.869 rintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rintf.html

Gnulib module: rintf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, Solaris 9, MSVC 9.
- This function is not declared on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

9.870 rintl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rintl.html

Gnulib module: rintl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

9.871 rmdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/rmdir.html

Gnulib module: rmdir

Portability problems fixed by Gnulib:

- This function is declared in different header files (namely, <io.h> or <direct.h>) on some platforms: mingw, MSVC 9.
- This function mistakenly removes a directory with `rmdir("dir/./")` on some platforms: Cygwin 1.5.x.
- This function fails with `EINVAL` instead of the expected `ENOTDIR` for `rmdir("file/")` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- When `rmdir` fails because the specified directory is not empty, the `errno` value is system dependent.
- POSIX requires that `rmdir("link-to-empty/")` remove `empty` and leave `link-to-empty` as a dangling symlink. This is counter-intuitive, so some systems fail with `ENOTDIR` instead: glibc

9.872 round

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/round.html

Gnulib module: round or round-ieee

Portability problems fixed by either Gnulib module round or round-ieee:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, older IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: glibc 2.8, IRIX 6.5, OSF/1 5.1.
- This functions returns a wrong result for $x = 1/2 - 2^{-}54$ on some platforms: NetBSD 3.0, AIX 7.1.

Portability problems fixed by Gnulib module round-ieee:

- This function returns a positive zero for an argument between −0.5 and 0 on some platforms: AIX 7.1, OSF/1 5.1.
- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.873 roundf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/roundf.html

Gnulib module: roundf or roundf-ieee

Portability problems fixed by either Gnulib module roundf or roundf-ieee:

- This function is missing on some platforms: FreeBSD 5.2.1, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared on some platforms: glibc 2.8, IRIX 6.5, OSF/1 5.1.
- This functions returns a wrong result for $x = 1/2 - 2^{-}25$ on some platforms: mingw.

Portability problems fixed by Gnulib module roundf-ieee:

- This function returns a positive zero for an argument between −0.5 and 0 on some platforms: AIX 7.1, OSF/1 5.1.
- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.874 roundl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/roundl.html

Gnulib module: roundl or roundl-ieee

Portability problems fixed by either Gnulib module roundl or roundl-ieee:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, older IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

- This function is not declared on some platforms: glibc 2.8, IRIX 6.5, OSF/1 5.1.

Portability problems fixed by Gnulib module `roundl-ieee`:

- This function returns a positive zero for an argument between −0.5 and 0 on some platforms: AIX 7.1.
- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.875 `scalbln`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/scalbln.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.876 `scalblnf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/scalblnf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5.

9.877 `scalblnl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/scalblnl.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5.

9.878 scalbn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/scalbn.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, IRIX 6.5, OSF/1 4.0, MSVC 9.

9.879 scalbnf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/scalbnf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9.

9.880 scalbnl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/scalbnl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5.

9.881 scandir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/scandir.html

Gnulib module: scandir

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 9, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

- The fourth parameter of this function is declared as `int (*) (const void *, const void *)` on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Interix 3.5.

- The fourth parameter of this function is declared as `int (*) (void *, void *)` on some platforms: AIX 5.1.

9.882 scanf

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/scanf.html`

Gnulib module: stdio, nonblocking

Portability problems fixed by Gnulib module `stdio`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- C99 and POSIX.1-2001 and later require end-of-file to be sticky, that is, they require this function to act as if it reads end-of-file if `feof` would return nonzero. However, on some systems this function attempts to read from the underlying file descriptor even if the stream's end-of-file indicator is set. These systems include glibc and default Solaris.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, this function doesn't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.883 sched_get_priority_max

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sched_get_priority_max.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.884 sched_get_priority_min

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sched_get_priority_min.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, mingw, MSVC 9, BeOS.

9.885 sched_getparam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sched_getparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.886 sched_getscheduler

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sched_getscheduler.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.887 sched_rr_get_interval

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sched_rr_get_interval.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.888 sched_setparam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sched_setparam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.889 sched_setscheduler

POSIX specification:
http: / / www . opengroup . org / onlinepubs / 9699919799 / functions / sched_setscheduler.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.890 sched_yield

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sched_yield.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.891 seed48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/seed48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.892 seekdir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/seekdir.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: MSVC 9, BeOS.
- On platforms where `long int` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro (only on Mac OS X systems).

9.893 select

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/select.html

Gnulib module: select

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), `select` can only be called on descriptors created by the `socket` function, not on regular file descriptors.
- On Windows platforms (excluding Cygwin), error codes for `accept` are not placed in `errno`, and `WSAGetLastError` must be used instead.
- This function fails when the `nfds` argument is 0 on some platforms: Interix 3.5.
- On some platforms, this function fails to detect invalid fds with EBADF, but only if they lie beyond the current maximum open fd: FreeBSD 8.2.

Portability problems not fixed by Gnulib:

- When you call `select` with a timeout, some implementations modify the timeout parameter so that upon return from the function, it contains the amount of time not slept. Other implementations leave the timeout parameter unmodified.
- On BeOS, `select` can only be called on descriptors created by the `socket` function, not on regular file descriptors.
- Under Windows, when passing a pipe, Gnulib's `select` replacement might return 0 even before the timeout has passed. Programs using it with pipes can thus busy wait.
- On Solaris 2.6 and older, `select` applied to a file descriptor opened for reading and associated with `/dev/null` hangs, waiting for input, when instead it should return immediately.
- On Linux, when some file descriptor refers to a regular file, `select` may fail, setting `errno` to `EBADF`.
- This function is declared in `<unistd.h>`, not `<sys/select.h>`, on some platforms: IRIX 5.3.

9.894 sem_close

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_close.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.895 sem_destroy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_destroy.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.
- This function is not implemented on some platforms: Mac OS X 10.11.

9.896 sem_getvalue

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_getvalue.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.
- This function is not implemented on some platforms: Mac OS X 10.11.

9.897 sem_init

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_init.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.
- This function is not implemented on some platforms: Mac OS X 10.11.

9.898 sem_open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_open.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.899 sem_post

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_post.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.900 sem_timedwait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_timedwait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9, BeOS.

9.901 sem_trywait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_trywait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.902 sem_unlink

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_unlink.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

9.903 sem_wait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sem_wait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, BeOS.

9.904 semctl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/semctl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.905 semget

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/semget.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.906 semop

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/semop.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.907 send

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/send.html

Gnulib module: send

Portability problems fixed by Gnulib:

- This function has the return type `int` instead of `ssize_t` on some platforms: OSF/1 5.1.
- On Windows platforms (excluding Cygwin), error codes for `send` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.908 sendmsg

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sendmsg.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, Interix 3.5, BeOS.

9.909 sendto

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sendto.html

Gnulib module: sendto

Portability problems fixed by Gnulib:

- This function has the return type `int` instead of `ssize_t` on some platforms: OSF/1 5.1.
- On Windows platforms (excluding Cygwin), error codes for `sendto` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.910 setbuf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setbuf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.911 setegid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setegid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.23, mingw, MSVC 9, BeOS.

9.912 setenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setenv.html

Gnulib module: setenv

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 4.3.2, HP-UX 11.23, IRIX 6.5, Solaris 9, mingw, MSVC 9, BeOS.
- This function is not declared on some platforms: OSF/1 5.1.
- On some platforms, this function does not fail with '`EINVAL`' when passed an empty string or a string containing '`=`': Mac OS X 10.5, FreeBSD 6.0, NetBSD 1.6, OpenBSD 3.8, Cygwin 1.5.x.
- On some platforms, this function removes a leading '`=`' from the value argument: Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

- Older versions of POSIX required that `setenv(NULL,"",0)` gracefully fail with `EINVAL`, but not all implementations guarantee this, and the requirement was removed.

9.913 seteuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/seteuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.23, mingw, MSVC 9, BeOS.

9.914 setgid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setgid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.915 setgrent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setgrent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.916 sethostent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sethostent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.917 setitimer

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setitimer.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.918 setjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- POSIX does not specify whether `setjmp` saves the signal mask in the `jmp_buf`. It does on BSD platforms, and on glibc platforms when `_BSD_SOURCE` (and/or `_DEFAULT_SOURCE` on glibc >= 2.19) is defined; in this case `setjmp` behaves like `sigsetjmp(.,1)`, and functions `_setjmp` and `_longjmp` are available that don't save or restore the signal mask. On System V platforms (excluding HP-UX), and on glibc platforms by default, `setjmp` doesn't save the signal mask.

9.919 setkey

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setkey.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.
- This function is not declared in <stdlib.h> (without -D_GNU_SOURCE) on some platforms: glibc (at least 2.11–2.13).

9.920 setlocale

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setlocale.html

Gnulib module: setlocale

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), setlocale(*category*,NULL) ignores the environment variables LC_ALL, *category*, and LANG.
- On Windows platforms (excluding Cygwin) and Cygwin 1.5.x, setlocale(LC_ALL,*name*) succeeds and sets the LC_CTYPE category to 'C' when it does not support the encoding, instead of failing.
- On Windows platforms (excluding Cygwin), setlocale understands different locale names, that are not based on ISO 639 language names and ISO 3166 country names.

Portability problems not fixed by Gnulib:

- On Cygwin 1.5.x, which doesn't have locales, setlocale(LC_ALL,NULL) always returns "C".
- On Cygwin 1.7.0, only the charset portion of a locale designation is honored.
- On OpenBSD, setlocale(LC_ALL,"") will only update categories that are deemed appropriate for the LC_ALL environment value, even if there are other categories set to different values in the environment. In addition any value is accepted for LC_CTYPE, and so NULL is never returned to indicate a failure to set locale. To verify category values, each category must be set individually with setlocale(LC_COLLATE,"") etc.

9.921 setlogmask

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setlogmask.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.922 setnetent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setnetent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin, mingw, MSVC 9, BeOS.

9.923 setpgid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setpgid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.924 setpgrp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setpgrp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5.

9.925 setpriority

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setpriority.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, BeOS.

9.926 setprotoent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setprotoent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.927 setpwent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setpwent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.928 setregid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setregid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.929 setreuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setreuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, BeOS.

9.930 setrlimit

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setrlimit.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- On platforms where `rlim_t` is a 32-bit type, this function does not allow to set limits larger than 4 GB, such as for RLIMIT_FSIZE. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.931 setservent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setservent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.932 setsid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setsid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.933 setsockopt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setsockopt.html

Gnulib module: setsockopt

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `setsockopt` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- Many socket options are not available on all platforms.

9.934 setstate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setstate.html

Gnulib module: random

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function has a slightly incompatible declaration (the argument type being '`const char *`' instead of '`char *`') on some platforms.

9.935 setuid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setuid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.936 setutxent

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setutxent.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.937 setvbuf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/setvbuf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.938 shm_open

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shm_open.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.939 shm_unlink

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shm_unlink.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.940 shmat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shmat.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- Attempts to `shmat` into a previously malloc-ed region fail on SunOS 4, with `errno` set to `EINVAL`, even if there is an `munmap` call in between.
- On Linux, the flag `SHM_REMAP` is needed in order to force `shmat` to replace existing memory mappings in the specify address range. On other platforms, it is not needed.

9.941 shmctl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shmctl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.942 shmdt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shmdt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.943 shmget

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shmget.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.
- On many platforms (not Linux), SHMMAX is so small that it is unusable for reasonable applications, and/or `shmget` requires superuser privileges.

9.944 shutdown

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/shutdown.html

Gnulib module: shutdown

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), error codes for `shutdown` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

9.945 sigaction

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigaction.html

Gnulib module: sigaction

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- POSIX recommends that when specifying SA_RESETHAND, SA_NODEFER must also be specified.
- Support for SA_ONSTACK is missing on some platforms: mingw, MSVC 9, cygwin.
- Support for SA_SIGINFO is missing on some platforms: mingw, MSVC 9, Interix 3.5.
- Support for SIGCHLD, and thus for SA_NOCLDSTOP and SA_NOCLDWAIT, is missing on some platforms: mingw, MSVC 9.
- Support for SA_RESETHAND is missing on some platforms: NonStop.
- Support for SA_RESTART is missing on some platforms: mingw, MSVC 9, NonStop.
- In spite of having SA_SIGACTION, struct sigaction lacks the sa_sigaction member on some platforms: Irix 5.3.
- The symbolic value `SIG_IGN` for the `SIGCHLD` signal is equivalent to a signal handler

```
void handle_child (int sigchld)
{
  while (waitpid (-1, NULL, WNOHANG) > 0)
```

```
    ;
}
```

except that `SIG_IGN` for `SIGCHLD` has the effect that the children execution times are not accounted in the `times` function. On some platforms (BSD? SystemV? Linux?), you need to use the `sigaction` flag `SA_NOCLDWAIT` in order to obtain this behavior.

9.946 `sigaddset`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sigaddset.html`

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.947 `sigaltstack`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sigaltstack.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- `sigaltstack` doesn't work on HP-UX 11/IA-64 and OpenBSD 3.6/Sparc64.
- This function interprets the `ss_sp` member of `stack_t` as the upper bound instead of the lower bound of the alternate stack on some platforms: Irix 6.5

9.948 `sigdelset`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sigdelset.html`

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.949 sigemptyset

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigemptyset.html

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.950 sigfillset

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigfillset.html

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.951 sighold

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sighold.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.952 sigignore

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigignore.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

9.953 siginterrupt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/siginterrupt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, mingw, MSVC 9, Interix 3.5, BeOS.

Note: POSIX recommends using `sigaction` with SA_RESTART instead of `siginterrupt (sig, 0)`.

9.954 sigismember

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigismember.html

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.955 siglongjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/siglongjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.
- This is only provided as a macro on some platforms: Cygwin.

9.956 signal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/signal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.

- On System V platforms, when the signal is triggered, the kernel uninstalls the handler (i.e. resets the signal's action to SIG_DFL) before invoking the handler. This opens the door to race conditions: undesired things happen if the signal is triggered twice and the signal handler was not quick enough reinstalling itself as a handler. On BSD platforms and glibc platforms, on the other hand, when the signal is triggered, the kernel blocks the signal before invoking the handler. This is saner, but POSIX still allows either behavior. To avoid this problem, use `sigaction` instead of `signal`.

9.957 `signbit`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/signbit.html`

Gnulib module: signbit

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

9.958 `signgam`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/signgam.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.

9.959 `sigpause`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sigpause.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

9.960 `sigpending`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sigpending.html`

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.961 sigprocmask

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigprocmask.html

Gnulib module: sigprocmask

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.962 sigqueue

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigqueue.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.963 sigrelse

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigrelse.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

9.964 sigset

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigset.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

9.965 sigsetjmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigsetjmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.966 sigsuspend

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigsuspend.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.967 sigtimedwait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigtimedwait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- Linux implements the meaning of NULL timeout by doing what `sigwaitinfo` does; other platforms may not do the same.

9.968 sigwait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigwait.html

Gnulib module: extensions

Portability problems fixed by Gnulib:

- This function has an incompatible declaration on some platforms: Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- On Linux/glibc platforms before the advent of NPTL, signals could only be sent to one particular thread. In POSIX, signals are sent to the entire process and executed by any thread of the process that happens to have the particular signal currently unblocked.

9.969 sigwaitinfo

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sigwaitinfo.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS.

9.970 sin

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sin.html

Gnulib module: sin

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.971 sinf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sinf.html

Gnulib module: sinf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.972 sinh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sinh.html

Gnulib module: sinh

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.973 sinhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sinhf.html

Gnulib module: sinhf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.974 sinhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sinhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

9.975 sinl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sinl.html

Gnulib module: sinl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.976 sleep

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sleep.html

Gnulib module: sleep

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw (2005 or newer), MSVC 9.
- This function takes milliseconds as argument and returns `void` on some platforms: mingw (2005 and older).
- This function cannot sleep longer than 49.7 days on some platforms: Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

- According to POSIX, the `sleep` function may interfere with the program's use of the `SIGALRM` signal. On Linux, it doesn't; on other platforms, it may.

9.977 snprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/snprintf.html

Gnulib module: snprintf or snprintf-posix

Portability problems fixed by either Gnulib module `snprintf` or `snprintf-posix`:

- This function is missing on some platforms: IRIX 5.3, OSF/1 4.0, Solaris 2.5.1, MSVC 9.

- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, BeOS.
- This function does not return a byte count as specified in C99 on some platforms: HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw.
- This function overwrites memory even when a size argument of 1 is passed on some platforms: Linux libc5, BeOS.

Portability problems fixed by Gnulib module `snprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.
- This function does not truncate the result as specified in C99 on some platforms: mingw, MSVC 9.

- This function does not fully support the '`n`' directive on some platforms: HP-UX 11, mingw, MSVC 9.
- This function overwrites memory even when a zero size argument is passed on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.

9.978 `sockatmark`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sockatmark.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.979 `socket`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/socket.html`

Gnulib module: socket

Portability problems fixed by Gnulib:

- On Windows platforms (excluding Cygwin), the descriptors returned by the `socket` function cannot be used in calls to `read`, `write`, and `close`; you have to use `recv`, `send`, `closesocket` in these cases instead.
- On Windows platforms (excluding Cygwin), error codes for `socket` are not placed in `errno`, and `WSAGetLastError` must be used instead.

Portability problems not fixed by Gnulib:

- On BeOS, the descriptors returned by the `socket` function cannot be used in calls to `read`, `write`, and `close`; you have to use `recv`, `send`, `closesocket` in these cases instead.

9.980 `socketpair`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/socketpair.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.981 sprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sprintf.html

Gnulib module: sprintf-posix

Portability problems fixed by Gnulib:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.

9.982 `sqrt`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sqrt.html`

Gnulib module: sqrt

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3.

9.983 `sqrtf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sqrtf.html`

Gnulib module: sqrtf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.984 `sqrtl`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/sqrtl.html`

Gnulib module: sqrtl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.
- This function produces very imprecise results on some platforms: OpenBSD 5.1/SPARC.

Portability problems not fixed by Gnulib:

9.985 srand

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/srand.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.986 srand48

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/srand48.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.987 srandom

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/srandom.html

Gnulib module: random

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.988 sscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sscanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, this function doesn't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.989 stat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/stat.html

Gnulib module: stat

Portability problems fixed by Gnulib:

- On platforms where `off_t` is a 32-bit type, `stat` may not correctly report the size of files or block devices larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

- The `st_atime`, `st_ctime`, `st_mtime` fields are affected by the current time zone and by the DST flag of the current time zone on some platforms: mingw, MSVC 14 (when the environment variable `TZ` is set).
- On MSVC 14, this function fails with error `ENOENT` on files such as '`C:\pagefile.sys`' and on directories such as '`C:\System Volume Information`'.
- On some platforms, `stat("link-to-file/",buf)` succeeds instead of failing with `ENOTDIR`. FreeBSD 7.2, AIX 7.1, Solaris 9, mingw64.
- On some platforms, `stat(".",buf)` and `stat("./",buf)` give different results: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- See Section 8.63 [sys/stat.h], page 63, for general portability problems with `struct stat`.
- Cygwin's `stat` function sometimes sets `errno` to `EACCES` when `ENOENT` would be more appropriate.
- Because of the definition of `struct stat`, it is not possible to portably replace `stat` via an object-like macro. Therefore, expressions such as `(islnk ? lstat : stat) (name, buf)` are not portable, and should instead be written `islnk ? lstat (name, buf) : stat (name, buf)`.

9.990 `statvfs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/statvfs.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, mingw, MSVC 9.
- This function can hang if it stats all preceding entries in /proc/mounts, and any of those file systems are hard-mounted and not available. This affects Linux < 2.6.36.
- On platforms where `f_blocks` in '`struct statvfs`' is a 32-bit value, this function may not work correctly on files systems larger than 4 TiB. The fix is to use the `AC_SYS_LARGEFILE` macro. This affects glibc/Hurd, HP-UX 11, Solaris.

Gnulib provides a module `fsusage` that provides similar information as `statvfs`.

9.991 `stderr`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/stderr.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- stderr is created in 32-bit mode instead of 64-bit mode: Cygwin 1.5.x. One workaround is to use freopen(NULL, "r+", stderr) on Cygwin 1.5.21 or newer. Another is to use the gnulib ftello module and do ftello(stderr).
- POSIX states that a setuid application can guarantee that fd 2 is open, but some systems guarantee this even for non-setuid programs. If an application is executed with fd 2 closed, use of `stderr` can affect an unrelated file that happened to be assigned to fd 2. The gnulib *-safer modules may be used to guarantee that fd 2 stays reserved for `stderr`.

9.992 `stdin`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/stdin.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- stdin is created in 32-bit mode instead of 64-bit mode: Cygwin 1.5.x. One workaround is to use freopen(NULL, "r", stdin) on Cygwin 1.5.21 or newer. Another is to use the gnulib ftello module and do ftello(stdin).
- POSIX states that a setuid application can guarantee that fd 0 is open, but some systems guarantee this even for non-setuid programs. If an application is executed with fd 0 closed, use of `stdin` can affect an unrelated file that happened to be assigned to fd 0. The gnulib *-safer modules may be used to guarantee that fd 0 stays reserved for `stdin`.

9.993 `stdout`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/stdout.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- stdout is created in 32-bit mode instead of 64-bit mode: Cygwin 1.5.x. One workaround is to use freopen(NULL, "w", stdout) on Cygwin 1.5.21 or newer. Another is to use the gnulib ftello module and do ftello(stdout).
- POSIX states that a setuid application can guarantee that fd 1 is open, but some systems guarantee this even for non-setuid programs. If an application is executed with fd 1 closed, use of `stdout` can affect an unrelated file that happened to be assigned to fd 1. The gnulib *-safer modules may be used to guarantee that fd 1 stays reserved for `stdout`.

9.994 `stpcpy`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/stpcpy.html`

Gnulib module: stpcpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.995 `stpncpy`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/stpncpy.html`

Gnulib module: stpncpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has an incompatible return value on some platforms: AIX 5.1.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.996 `strcasecmp`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strcasecmp.html`

Gnulib module: strcase

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides an alternative function `mbscasecmp` that does a case insensitive comparison of character strings and that works in all locales.

9.997 `strcasecmp_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strcasecmp_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.998 strcat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcat.html

Gnulib module: string

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.999 strchr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strchr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in some multibyte locales. Gnulib provides an alternative function `mbschr` that works on character strings in all locales.

9.1000 strcmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1001 strcoll

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcoll.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function fails, setting `errno` to `EILSEQ`, on Solaris 10, in UTF-8 locales, when at least one of the strings contains a Unicode character in a block that was not assigned in Unicode 4.0.

9.1002 strcoll_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcoll_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1003 strcpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcpy.html

Gnulib module: string

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.1004 strcspn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strcspn.html

Gnulib module: strcspn

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides an alternative function `mbscspn` that works on character strings in all locales.

9.1005 strdup

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strdup.html

Gnulib module: strdup or strdup-posix

Portability problems fixed by either Gnulib module `strdup` or `strdup-posix`:

- This function is missing on some old platforms.
- This function has no prototype in `<string.h>` on some old platforms.

Portability problems fixed by Gnulib module `strdup-posix`:

- Upon failure, the function does not set `errno` to `ENOMEM` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.1006 strerror

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strerror.html

Gnulib module: strerror

Portability problems fixed by Gnulib:

- This function does not support the error values that are specified by POSIX but not defined by the system, on some platforms: OpenBSD 4.0, OSF/1 5.1, NonStop Kernel, Cygwin 1.5.x, mingw, MSVC 9.
- This function reports failure for `strerror(0)` (by setting `errno` or using a string similar to out-of-range values), although POSIX requires this to leave `errno` unchanged and report success, on some platforms: FreeBSD 8.2, OpenBSD 4.7, Mac OS X 10.5.
- This function fails to return a string for out-of-range integers on some platforms: HP-UX 11, IRIX 6.5, Solaris 8. (Some return NULL which is a POSIX violation, others return the empty string which is valid but not as useful); this can still cause bugs because most programs call `strerror` without setting and testing `errno`.)

Portability problems not fixed by Gnulib:

9.1007 strerror_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strerror_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1008 strerror_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strerror_r.html

Gnulib module: strerror_r-posix

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, Minix 3.1.8, HP-UX 11.23, IRIX 6.5, Solaris 9, mingw, MSVC 9.
- glibc and Cygwin have an incompatible version of this function. The POSIX compliant code

  ```
  char *s = (strerror_r (err, buf, buflen) == 0 ? buf : NULL);
  ```

  is essentially equivalent to this code using the glibc function:

  ```
  char *s = strerror_r (err, buf, buflen);
  ```

- This function clobbers the `strerror` buffer on some platforms: Cygwin 1.7.9.

- This function is sometimes not declared in `<string.h>` on some platforms: glibc 2.8, OSF/1 5.1.
- The third argument is of type `int` instead of `size_t` on some platforms: AIX 5.1, OSF/1 5.1.
- When this function fails, it returns −1 and sets `errno`, instead of returning the error number, on some platforms: glibc 2.12 with `-D_POSIX_C_SOURCE=200112L`, AIX 6.1, OSF/1 5.1.
- When this function fails, it corrupts `errno`, on some platforms: Solaris 10.
- This function does not support many error values defined in `<errno.h>` on some platforms: MSVC 14.
- This function does not support the error values that are specified by POSIX but not defined by the system, on some platforms: OpenBSD 4.0, OSF/1 5.1, NonStop Kernel, Cygwin 1.5.x.
- This function reports failure for `strerror_r(0, buf, len)`, although POSIX requires this to succeed, on some platforms: FreeBSD 8.2.
- This function produces a different string for `0` than `strerror` on some platforms: Mac OS X 10.5.
- This function always fails when the third argument is less than 80 on some platforms: HP-UX 11.31.
- When the buffer is too small and the value is in range, this function does not fail, but instead truncates the result and returns 0 on some platforms: AIX 6.1, OSF/1 5.1.
- When the value is not in range or the buffer is too small, this function fails to leave a NUL-terminated string in the buffer on some platforms: glibc 2.13, FreeBSD 8.2, Solaris 10.
- When the value is out of range but the buffer is too small, this function does not always return the longest possible string on some platforms: OpenBSD 4.7.

Portability problems not fixed by Gnulib:

9.1009 `strfmon`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strfmon.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin 1.7.1, mingw, MSVC 9, BeOS.

9.1010 `strfmon_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strfmon_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1011 `strftime`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strftime.html`

Gnulib module: strftime-fixes

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable `TZ` has been set by Cygwin.

Portability problems not fixed by Gnulib:

- The Windows C runtime library (which is used by MinGW) does not support the %e specifier (and possibly the other more recent SUS specifiers too, i.e., %C, %D, %h, %n, %r, %R, %t, and %T).
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

Extension: Gnulib offers a module '`strftime`' that provides an `nstrftime` function with various GNU extensions.

9.1012 `strftime_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strftime_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1013 `strlen`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strlen.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1014 strncasecmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strncasecmp.html

Gnulib module: strcase

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides alternative functions `mbsncasecmp` and `mbspcasecmp` that do a case insensitive comparison of character strings and that work in all locales.

9.1015 strncasecmp_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strncasecmp_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1016 strncat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strncat.html

Gnulib module: strncat

Portability problems fixed by Gnulib:

- This function dereferences too much memory on some platforms: Solaris 10 on SPARC.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.1017 strncmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strncmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1018 strncpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strncpy.html

Gnulib module: string

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.1019 strndup

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strndup.html

Gnulib module: strndup

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5, BeOS.
- This function does not NUL-terminate the result on some platforms: AIX 5.1.

Portability problems not fixed by Gnulib:

9.1020 strnlen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strnlen.html

Gnulib module: strnlen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, Interix 3.5.
- This function is buggy on some platforms: AIX 4.3.

Portability problems not fixed by Gnulib:

9.1021 strpbrk

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strpbrk.html

Gnulib module: strpbrk

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides an alternative function `mbspbrk` that works on character strings in all locales.

9.1022 strptime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strptime.html

Gnulib module: strptime

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.1023 strrchr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strrchr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in some multibyte locales. Gnulib provides an alternative function `mbsrchr` that works on character strings in all locales.

9.1024 strsignal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strsignal.html

Gnulib module: strsignal

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.
- This function does not return a string for out-of-range numbers on some platforms: Solaris, AIX 5.1.
- This function is declared in `unistd.h` instead of `string.h` on some platforms: NetBSD 5.0.

Portability problems not fixed by Gnulib:

- This function returns `const char *` instead of `char *` on some platforms: cygwin 1.5.25.

9.1025 strspn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strspn.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides an alternative function `mbsspn` that works on character strings in all locales.

9.1026 `strstr`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strstr.html`

Gnulib module: strstr or strstr-simple

Portability problems fixed by either Gnulib module `strstr-simple` or `strstr`:

- This function can trigger memchr bugs on some platforms: glibc 2.10.
- This function can trigger false positives for long periodic needles on some platforms: glibc 2.12, Cygwin 1.7.7.

Portability problems fixed by Gnulib `strstr`:

- This function has quadratic instead of linear worst-case complexity on some platforms: glibc 2.8, Mac OS X 10.5, FreeBSD 6.2, NetBSD 5.0, OpenBSD 4.0, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in most multibyte locales. Gnulib provides an alternative function `mbsstr` that works on character strings in all locales.

9.1027 `strtod`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strtod.html`

Gnulib module: strtod or strtod-obsolete

Portability problems fixed by either Gnulib module `strtod` or `strtod-obsolete`:

- This function mis-parses strings with leading '`+`' on some old platforms: Old versions of Linux.
- This function returns a wrong end pointer on some old platforms.
- This function consumes whitespace even when there is nothing that should be parsed on some platforms: IRIX 6.5, OSF/1 5.1.
- This function allows whitespace between '`e`' and the exponent on some platforms: HP-UX 11.11, IRIX 6.5, OSF/1 4.0.
- This function returns the wrong end pointer for '`-0x`' on some platforms: glibc 2.4, Mac OS X 10.5, FreeBSD 6.2, AIX 7.1, Cygwin < 1.5.25-11.
- This function returns +0.0 (not −0.0) for '`-0`' on some platforms: IRIX 6.5, OSF/1 4.0.
- This function fails to parse Infinities and plain NaNs on some platforms: OpenBSD 4.0, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9.
- This function fails to parse '`NaN()`' on some platforms: glibc-2.3.6, Mac OS X 10.5, FreeBSD 6.2, OpenBSD 4.0, AIX 7.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Cygwin < 1.5.25-11, mingw, MSVC 9.
- This function fails to parse '`NaN(`*`n-char-sequence`*`)`' on some platforms: OpenBSD 4.0, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.
- This function parses '`NaN(`*`n-char-sequence`*`)`', but returns the wrong end pointer on some platforms: glibc-2.4, AIX 7.1.

- This function fails to parse C99 hexadecimal floating point on some platforms: NetBSD 5.0, OpenBSD 4.0, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function returns the wrong end pointer for '`0x1p`' on some platforms: AIX 7.1.

Portability problems fixed by Gnulib module `strtod-obsolete`:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

- This function returns +0.0 (not −0.0) for negative underflow on some platforms: glibc 2.7, Cygwin 1.5.x, mingw, MSVC 9.
- This function cannot distinguish between "nan" and "-nan" on some platforms: glibc 2.7, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.
- This function fails to correctly parse very long strings on some platforms: Mac OS X 10.5, FreeBSD 6.2, NetBSD 5.0, OpenBSD 4.0, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9.
- The replacement function does not always return correctly rounded results.

9.1028 `strtof`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strtof.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5, BeOS.

9.1029 `strtoimax`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/strtoimax.html`

Gnulib module: strtoimax

Portability problems fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, IRIX 6.5, OSF/1 5.1, Solaris 9, MSVC 9, Interix 3.5.
- This function fails on valid input strings on some platforms: AIX 5.1.

Portability problems not fixed by Gnulib:

- This function is only defined as a macro on some platforms: HP-UX 11.11.

9.1030 strtok

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtok.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1031 strtok_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtok_r.html

Gnulib module: strtok_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function crashes when invoked from code compiled with optimization enabled on some platforms: glibc 2.7.

Portability problems not fixed by Gnulib:

- This function cannot work correctly on character strings in multibyte locales. Gnulib provides an alternative function `mbstok_r` that works on character strings in all locales.

9.1032 strtol

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtol.html

Gnulib module: strtol

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

9.1033 strtold

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtold.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.1034 strtoll

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtoll.html

Gnulib module: strtoll

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, OSF/1 5.1, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

9.1035 strtoul

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtoul.html

Gnulib module: strtoul

Portability problems fixed by Gnulib:

- This function is missing on some old platforms.

Portability problems not fixed by Gnulib:

9.1036 strtoull

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtoull.html

Gnulib module: strtoull

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.11, OSF/1 5.1, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

9.1037 strtoumax

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strtoumax.html

Gnulib module: strtoumax

Portability problems fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 9, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- This function is only defined as a macro on some platforms: HP-UX 11.11.

9.1038 strxfrm

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strxfrm.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1039 strxfrm_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/strxfrm_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1040 swab

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/swab.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

9.1041 swprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/swprintf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- On Windows, this function does not take a buffer size as second argument.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the "C" locale on some platforms: NetBSD 5.1.

9.1042 swscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/swscanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1043 symlink

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/symlink.html

Gnulib module: symlink

Portability problems fixed by Gnulib:

- On some systems, `symlink(value,"name/")` mistakenly creates a symlink: FreeBSD 7.2, AIX 7.1, Solaris 9.
- This function is missing on some platforms; however, the replacement always fails with `EPERM`: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Some file systems do not support symbolic links.

9.1044 symlinkat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/symlinkat.html

Gnulib module: symlinkat

Portability problems fixed by Gnulib:

- On some systems, `symlinkat(value, fd, "name/")` mistakenly creates a symlink: AIX 7.1.
- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.
- Some platforms declare this function in `stdio.h` instead of `unistd.h`: Cygwin 1.7.1.

Portability problems not fixed by Gnulib:

- This function always fails with '`ENOSYS`' on platforms that don't support symlinks: mingw, MSVC 9.

9.1045 sync

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sync.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, Interix 3.5.

9.1046 sysconf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/sysconf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1047 syslog

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/syslog.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

9.1048 system

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/system.html

Gnulib module: system-posix

Portability problems fixed by Gnulib:

- The macros `WIFSIGNALED`, `WIFEXITED`, `WIFSTOPPED`, `WTERMSIG`, `WEXITSTATUS`, `WNOHANG`, `WUNTRACED`, `WSTOPSIG` are not defined in `<stdlib.h>` (only in `<sys/wait.h>`) on some platforms: MirBSD 10.

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), the command processor used by the `system` function is `cmd.exe`, not `/bin/sh`. Accordingly, the rules for quoting shell arguments containing spaces, quote or other special characters are different.

9.1049 tan

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tan.html

Gnulib module: tan

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1050 tanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tanf.html

Gnulib module: tanf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.1051 tanh

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tanh.html

Gnulib module: tanh

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1052 tanhf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tanhf.html

Gnulib module: tanhf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 9.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

9.1053 tanhl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tanhl.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.

- This function is only defined as a macro with arguments on some platforms: MSVC 9.

9.1054 tanl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tanl.html

Gnulib module: tanl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, Interix 3.5, BeOS.
- This function is only defined as a macro with arguments on some platforms: MSVC 9.
- This function is not declared on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

9.1055 tcdrain

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tcdrain.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- On some platforms, `tcdrain` on a non-tty fails with `errno` set to `EINVAL` or, on Mac OS X, also `EOPNOTSUPP` or `ENODEV`, rather than `ENOTTY`.

9.1056 tcflow

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tcflow.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1057 tcflush

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tcflush.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

- On some platforms, `tcflush` of `TCIFLUSH` on a non-tty fails with errno set to `EINVAL` rather than `ENOTTY`.
- On some platforms, `tcflush` of `TCOFLUSH` on a non-tty fails with errno set to `EINVAL` or, on IRIX, also `ENOSYS`, or, on Mac OS X, also `EOPNOTSUPP` or `ENODEV`, rather than `ENOTTY`.

9.1058 `tcgetattr`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcgetattr.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1059 `tcgetpgrp`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcgetpgrp.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.1060 `tcgetsid`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcgetsid.html`

Gnulib module: tcgetsid

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, OpenBSD 4.5, Minix 3.1.8, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared on some platforms: OSF/1 5.1.
- The declaration of this function in C++ compilation units has C++ linkage, not C linkage, on some platforms: HP-UX 11.00.

Portability problems not fixed by Gnulib:

- This function always fails on some platforms: FreeBSD 6.0, Cygwin 1.7.8, mingw, MSVC 9, Interix 3.5, BeOS.
- This function returns int instead of pid_t on some platforms: Cygwin 1.7.11.

9.1061 `tcsendbreak`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcsendbreak.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1062 `tcsetattr`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcsetattr.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1063 `tcsetpgrp`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tcsetpgrp.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

9.1064 `tdelete`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tdelete.html`

Gnulib module: tsearch

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.
- `tdelete` returns `NULL` when removing the last element of a tree on some platforms: OpenBSD 4.0.

Portability problems not fixed by Gnulib:

9.1065 telldir

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/telldir.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: MSVC 9, BeOS.
- On platforms where `long int` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro (only on Mac OS X systems).

9.1066 tempnam

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tempnam.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.
- This function is not appropriate for creating temporary files. (It has security risks.) Better use `mkstemp` instead.

9.1067 tfind

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tfind.html

Gnulib module: tsearch

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.1068 tgamma

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tgamma.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5, BeOS.

9.1069 tgammaf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tgammaf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, MSVC 9, Interix 3.5, BeOS.

9.1070 tgammal

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tgammal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.

9.1071 time

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/time.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1072 timer_create

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/timer_create.html

Gnulib module: timer-time

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.4, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS, Tandem/NSK.
- This function fails with `ENOSYS` on some platforms: OpenBSD 4.9.

9.1073 timer_delete

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/timer_delete.html

Gnulib module: timer-time

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.4, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS, Tandem/NSK.
- This function fails with ENOSYS on some platforms: OpenBSD 4.9.

9.1074 timer_getoverrun

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/timer_getoverrun.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, IRIX 5.3, Solaris 2.4, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1075 timer_gettime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/timer_gettime.html

Gnulib module: timer-time

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.4, Minix 3.1.8, IRIX 5.3, mingw, MSVC 9, Interix 3.5, BeOS, Tandem/NSK.
- This function fails with ENOSYS on some platforms: OpenBSD 4.9.

9.1076 timer_settime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/timer_settime.html

Gnulib module: timer-time

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.4, Minix 3.1.8, IRIX 5.3, Solaris 2.4, mingw, MSVC 9, Interix 3.5, BeOS, Tandem/NSK.
- This function fails with ENOSYS on some platforms: OpenBSD 4.9.

9.1077 `times`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/times.html`

Gnulib module: times

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- There is no function on Windows to measure consumed process child times, thus the `tms_cutime` and `tms_cstime` will always be 0 when the module is used.

9.1078 `timezone`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/timezone.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: IRIX 6.5, OSF/1 5.1, mingw.
- The address of this variable is not a compile-time constant on some platforms: mingw.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

A more portable way of getting the UTC offset is to use `strftime` with the `%z` format. See Section 9.1011 [strftime], page 364.

9.1079 `tmpfile`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tmpfile.html`

Gnulib module: tmpfile

Portability problems fixed by Gnulib:

- This function often fails for trivial reasons on some platforms: mingw, MSVC 9.
- On platforms where `off_t` is a 32-bit type, `tmpfile` may not work correctly to create files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

9.1080 `tmpnam`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tmpnam.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is not appropriate for creating temporary files. (It has security risks.) Better use `mkstemp` instead.

9.1081 `toascii`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/toascii.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

9.1082 `tolower`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tolower.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1083 `tolower_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tolower_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1084 `toupper`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/toupper.html`

Gnulib module: ctype

Portability problems fixed by Gnulib:

- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1085 `toupper_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/toupper_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1086 `towctrans`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/towctrans.html`

Gnulib module: towctrans

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.5.1, mingw, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1087 `towctrans_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/towctrans_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1088 `towlower`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/towlower.html`

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.
- This function returns values of which the upper 16 bits are incorrect on some platforms: mingw.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1089 `towlower_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/towlower_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1090 `towupper`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/towupper.html`

Gnulib module: wctype-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.
- This function returns values of which the upper 16 bits are incorrect on some platforms: mingw.
- This function cannot be called from plain inline or extern inline functions on some platforms: OS X 10.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1091 towupper_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/towupper_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1092 trunc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/trunc.html

Gnulib module: trunc or trunc-ieee

Portability problems fixed by either Gnulib module `trunc` or `trunc-ieee`:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.8.

Portability problems fixed by Gnulib module `trunc-ieee`:

- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.1093 truncate

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/truncate.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- On platforms where `off_t` is a 32-bit type, this function is not applicable to arbitrary lengths for files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

9.1094 truncf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/truncf.html

Gnulib module: truncf or truncf-ieee

Portability problems fixed by either Gnulib module `truncf` or `truncf-ieee`:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 9, MSVC 9, Interix 3.5.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.8.

Portability problems fixed by Gnulib module `truncf-ieee`:

- This function returns a positive zero for a minus zero argument on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.1095 truncl

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/truncl.html

Gnulib module: truncl or truncl-ieee

Portability problems fixed by either Gnulib module `truncl` or `truncl-ieee`:

- This function is missing on some platforms: FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.8.
- This function crashes on some platforms: OSF/1 4.0.

Portability problems fixed by Gnulib module `truncl-ieee`:

- This function returns a positive zero for an argument between -1 and 0 on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

9.1096 tsearch

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tsearch.html

Gnulib module: tsearch

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.1097 ttyname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ttyname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1098 ttyname_r

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ttyname_r.html

Gnulib module: ttyname_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, Minix 3.1.8, mingw, MSVC 9, BeOS.
- This function is not declared unless `_REENTRANT` is defined, on some platforms: HP-UX 11.
- This function has an incompatible declaration on some platforms: Mac OS X 10.4, Solaris 11 2011-11 (when `_POSIX_PTHREAD_SEMANTICS` is not defined).
- This function ignores the size argument, thus overwriting memory after the buffer, on some platforms: OSF/1 5.1.
- This function refuses to do anything when the output buffer is less than 128 bytes large, on some platforms: Solaris 11 2010-11.

Portability problems not fixed by Gnulib:

9.1099 twalk

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/twalk.html

Gnulib module: tsearch

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

9.1100 tzname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/tzname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: IRIX 6.5, OSF/1 5.1, mingw.

- The address of this variable is not a compile-time constant on some platforms: Cygwin, mingw.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones supported by GNU or specified by POSIX. See Section 9.1101 [tzset], page 389.

A more portable way of getting the time zone abbreviation is to use `strftime` with the `%Z` format. See Section 9.1011 [strftime], page 364.

9.1101 `tzset`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/tzset.html`

Gnulib module: tzset

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable `TZ` has been set by Cygwin.
- This function clobbers the buffer used by the localtime function on some platforms: Solaris 2.6.

Portability problems not fixed by Gnulib:

- Native Windows platforms (mingw, MSVC) support only a subset of POSIX-specified values for the `TZ` environment variable, consisting of a time zone abbreviation containing exactly three ASCII letters with no daylight saving time or angle brackets, and with no support for `tz` database settings like `TZ='America/New_York'`. Even this subset does not work on applications built via the Universal Windows Platform, as it does not make environment variables like `TZ` available to applications.

9.1102 `ulimit`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/ulimit.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

9.1103 `umask`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/umask.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1104 uname

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/uname.html

Gnulib module: uname

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.1105 ungetc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ungetc.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.

9.1106 ungetwc

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/ungetwc.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1107 unlink

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/unlink.html

Gnulib module: unlink

Portability problems fixed by Gnulib:

- Some systems mistakenly succeed on `unlink("link-to-file/")`: GNU/Hurd, FreeBSD 7.2, AIX 7.1, Solaris 9.
- On Mac OS X 10.10, in a writable HFS mount, `unlink("..")` succeeds without doing anything.

Portability problems not fixed by Gnulib:

- Some systems allow a superuser to unlink directories, even though this can cause file system corruption. The error given if a process is not permitted to unlink directories varies across implementations; it is not always the POSIX value of `EPERM`. Meanwhile, if a process has the ability to unlink directories, POSIX requires that `unlink("symlink-to-dir/")` remove `dir` and leave `symlink-to-dir` dangling; this behavior is counter-intuitive. The gnulib module unlinkdir can help determine whether code must be cautious of unlinking directories.
- Removing an open file is non-portable: On Unix this allows the programs that have the file already open to continue working with it; the file's storage is only freed when the no process has the file open any more. On Windows, the attempt to remove an open file fails.

9.1108 `unlinkat`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/unlinkat.html`

Gnulib module: unlinkat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not safe to be used in libraries and is not multithread-safe.
- On Mac OS X 10.10, in a writable HFS mount, `unlinkat(fd, "..", 0)` succeeds without doing anything.
- Some systems mistakenly succeed on `unlinkat(fd,"file/",flag)`: GNU/Hurd, Solaris 9.
- Some platforms declare this function in `fcntl.h` instead of `unistd.h`: Cygwin 1.7.1.

Portability problems not fixed by Gnulib:

- When `unlinkat(fd,name,AT_REMOVEDIR)` fails because the specified directory is not empty, the `errno` value is system dependent.
- POSIX requires that `unlinkdir(fd,"link-to-empty/",AT_REMOVEDIR)` remove `empty` and leave `link-to-empty` as a dangling symlink. This is counter-intuitive, so some systems fail with `ENOTDIR` instead: glibc
- Some systems allow a superuser to unlink directories, even though this can cause file system corruption. The error given if a process is not permitted to unlink directories varies across implementations; it is not always the POSIX value of `EPERM`. Meanwhile, if a process has the ability to unlink directories, POSIX requires that `unlinkat(fd,"symlink-to-dir/",0)` remove `dir` and leave `symlink-to-dir` dangling; this behavior is counter-intuitive. The gnulib module unlinkdir can help determine whether code must be cautious of unlinking directories.
- Removing an open file is non-portable: On Unix this allows the programs that have the file already open to continue working with it; the file's storage is only freed when the no process has the file open any more. On Windows, the attempt to remove an open file fails.

9.1109 unlockpt

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/unlockpt.html

Gnulib module: unlockpt

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- This function is not declared on some platforms: IRIX 5.3.
- This function reports success for invalid file descriptors on some platforms: NetBSD 5.1, Cygwin 1.7.9.

9.1110 unsetenv

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/unsetenv.html

Gnulib module: unsetenv

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, Solaris 9, mingw, MSVC 9, BeOS.
- This function is not declared on some platforms: OSF/1 5.1.
- This function has the return type '`void`' instead of '`int`' on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 1.6, OpenBSD 3.8, OSF/1 5.1.
- On some platforms, this function does not fail with '`EINVAL`' when passed an empty string or a string containing '`=`': FreeBSD 6.0, NetBSD 1.6, OpenBSD 4.7.
- This function removes only the first value association for the given environment variable, not all of them, on some platforms: Solaris 11 2011-11, Haiku.

Portability problems not fixed by Gnulib:

- Older versions of POSIX required that `unsetenv(NULL)` gracefully fail with `EINVAL`, but not all implementations guarantee this, and the requirement was removed.

9.1111 uselocale

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/uselocale.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

9.1112 utime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/utime.html

Gnulib module: utime

Portability problems fixed by Gnulib:

- The times that are set on the file are affected by the current time zone and by the DST flag of the current time zone on some platforms: mingw, MSVC 14 (when the environment variable TZ is set).
- On some platforms, the prototype for utime omits const for the second argument: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On some old platforms (Sequent), utime (file, NULL) fails to set the file's timestamp to the current time.
- On some platforms, this function mis-handles trailing slash: Solaris 9.
- This function cannot set full timestamp resolution. Use utimensat(AT_FDCWD,file,times,0), or the gnulib module utimens, instead.

9.1113 utimensat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/utimensat.html

Gnulib module: utimensat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS. However, the replacement function may end up truncating timestamps to less resolution than supported by the file system. Furthermore, the replacement function is not safe to be used in libraries and is not multithread-safe.
- This function returns a bogus value instead of failing with ENOSYS on some platforms: Linux kernel 2.6.21.
- This function fails with ENOSYS if passed the flag AT_SYMLINK_NOFOLLOW on a regular file: Linux kernel 2.6.22.
- When using UTIME_OMIT or UTIME_NOW, some systems require the tv_sec argument to be 0, and don't necessarily handle all file permissions in the manner required by POSIX: Linux kernel 2.6.25.
- When using UTIME_OMIT for the modification time, but specifying an access time, some systems fail to update the change time: Linux kernel 2.6.32, Solaris 11.1.
- Out-of-range values of tv_nsec do not lead to a failure on some platforms: Linux kernel 2.6.22.19 on hppa.

Portability problems not fixed by Gnulib:

- On some platforms, timestamps of symbolic links cannot be modified, so the replacement fails with ENOSYS if passed the flag AT_SYMLINK_NOFOLLOW on a symlink.

- The mere act of using `lstat` modifies the access time of symlinks on some platforms, so `utimensat` with `AT_SYMLINK_NOFOLLOW` can only effectively change modification time: Cygwin.
- The mere act of using `stat` modifies the access time of directories on some platforms, so `utimensat` can only effectively change directory modification time: Cygwin 1.5.x.

The gnulib module fdutimensat provides a similar interface.

9.1114 `utimes`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/utimes.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.
- The declaration of this function lacks `const` in the second argument on some platforms: OSF/1 5.1.
- On some platforms, this function mis-handles trailing slash: FreeBSD 7.2, Solaris 9.
- This function cannot set full timestamp resolution. In particular, some platforms incorrectly round rather than truncate. Use `utimensat(AT_FDCWD,file,times,0)`, or the gnulib module utimens, instead.
- On some platforms, `utimes (file, NULL)` fails to set the file's timestamp to the current time: glibc 2.3.3.
- On some platforms, `utimes` failed on read-only files when `utime` worked fine. glibc 2.2.5.
- On OS/2, this function cannot set the timestamp to earlier than the year 1980 in local time.
- On OS/2, this function cannot set the timestamp to an odd number of seconds.
- On OS/2, this function does not work on an opened file.

Extension: Gnulib provides a module '`utimens`' that works around these problems and allows to set the time with nanosecond resolution (as far as supported by the file system).

9.1115 `va_arg`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/va_arg.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- The second argument of `va_arg` must be a type that is invariant under the "default argument promotions" (ISO C 99 6.5.2.2 paragraph 6). This means that the following are not valid here:

  '`float`' Use '`double`' instead.

  '`bool`' Use '`int`' instead.

  Integer types smaller than '`int`'.
  Use '`int`' or '`unsigned int`' instead.

  This is a portability problem because you don't know the width of some abstract types like `uid_t`, `gid_t`, `mode_t`. So, instead of

  ```
  mode = va_arg (ap, mode_t);
  ```

  you have to write

  ```
  mode = (sizeof (mode_t) < sizeof (int)
          ? va_arg (ap, int)
          : va_arg (ap, mode_t));
  ```

9.1116 va_copy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/va_copy.html

Gnulib module: stdarg

Portability problems fixed by Gnulib:

- This macro is missing on some platforms: AIX 5.1 with cc or xlc, HP-UX 11 with cc, IRIX 6.5 with cc, OSF/1 5.1 with cc.

Portability problems not fixed by Gnulib:

9.1117 va_end

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/va_end.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1118 va_start

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/va_start.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

9.1119 vdprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vdprintf.html

Gnulib module: vdprintf or vdprintf-posix

Portability problems fixed by either Gnulib module `vdprintf` or `vdprintf-posix`:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

Portability problems fixed by Gnulib module `vdprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: BeOS.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, BeOS.
- This function does not support the '`F`' directive on some platforms: BeOS.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: BeOS.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, BeOS.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.1120 vfprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vfprintf.html

Gnulib module: vfprintf-posix or stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module `vfprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems fixed by Gnulib module `stdio` or `vfprintf-posix`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio` or `vfprintf-posix`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the "C" locale on some platforms: NetBSD 5.1.
- Attempting to write to a read-only stream fails with `EOF` but does not set the error flag for `ferror` on some platforms: glibc 2.13, cygwin 1.7.9.

9.1121 vfscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vfscanf.html

Gnulib module: vfscanf, nonblocking

Portability problems fixed by Gnulib module `vfscanf`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, OSF/1 5.1, Solaris 8, Interix 3.5.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, this function doesn't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.1122 vfwprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vfwprintf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.1123 vfwscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vfwscanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1124 vprintf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/vprintf.html

Gnulib module: vprintf-posix or stdio, nonblocking, sigpipe

Portability problems fixed by Gnulib module vprintf-posix:

- This function does not support size specifiers as in C99 (hh, ll, j, t, z) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of 'long double' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf "%f", "%e", "%g" of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the 'a' and 'A' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the 'F' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the 'n' directive on some platforms: MSVC 9.
- This function does not support the 'ls' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the 'ls' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as "%2$s", on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the ' flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the 'a' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '-' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf "%010f" of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '"%.511f"') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems fixed by Gnulib module `stdio` or `vprintf-posix`, together with module `nonblocking`:

- When writing to a non-blocking pipe whose buffer is full, this function fails with `errno` being set to `ENOSPC` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module `stdio` or `vprintf-posix`, together with module `sigpipe`:

- When writing to a pipe with no readers, this function fails, instead of obeying the current `SIGPIPE` handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- Attempting to write to a read-only stream fails with `EOF` but does not set the error flag for `ferror` on some platforms: glibc 2.13, cygwin 1.7.9.

9.1125 `vscanf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vscanf.html`

Gnulib module: vscanf, nonblocking

Portability problems fixed by Gnulib module `vscanf`, together with module `nonblocking`:

- When reading from a non-blocking pipe whose buffer is empty, this function fails with `errno` being set to `EINVAL` instead of `EAGAIN` on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 4.3.2, IRIX 6.5, OSF/1 5.1, Solaris 8.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, these functions don't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.1126 `vsnprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vsnprintf.html`

Gnulib module: vsnprintf or vsnprintf-posix

Portability problems fixed by either Gnulib module `vsnprintf` or `vsnprintf-posix`:

- This function is missing on some platforms: IRIX 5.3, OSF/1 4.0, Solaris 2.5.1.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function overwrites memory even when a size argument of 1 is passed on some platforms: Linux libc5, BeOS.

- This function does not return a byte count as specified in C99 on some platforms: HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw, MSVC 9.

Portability problems fixed by Gnulib module `vsnprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.
- This function does not truncate the result as specified in C99 on some platforms: mingw, MSVC 9.
- This function does not fully support the '`n`' directive on some platforms: HP-UX 11, mingw, MSVC 9.
- This function overwrites memory even when a zero size argument is passed on some platforms: HP-UX 11, OSF/1 5.1.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.

9.1127 `vsprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vsprintf.html`

Gnulib module: vsprintf-posix

Portability problems fixed by Gnulib:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: AIX 7.1, Solaris 10/x86, mingw, MSVC 9, BeOS.

- This function mishandles large floating point precisions (for example, formatting 1.0 with '`"%.511f"`') on some platforms: Solaris 10.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems not fixed by Gnulib:

- Formatting noncanonical '`long double`' numbers produces nonmeaningful results on some platforms: glibc and others, on x86, x86_64, IA-64 CPUs.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the "C" locale on some platforms: NetBSD 5.1.

9.1128 vsscanf

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vsscanf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 8, MSVC 9.
- On Windows platforms (excluding Cygwin), this function does not set `errno` upon failure.
- On Windows, these functions don't support the `hh`, `ll`, `j`, `t`, `z` size specifiers.

9.1129 vswprintf

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vswprintf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- On Windows, this function does not take a buffer size as second argument.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the "C" locale on some platforms: NetBSD 5.1.

9.1130 vswscanf

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vswscanf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1131 `vwprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vwprintf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS, Cygwin 1.7.
- This function exists, but does not support wide arguments on some platforms: Cygwin 1.5.x.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.1132 `vwscanf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/vwscanf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1133 wait

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wait.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1134 waitid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/waitid.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- As of 2005, no system is known on which `waitid` with flag `WNOWAIT` works correctly.

9.1135 waitpid

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/waitpid.html

Gnulib module: waitpid

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

9.1136 wcpcpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcpcpy.html

Gnulib module: wcpcpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.13.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1137 wcpncpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcpncpy.html

Gnulib module: wcpncpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.13.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1138 wcrtomb

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcrtomb.html

Gnulib module: wcrtomb

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, mingw, Interix 3.5.
- This function returns 0 when the first argument is NULL in some locales on some platforms: AIX 4.3, OSF/1 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1139 wcscasecmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscasecmp.html

Gnulib module: wcscasecmp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1140 wcscasecmp_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscasecmp_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1141 wcscat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscat.html

Gnulib module: wcscat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1142 wcschr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcschr.html

Gnulib module: wcschr

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1143 wcscmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscmp.html

Gnulib module: wcscmp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1144 wcscoll

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscoll.html

Gnulib module: wcscoll

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1145 wcscoll_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscoll_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1146 wcscpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscpy.html

Gnulib module: wcscpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1147 wcscspn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcscspn.html

Gnulib module: wcscspn

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1148 wcsdup

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsdup.html

Gnulib module: wcsdup

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, BeOS.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1149 wcsftime

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsftime.html

Gnulib module: wcsftime

Portability problems fixed by Gnulib:

- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable `TZ` has been set by Cygwin.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- Native Windows platforms (mingw, MSVC) support only a subset of time zones specified by POSIX. See Section 9.1101 [tzset], page 389.

9.1150 wcslen

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcslen.html

Gnulib module: wcslen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1151 wcsncasecmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsncasecmp.html

Gnulib module: wcsncasecmp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1152 wcsncasecmp_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsncasecmp_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1153 wcsncat

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsncat.html

Gnulib module: wcsncat

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1154 wcsncmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsncmp.html

Gnulib module: wcsncmp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1155 wcsncpy

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcsncpy.html`

Gnulib module: wcsncpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1156 wcsnlen

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcsnlen.html`

Gnulib module: wcsnlen

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1157 wcsnrtombs

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcsnrtombs.html`

Gnulib module: wcsnrtombs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1158 wcspbrk

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcspbrk.html

Gnulib module: wcspbrk

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1159 wcsrchr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsrchr.html

Gnulib module: wcsrchr

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1160 wcsrtombs

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsrtombs.html

Gnulib module: wcsrtombs

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, mingw, Interix 3.5.
- This function may set the source pointer to NULL before NUL terminating the destination string on some platforms: OSF/1 5.1.
- This function does not ignore the length argument if the destination argument is NULL on some platforms: mingw.
- This function updates the source pointer also if the destination argument is NULL on some platforms: HP-UX 11, OSF/1 5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1161 wcsspn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsspn.html

Gnulib module: wcsspn

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1162 wcsstr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsstr.html

Gnulib module: wcsstr

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 5.3, Solaris 2.6.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1163 wcstod

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcstod.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1164 wcstof

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcstof.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5, BeOS.

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1165 `wcstoimax`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstoimax.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1166 `wcstok`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstok.html`

Gnulib module: wcstok

Portability problems fixed by Gnulib:

- This function is missing on some platforms: IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1167 `wcstol`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstol.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1168 `wcstold`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstold.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 9, Cygwin, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1169 `wcstoll`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstoll.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.11, IRIX 5.3, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1170 `wcstombs`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstombs.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1171 `wcstoul`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcstoul.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1172 wcstoull

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcstoull.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.11, IRIX 5.3, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1173 wcstoumax

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcstoumax.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, MSVC 9, Interix 3.5.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1174 wcswidth

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcswidth.html

Gnulib module: wcswidth

Portability problems fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, mingw, MSVC 9, BeOS.
- This function handles combining characters in UTF-8 locales incorrectly on some platforms: Mac OS X 10.3.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1175 wcsxfrm

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcsxfrm.html

Gnulib module: wcsxfrm

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, Cygwin 1.5.x.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1176 `wcsxfrm_l`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wcsxfrm_l.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1177 `wctob`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wctob.html`

Gnulib module: wctob

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 5.3, Solaris 2.6, mingw, Interix 3.5.
- This function clobbers caller-owned registers on some platforms: Cygwin 1.7.5.
- This function does not work on some platforms: Solaris 9.
- This function is missing a declaration on some platforms: IRIX 6.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1178 `wctomb`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wctomb.html`

Gnulib module: wctomb

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1179 wctrans

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wctrans.html

Gnulib module: wctrans

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.5.1, mingw, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1180 wctrans_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wctrans_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1181 wctype

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wctype.html

Gnulib module: wctype

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, MSVC 9.
- This function is declared in `<wchar.h>`, not in `<wctype.h>`, on some platforms: HP-UX 11.00.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1182 wctype_l

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wctype_l.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1183 wcwidth

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wcwidth.html

Gnulib module: wcwidth

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 5.3, Solaris 2.5.1, mingw, MSVC 9, BeOS.
- This function is not declared (without `-D_GNU_SOURCE`) on some platforms: glibc 2.8.
- This function handles combining characters in UTF-8 locales incorrectly on some platforms: Mac OS X 10.3, OpenBSD 5.8.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1184 wmemchr

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wmemchr.html

Gnulib module: wmemchr

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1185 wmemcmp

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wmemcmp.html

Gnulib module: wmemcmp

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1186 wmemcpy

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wmemcpy.html

Gnulib module: wmemcpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1187 wmemmove

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wmemmove.html

Gnulib module: wmemmove

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1188 wmemset

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wmemset.html

Gnulib module: wmemset

Portability problems fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11.00, IRIX 6.5, Solaris 2.6, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1189 `wordexp`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wordexp.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.1190 `wordfree`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wordfree.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

9.1191 `wprintf`

POSIX specification:
`http://www.opengroup.org/onlinepubs/9699919799/functions/wprintf.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Interix 3.5, BeOS.
- This function exists, but does not support wide arguments on some platforms: Cygwin 1.5.x.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- When formatting an integer with grouping flag, this function inserts thousands separators even in the `"C"` locale on some platforms: NetBSD 5.1.
- On some platforms, this function does not set `errno` or the stream error indicator on attempts to write to a read-only stream: Cygwin 1.7.9.

9.1192 write

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/write.html

Gnulib module: write, nonblocking, sigpipe

Portability problems fixed by Gnulib module stdio, together with module nonblocking:

- This function crashes when invoked with invalid arguments on some platforms: MSVC 9.
- When writing to a non-blocking pipe whose buffer is full, this function fails with errno being set to ENOSPC instead of EAGAIN on some platforms: mingw, MSVC 9.
- When writing to a non-blocking pipe on which no reader is currently waiting an amount of bytes that exceeds the pipe buffer's size, then—even if the pipe's buffer is empty—this function fails, instead of performing a partial write into the pipe buffer, on some platforms: mingw, MSVC 9.

Portability problems fixed by Gnulib module stdio, together with module sigpipe:

- When writing to a pipe with no readers, this function fails with error EINVAL, instead of obeying the current SIGPIPE handler, on some platforms: mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function may fail with error EINTR, even in programs that don't install any signal handlers, on some platforms: Mac OS X 10.5.

For handling EINTR, Gnulib provides a module 'safe-write' with a function safe_write.

9.1193 writev

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/writev.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

9.1194 wscanf

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/wscanf.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Interix 3.5, BeOS.
- On AIX and Windows platforms, wchar_t is a 16-bit type and therefore cannot accommodate all Unicode characters.

9.1195 y0

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/y0.html

Gnulib module: y0

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

9.1196 y1

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/y1.html

Gnulib module: y1

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

9.1197 yn

POSIX specification:
http://www.opengroup.org/onlinepubs/9699919799/functions/yn.html

Gnulib module: yn

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8.

10 Past POSIX Function Substitutes

This chapter describes which functions and function-like macros specified by older versions of POSIX are substituted by Gnulib, which portability pitfalls are fixed by Gnulib, and which (known) portability problems are not worked around by Gnulib.

The notation "Gnulib module: —" means that Gnulib does not provide a module providing a substitute for the function. When the list "Portability problems not fixed by Gnulib" is empty, such a module is not needed: No portability problems are known. Otherwise, it indicates that such a module would be useful but is not available: No one so far found this function important enough to contribute a substitute for it. If you need this particular function, you may write to <bug-gnulib at gnu dot org>.

10.1 bcmp

POSIX specification: http://www.opengroup.org/susv3xsh/bcmp.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.
- This function is marked as "legacy" in POSIX. Better use memcmp instead.

10.2 bcopy

POSIX specification: http://www.opengroup.org/susv3xsh/bcopy.html

Gnulib module: bcopy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

- This function is marked as "legacy" in POSIX. Better use memcpy or memmove instead.

10.3 bsd_signal

POSIX specification: http://www.opengroup.org/susv3xsh/bsd_signal.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, IRIX 5.3, Solaris 2.5.1, Cygwin, mingw, MSVC 9, Interix 3.5.

10.4 bzero

POSIX specification: http://www.opengroup.org/susv3xsh/bzero.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.
- This function is marked as "legacy" in POSIX. Better use `memset` instead.

10.5 ecvt

POSIX specification: http://www.opengroup.org/susv3xsh/ecvt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0.
- This function is marked as "legacy" in POSIX. Better use `sprintf` instead.

10.6 fcvt

POSIX specification: http://www.opengroup.org/susv3xsh/fcvt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, NetBSD 5.0.
- This function is marked as "legacy" in POSIX. Better use `sprintf` instead.

10.7 ftime

POSIX specification: http://www.opengroup.org/susv3xsh/ftime.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, IRIX 5.3, Solaris 2.4.
- On native Windows platforms (mingw, MSVC), this function works incorrectly when the environment variable `TZ` has been set by Cygwin.
- This function is marked as "legacy" in POSIX. Better use `gettimeofday` or `clock_gettime` instead, and use `ftime` only as a fallback for portability to Windows platforms.

10.8 gcvt

POSIX specification: http://www.opengroup.org/susv3xsh/gcvt.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0.
- This function is marked as "legacy" in POSIX. Better use `sprintf` instead.

10.9 getcontext

POSIX specification: http://www.opengroup.org/susv3xsh/getcontext.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

10.10 gethostbyaddr

POSIX specification: http://www.opengroup.org/susv3xsh/gethostbyaddr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

10.11 gethostbyname

POSIX specification: http://www.opengroup.org/susv3xsh/gethostbyname.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

10.12 getwd

POSIX specification: http://www.opengroup.org/susv3xsh/getwd.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, BeOS.

- The size of the buffer required for this function is not a compile-time constant. Also, the function truncates a result that would be larger than the minimum buffer size. For these reasons, this function is marked as "legacy" in POSIX. Better use the `getcwd` function instead.

10.13 `h_errno`

POSIX specification: `http://www.opengroup.org/susv3xsh/h_errno.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5.

10.14 `index`

POSIX specification: `http://www.opengroup.org/susv3xsh/index.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.
- This function is marked as "legacy" in POSIX. Better use `strchr` instead.

10.15 `makecontext`

POSIX specification: `http://www.opengroup.org/susv3xsh/makecontext.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

10.16 `mktemp`

POSIX specification: `http://www.opengroup.org/susv3xsh/mktemp.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is not appropriate for creating temporary files. (It has security risks.) Therefore it is marked as "legacy" in POSIX. Better use `mkstemp` instead.

10.17 pthread_attr_getstackaddr

POSIX specification: http://www.opengroup.org/susv3xsh/pthread_attr_getstackaddr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Solaris 2.4, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

10.18 pthread_attr_setstackaddr

POSIX specification: http://www.opengroup.org/susv3xsh/pthread_attr_setstackaddr.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, IRIX 5.3, Solaris 2.4, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

10.19 rindex

POSIX specification: http://www.opengroup.org/susv3xsh/rindex.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9.
- This function is marked as "legacy" in POSIX. Better use `strrchr` instead.

10.20 scalb

POSIX specification: http://www.opengroup.org/susv3xsh/scalb.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

10.21 setcontext

POSIX specification: http://www.opengroup.org/susv3xsh/setcontext.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

- The effects of this call are system and compiler optimization dependent, since it restores the contents of register-allocated variables but not the contents of stack-allocated variables.

10.22 swapcontext

POSIX specification: http://www.opengroup.org/susv3xsh/swapcontext.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

10.23 ualarm

POSIX specification: http://www.opengroup.org/susv3xsh/ualarm.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Solaris 2.4, mingw, MSVC 9, BeOS.

10.24 usleep

POSIX specification: http://www.opengroup.org/susv3xsh/usleep.html

Gnulib module: usleep

Portability problems fixed by Gnulib:

- On some systems, `usleep` rejects attempts to sleep longer than 1 second, as allowed by POSIX: mingw.
- This function is missing on some platforms. However, the replacement is designed to be lightweight, and may round to the nearest second; use `select` or `nanosleep` if better resolution is needed: IRIX 5.3, Solaris 2.4, older mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

- According to POSIX, the `usleep` function may interfere with the program's use of the `SIGALRM` signal. On Linux, it doesn't; on other platforms, it may.

10.25 vfork

POSIX specification: http://www.opengroup.org/susv3xsh/vfork.html

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: IRIX 6.5, mingw, MSVC 9, BeOS.

10.26 `wcswcs`

POSIX specification: `http://www.opengroup.org/susv3xsh/wcswcs.html`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, IRIX 5.3, Solaris 2.5.1, Cygwin, mingw, MSVC 9, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.
- This function is marked as "legacy" in POSIX. Better use `wcsstr` instead.

11 Glibc Header File Substitutes

This chapter describes which header files contained in GNU libc but not specified by ISO C or POSIX are substituted by Gnulib, which portability pitfalls are fixed by Gnulib, and which (known) portability problems are not worked around by Gnulib.

The notation "Gnulib module: —" means that Gnulib does not provide a module providing a substitute for the header file. When the list "Portability problems not fixed by Gnulib" is empty, such a module is not needed: No portability problems are known. Otherwise, it indicates that such a module would be useful but is not available: No one so far found this header file important enough to contribute a substitute for it. If you need this particular header file, you may write to `<bug-gnulib at gnu dot org>`.

11.1 `a.out.h`

Describes the structure of executables (and object files?) in the old `a.out` format.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This header file is useless because most executables and object files are in ELF format on some platforms: glibc 2.3.6, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8.

11.2 `aliases.h`

Defines the type `struct aliasent` and declares the functions `setaliasent`, `endaliasent`, `getaliasent`, `getaliasent_r`, `getaliasbyname`, `getaliasbyname_r`.

Documentation:

- man setaliasent.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.3 `alloca.h`

Declares the `alloca` function of function-like macro.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Variable-Size-Automatic.html`,
- man alloca.

Gnulib module: alloca

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 4.3.2, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

11.4 ar.h

Describes the structure of files produced by the 'ar' program. Defines the type `struct ar_hdr` and the macros `ARMAG`, `SARMAG`, `ARFMAG`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, BeOS.

11.5 argp.h

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Argp.html`.

Gnulib module: argp

Portability problems fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

11.6 argz.h

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Argz-Functions.html`,
- man argz.

Gnulib module: argz

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- The argz functions do not work on some platforms: Cygwin.

Portability problems not fixed by Gnulib:

11.7 byteswap.h

Defines the functions or function-like macros `bswap_16`, `bswap_32`, `bswap_64`.

Gnulib module: byteswap

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

11.8 crypt.h

Defines the type `struct crypt_data` and declares the functions `crypt`, `crypt_r`, `setkey`, `setkey_r`, `encrypt`, `encrypt_r`.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/crypt.html`, `http://www.gnu.org/software/libc/manual/html_node/DES-Encryption.html`,
- man crypt, man encrypt.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.
- The functions `crypt`, `setkey`, `encrypt` are missing on some platforms: HP-UX 11, OSF/1 5.1.
- The type `struct crypt_data` and the functions `crypt_r`, `setkey_r`, `encrypt_r` are missing on some platforms: IRIX 6.5, Solaris 11 2011-11, Cygwin.

11.9 endian.h

Describe's the platform's endianness (byte ordering of words stored in memory). Defines the macros `BYTE_ORDER`, `LITTLE_ENDIAN`, `BIG_ENDIAN`, `PDP_ENDIAN`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5.

11.10 envz.h

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Envz-Functions.html,
- man envz.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

11.11 err.h

Declares the functions warn, vwarn, warnx, vwarnx, err, verr, errx, verrx.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Error-Messages.html,
- man err.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

11.12 error.h

Declares the functions error, error_at_line and the variables error_print_progname, error_message_count, error_one_per_line.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Error-Messages.html,
- man error.

Gnulib module: error

Portability problems fixed by Gnulib:

- This header file is missing on many platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, Interix 3.5, BeOS.
- This header file contains unrelated definitions on some platforms: MSVC 9.

Portability problems not fixed by Gnulib:

11.13 execinfo.h

Declares the functions backtrace, backtrace_symbols, backtrace_symbols_fd.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Backtraces.html,
- man backtrace.

Gnulib module: —

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

- On platforms where the header file is missing, the Gnulib substitute implementation is just a stub, and does nothing.

11.14 fpu_control.h

Handling of the FPU control word. Defines the fpu_control_t type, declares the __fpu_control variable, and defines the _FPU_GETCW, _FPU_SETCW macros.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.15 fstab.h

Defines the type struct fstab, the macros FSTAB_*, _PATH_FSTAB, and declares the functions setfsent, endfsent, getfsent, getfsspec, getfsfile.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/fstab.html,
- man setfsent.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- The macro _PATH_FSTAB is missing on some platforms: AIX 5.1, HP-UX 11.

11.16 fts.h

Defines the types FTS, FTSENT and the macros FTS_*, and declares the functions fts_open, fts_read, fts_children, fts_set, fts_close.

Documentation:

- man fts.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

11.17 getopt.h

Defines the type struct option and declares the variables optarg, optind, opterr, optopt and the functions getopt, getopt_long, getopt_long_only.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Getopt.html,
- man getopt.

Gnulib module: getopt-gnu

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: AIX 5.1, HP-UX 11, MSVC 9, Interix 3.5.
- The function getopt_long is missing on some platforms: IRIX 6.5, OSF/1 5.1, Solaris 9.
- The function getopt_long_only is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 5.0, IRIX 6.5, OSF/1 5.1, Solaris 9, mingw.
- The method to reset options is incompatible on some platforms: FreeBSD 6.0, NetBSD 5.0(?), OpenBSD 3.8, Cygwin 1.5.x, mingw.
- The function getopt does not handle a leading '+' character in the options string on some platforms: Solaris 11 2010-11.

Portability problems not fixed by Gnulib:

11.18 gshadow.h

Defines the type struct sgrp and declares the functions setsgent, endsgent, getsgent, getsgnam, sgetsgent, fgetsgent, putsgent, getsgent_r, getsgnam_r, sgetsgent_r, fgetsgent_r.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.19 ieee754.h

Defines the types `union ieee754_float`, `union ieee754_double`, `union ieee854_long_double`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.20 ifaddrs.h

Defines the type `struct ifaddrs` and declares the functions `getifaddrs`, `freeifaddrs`.

Documentation:

- `http://ecos.sourceware.org/docs-latest/ref/net-common-tcpip-manpages-getifaddrs.html`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.21 libintl.h

Defines the macros `__USE_GNU_GETTEXT`, `__GNU_GETTEXT_SUPPORTED_REVISION`, and declares the functions `gettext`, `dgettext`, `dcgettext`, `ngettext`, `dngettext`, `dcngettext`, `textdomain`, `bindtextdomain`, `bind_textdomain_codeset`.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Message-catalogs-with-gettext.html`,
- `http://www.gnu.org/software/gettext/manual/html_node/gettext.html`.

Gnulib module: gettext

Portability problems fixed by Gnulib, if GNU gettext is installed:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9, Interix 3.5, BeOS.
- The functions cannot deal with GNU .mo files with system-dependent strings (of major version 1 or of minor version 1) on some non-glibc platforms: NetBSD 3.0, Solaris 10.

Portability problems not fixed by Gnulib:

11.22 mcheck.h

Defines the type enum mcheck_status and declares the functions mcheck, mcheck_pedantic, mcheck_check_all, mprobe, mtrace, muntrace.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Heap-Consistency-Checking.html.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

11.23 mntent.h

Defines the type struct mntent and the macros MNTTAB, MOUNTED, MNTTYPE_*, MNTOPT_*, and declares the functions setmntent, getmntent, getmntent_r, addmntent, endmntent, hasmntopt.

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/mtab.html,
- man setmntent.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- The function getmntent_r is missing on all non-glibc platforms: AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin.

Gnulib module mountlist provides a higher-level abstraction.

11.24 obstack.h

Documentation:

- http://www.gnu.org/software/libc/manual/html_node/Obstacks.html.

Gnulib module: obstack

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

11.25 paths.h

Defines the macros `_PATH_*`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2010-11, mingw, MSVC 9, BeOS.
- The set of `_PATH_*` macros is platform dependent.

11.26 printf.h

Defines the type `struct printf_info` and the macros and enum values `PA_*`, and declares the functions `printf_function`, `printf_arginfo_function`, `register_printf_function`, `parse_printf_format`, `printf_size`, `printf_size_info`.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Parsing-a-Template-String.html`.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

11.27 pty.h

Declares the functions `openpty` and `forkpty`.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/Pseudo_002dTerminal-Pairs.html`,
- man openpty.

Gnulib module: pty

Portability problems fixed by Gnulib:

- This header file is missing on some platforms that declare the `forkpty` and `openpty` functions in `util.h` or `libutil.h` instead: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8.
- This header file is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, BeOS.

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

11.28 resolv.h

Defines the types `res_sendhookact`, `res_send_qhook`, `res_send_rhook`, `res_state`, `struct res_sym` and the macros `_PATH_RESCONF`, `RES_*`, and declares the functions `fp_nquery`, `fp_query`, `hostalias`, `p_query`, `res_close`, `res_init`, `res_isourserver`, `res_mkquery`, `res_query`, `res_querydomain`, `res_search`, `res_send`.

Documentation:

- man res_init.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- The functions are missing on some platforms: HP-UX 11.

11.29 shadow.h

Defines the type `struct spwd` and declares the functions `setspent`, `endspent`, `getspent`, `getspent_r`, `getspnam`, `getspnam_r`, `sgetspent`, `sgetspent_r`, `fgetspent`, `fgetspent_r`, `putspent`, `lckpwdf`, `ulckpwdf`.

Documentation:

- man setspent.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- The functions `getspent_r`, `getspnam_r`, `sgetspent_r`, `fgetspent`, `fgetspent_r`, `putspent` are missing on some platforms: HP-UX 11.
- The functions `sgetspent`, `sgetspent_r` are missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11.

11.30 sys/ioctl.h

Declares the function `ioctl`.

Documentation:

- `http://www.gnu.org/software/libc/manual/html_node/IOCTLs.html`,
- man ioctl.

Gnulib module: sys_ioctl

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9.

- This header file does not declare the `ioctl` function on some platforms: AIX 5.1, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

11.31 `sysexits.h`

Defines the `EX_*` macros, including `EX_OK`.

Gnulib module: sysexits

Portability problems fixed by Gnulib:

- This header file is missing on some platforms: mingw, MSVC 9, Interix 3.5, BeOS.
- The macro `EX_CONFIG` is missing on some platforms: HP-UX 11.

Portability problems not fixed by Gnulib:

11.32 `ttyent.h`

Defines the type `struct ttyent` and declares the functions `setttyent`, `endttyent`, `getttyent`, `getttynam`.

Documentation:

- man setttyent.

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This header file is missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12 Glibc Function Substitutes

This chapter describes which functions and function-like macros provided as extensions by at least GNU libc are also supported by Gnulib, which portability pitfalls are fixed by Gnulib, and which (known) portability problems are not worked around by Gnulib.

The notation "Gnulib module: —" means that Gnulib does not provide a module providing a substitute for the function. When the list "Portability problems not fixed by Gnulib" is empty, such a module is not needed: No portability problems are known. Otherwise, it indicates that such a module would be useful but is not available: No one so far found this function important enough to contribute a substitute for it. If you need this particular function, you may write to `<bug-gnulib at gnu dot org>`.

This list of functions is sorted according to the header that declares them.

12.1 Glibc Extensions to `<aio.h>`

12.1.1 `aio_init`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2 Glibc `<aliases.h>`

12.2.1 `endaliasent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2.2 `getaliasbyname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2.3 `getaliasbyname_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2.4 `getaliasent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2.5 `getaliasent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.2.6 `setaliasent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3 Glibc `<argp.h>`

12.3.1 `argp_err_exit_status`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.2 argp_error

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.3 argp_failure

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.4 argp_help

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.5 argp_parse

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.6 argp_program_bug_address

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.7 `argp_program_version`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.8 `argp_program_version_hook`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.9 `argp_state_help`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.3.10 `argp_usage`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.4 Glibc `<argz.h>`

12.4.1 `argz_add`

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.2 argz_add_sep

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.3 argz_append

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.4 argz_count

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.5 argz_create

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.6 argz_create_sep

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.7 argz_delete

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.8 argz_extract

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.9 argz_insert

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.10 argz_next

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.11 argz_replace

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.4.12 argz_stringify

Gnulib module: argz

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is broken on some platforms: Cygwin 1.5.24.

Portability problems not fixed by Gnulib:

12.5 Glibc Extensions to <arpa/inet.h>

12.5.1 inet_aton

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

12.5.2 inet_lnaof

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.5.3 inet_makeaddr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

12.5.4 inet_net_ntop

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, OSF/1 4.0, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.5.5 inet_net_pton

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, OSF/1 4.0, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.5.6 inet_neta

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 6.5, OSF/1 4.0, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.5.7 inet_netof

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

12.5.8 inet_network

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

12.5.9 inet_nsap_addr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.5.10 `inet_nsap_ntoa`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.00, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.6 Glibc `<byteswap.h>`

12.6.1 `bswap_16`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.6.2 `bswap_32`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.6.3 `bswap_64`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.7 Glibc Extensions to `<complex.h>`

12.7.1 `clog10`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.7.2 clog10f

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.7.3 clog10l

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.8 Glibc <crypt.h>

12.8.1 crypt_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.8.2 encrypt_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.8.3 setkey_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.9 Glibc Extensions to <ctype.h>

12.9.1 isctype

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.10 Glibc Extensions to <dirent.h>

12.10.1 getdirentries

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on huge directories larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

12.10.2 scandirat

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.14, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.10, mingw, MSVC 9, Interix 3.5, BeOS.

12.10.3 versionsort

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.11 Glibc Extensions to <dlfcn.h>

12.11.1 `dladdr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.11.2 `dladdr1`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.11.3 `dlinfo`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.11.4 `dlmopen`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.11.5 `dlvsym`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.12 Glibc `<envz.h>`

12.12.1 `envz_add`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.12.2 `envz_entry`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.12.3 `envz_get`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.12.4 `envz_merge`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.12.5 `envz_remove`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.12.6 `envz_strip`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.13 Glibc `<err.h>`

12.13.1 `err`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.2 `errx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.3 `verr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.4 `verrx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.5 `vwarn`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.6 `vwarnx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.7 `warn`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.13.8 `warnx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

12.14 Glibc Extensions to `<errno.h>`

12.14.1 `program_invocation_name`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

12.14.2 `program_invocation_short_name`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5.

12.15 Glibc `<error.h>`

12.15.1 `error`

Gnulib module: error

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.15.2 `error_at_line`

Gnulib module: error

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.15.3 `error_message_count`

Gnulib module: error

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.15.4 `error_one_per_line`

Gnulib module: error

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.15.5 `error_print_progname`

Gnulib module: error

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.16 Glibc `<execinfo.h>`

12.16.1 `backtrace`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.16.2 `backtrace_symbols`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.16.3 `backtrace_symbols_fd`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.4, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.17 Glibc Extensions to `<fcntl.h>`

12.17.1 `fallocate`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on older glibc versions and all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly across the entire data range of files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

12.17.2 `name_to_handle_at`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.17.3 `readahead`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.17.4 `open_by_handle_at`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.18 Glibc Extensions to `<fenv.h>`

12.18.1 `fedisableexcept`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5, BeOS.

12.18.2 `feenableexcept`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5, BeOS.

12.18.3 `fegetexcept`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5, BeOS.

12.19 Glibc Extensions to `<fmtmsg.h>`

12.19.1 `addseverity`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.20 Glibc `<fstab.h>`

12.20.1 `endfsent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.20.2 `getfsent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.20.3 `getfsfile`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.20.4 `getfsspec`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.20.5 `setfsent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.21 Glibc `<fts.h>`

12.21.1 `fts_children`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not correctly report the size of files or block devices larger than 2 GB and may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. The fix is to use the `AC_SYS_LARGEFILE` macro (only on Mac OS X systems).

12.21.2 `fts_close`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.21.3 `fts_open`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.21.4 `fts_read`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not correctly report the size of files or block devices larger than 2 GB and may not work correctly on huge directories larger than 2 GB. Also, on platforms where `ino_t` is a 32-bit type, this function may report inode numbers incorrectly. The fix is to use the `AC_SYS_LARGEFILE` macro (only on Mac OS X systems).

12.21.5 `fts_set`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.22 Glibc `<getopt.h>`

12.22.1 `getopt_long`

Gnulib module: getopt-gnu

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, MSVC 9, Interix 3.5.
- The function `getopt_long` does not obey the combination of '`+`' and '`:`' flags in the options string on some platforms: glibc 2.11.
- The use of '`W;`' in the optstring argument to does not always allow `-W foo` to behave synonymously with `--foo`: glibc 2.11.
- The function `getopt_long` does not support the '`+`' flag in the options string on some platforms: Mac OS X 10.5, AIX 5.2, OSF/1 5.1, Solaris 10.
- The value of `optind` after a missing required argument is wrong on some platforms: Mac OS X 10.5.

- The function `getopt_long` does not obey the '`-`' flag in the options string when `POSIXLY_CORRECT` is set on some platforms: Cygwin 1.7.0.
- Some implementations fail to reset state, including re-checking `POSIXLY_CORRECT`, when `optind` is set to '`0`': NetBSD, Cygwin 1.7.0.
- The function `getopt_long` does not support options with optional arguments on some platforms: Mac OS X 10.5, OpenBSD 4.0, AIX 5.2, IRIX 6.5, Solaris 11 2010-11, Cygwin 1.5.x.
- This function crashes if the option string includes `W;` but there are no long options, on some platforms: glibc 2.14.

Portability problems not fixed by Gnulib:

12.22.2 `getopt_long_only`

Gnulib module: getopt-gnu

Portability problems fixed by Gnulib:

- The function `getopt_long_only` does not obey the combination of '`+`' and '`:`' flags in the options string on some platforms: glibc 2.11.
- The use of '`W;`' in the optstring argument to does not always allow `-W foo` to behave synonymously with `--foo`: glibc 2.11.
- The function `getopt_long_only` does not support the '`+`' flag in the options string on some platforms: Mac OS X 10.5, AIX 5.2, OSF/1 5.1, Solaris 10.
- The value of `optind` after a missing required argument is wrong on some platforms: Mac OS X 10.5.
- The function `getopt_long_only` does not obey the '`-`' flag in the options string when `POSIXLY_CORRECT` is set on some platforms: Cygwin 1.7.0.
- Some implementations fail to reset state, including re-checking `POSIXLY_CORRECT`, when `optind` is set to '`0`': NetBSD, Cygwin 1.7.0.
- The function `getopt_long_only` does not support options with optional arguments on some platforms: Mac OS X 10.5, OpenBSD 4.0, AIX 5.2, Solaris 11 2010-11, Cygwin 1.5.x.
- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 5.2.1, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9, Interix 3.5.
- This function crashes if the option string includes `W;` but there are no long options, on some platforms: glibc 2.14.

Portability problems not fixed by Gnulib:

- Some implementations return success instead of reporting an ambiguity if user's option is a prefix of two long options with the same outcome: FreeBSD.
- The GNU Coding Standards discourage the use of `getopt_long_only` in new programs.

12.23 Glibc Extensions to `<glob.h>`

12.23.1 glob_pattern_p

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on most non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.24 Glibc Extensions to <gnu/libc-version.h>

12.24.1 gnu_get_libc_release

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.24.2 gnu_get_libc_version

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.25 Glibc Extensions to <grp.h>

12.25.1 fgetgrent

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.25.2 fgetgrent_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.25.3 `getgrent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.25.4 `getgrouplist`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function takes `int` instead of `gid_t` parameters on some platforms: OS X 10.11.
- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, BeOS.

The Gnulib module `getugroups` provides a similar API.

12.25.5 `initgroups`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is unsafe to call between `fork` and `exec` if the parent process is multi-threaded. Instead, use `getgroups` or `getgrouplist` (or use the gnulib module `mgetgroups`) before forking, and `setgroups` in the child.
- This function is missing on some platforms: mingw, MSVC 9, Interix 3.5, BeOS.

12.25.6 `putgrent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.25.7 `setgroups`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, mingw, MSVC 9, Interix 3.5, BeOS.

- On very old systems, this function operated on an array of '`int`', even though that was a different size than an array of '`gid_t`'; you can use autoconf's AC_TYPE_GETGROUPS to set `GETGROUPS_T` to the appropriate size (since `getgroups` and `setgroups` share the same bug).

12.26 Glibc `<gshadow.h>`

12.26.1 `endsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.2 `fgetsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.3 `fgetsgent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.4 `getsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.5 `getsgent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.6 `getsgnam`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.7 `getsgnam_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.8 `putsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.9 `setsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.10 `sgetsgent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.26.11 `sgetsgent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.27 Glibc `<ifaddrs.h>`

12.27.1 `getifaddrs`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.27.2 `freeifaddrs`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.28 Glibc `<libintl.h>`

12.28.1 `bind_textdomain_codeset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.2 `bindtextdomain`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.3 `dcgettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.4 `dcngettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.5 `dgettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.6 `dngettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.7 `gettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.8 `ngettext`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.28.9 `textdomain`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.29 Glibc `<link.h>`

12.29.1 `dl_iterate_phdr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.30 Glibc `<malloc.h>`

12.30.1 `mallinfo`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Solaris 11 2010-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.2 `malloc_get_state`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.3 `malloc_set_state`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.4 `malloc_info`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.5 `malloc_stats`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.6 `malloc_trim`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.7 `malloc_usable_size`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.00, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.8 `mallopt`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Solaris 11 2010-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.30.9 `memalign`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.00, OSF/1 5.1, mingw, MSVC 9, Interix 3.5.

12.30.10 `pvalloc`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31 Glibc Extensions to `<math.h>`

12.31.1 `drem`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, mingw, MSVC 9.

12.31.2 `dremf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9.

12.31.3 `dreml`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.4 `exp10`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.31.5 `exp10f`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.31.6 `exp10l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.7 `finite`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, MSVC 9.

12.31.8 `finitef`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9.

12.31.9 `finitel`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.31.10 `gamma`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9.

12.31.11 `gammaf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.12 `gammal`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.13 `isinff`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.

12.31.14 `isinfl`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.31.15 `isnanf`

Gnulib module: isnanf

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, MSVC 9.

Portability problems not fixed by Gnulib:

12.31.16 `isnanl`

Gnulib module: isnanl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

12.31.17 `j0f`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.18 `j0l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.19 `j1f`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.20 `j1l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.21 `jnf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.22 `jnl`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.23 `lgamma_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5 x86, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.

12.31.24 `lgammaf_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.

12.31.25 `lgammal_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.26 `matherr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: FreeBSD 6.0, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, mingw, MSVC 9.

12.31.27 `pow10`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.31.28 pow10f

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.31.29 pow10l

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.30 scalbf

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.31 scalbl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.32 significand

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.

12.31.33 `significandf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9.

12.31.34 `significandl`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.35 `sincos`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9, Interix 3.5.

12.31.36 `sincosf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9, Interix 3.5.

12.31.37 `sincosl`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.38 y0f

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.39 y0l

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.40 y1f

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.41 y1l

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.31.42 ynf

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, mingw, MSVC 9.

12.31.43 `ynl`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.32 Glibc `<mcheck.h>`

12.32.1 `mcheck`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.32.2 `mcheck_check_all`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.32.3 `mcheck_pedantic`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.32.4 `mprobe`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.32.5 `mtrace`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.32.6 `muntrace`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.33 Glibc `<mntent.h>`

12.33.1 `addmntent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.33.2 `endmntent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.33.3 `getmntent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, mingw, MSVC 9, BeOS.

12.33.4 `getmntent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.33.5 `hasmntopt`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, Cygwin, mingw, MSVC 9, BeOS.

12.33.6 `setmntent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.34 Glibc Extensions to `<netdb.h>`

12.34.1 `endnetgrent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.2 `gethostbyaddr_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.3 gethostbyname2

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.4 gethostbyname2_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.5 gethostbyname_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.6 gethostent_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.7 getnetbyaddr_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.8 `getnetbyname_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.9 `getnetent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.10 `getnetgrent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.11 `getnetgrent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.12 `getprotobyname_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.13 `getprotobynumber_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.14 `getprotoent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.15 `getservbyname_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.16 `getservbyport_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.17 `getservent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.18 `herror`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5.

12.34.19 `hstrerror`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.20 `innetgr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.21 `rcmd`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

12.34.22 `rcmd_af`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.23 `rexec`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, BeOS.

12.34.24 `rexec_af`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.25 rresvport

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

12.34.26 rresvport_af

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 4.0, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.27 ruserok

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, BeOS.

12.34.28 ruserok_af

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.34.29 setnetgrent

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35 Glibc <netinet/ether.h>

12.35.1 ether_aton

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.2 `ether_aton_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.3 `ether_hostton`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.4 `ether_line`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.5 `ether_ntoa`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.6 `ether_ntoa_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.35.7 `ether_ntohost`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36 Glibc Extensions to `<netinet/in.h>`

12.36.1 `bindresvport`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.

12.36.2 `getipv4sourcefilter`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.3 `getsourcefilter`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.4 `in6addr_any`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This constant is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, HP-UX 11.00, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.5 `in6addr_loopback`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This constant is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 4.3.2, HP-UX 11.00, IRIX 6.5, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.6 `inet6_option_alloc`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.7 `inet6_option_append`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.8 `inet6_option_find`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.9 `inet6_option_init`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.10 `inet6_option_next`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.11 `inet6_option_space`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.12 `inet6_opt_append`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.13 `inet6_opt_find`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.14 `inet6_opt_finish`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.15 `inet6_opt_get_val`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.16 `inet6_opt_init`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.17 `inet6_opt_next`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.18 `inet6_opt_set_val`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.19 `inet6_rth_add`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.20 `inet6_rth_getaddr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.21 `inet6_rth_init`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.22 `inet6_rth_reverse`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.23 `inet6_rth_segments`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.24 `inet6_rth_space`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.4, Mac OS X 10.5, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.25 `setipv4sourcefilter`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.36.26 `setsourcefilter`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.37 Glibc `<obstack.h>`

12.37.1 `obstack_alloc_failed_handler`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.37.2 `obstack_exit_failure`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.37.3 `obstack_free`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.37.4 `obstack_printf`

Gnulib module: obstack-printf or obstack-printf-posix

Portability problems fixed by either Gnulib module `obstack-printf` or `obstack-printf-posix`:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems fixed by Gnulib module `ostack-printf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the ' flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.
- This function does not fully support the '`n`' directive on some platforms: HP-UX 11, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

12.37.5 `obstack_vprintf`

Gnulib module: obstack-printf or obstack-printf-posix

Portability problems fixed by either Gnulib module `obstack-printf` or `obstack-printf-posix`:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems fixed by Gnulib module `ostack-printf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.24, mingw, MSVC 9, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: mingw, MSVC 9, BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: AIX 5.2, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, AIX 5.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Solaris 9, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function does not support the '`n`' directive on some platforms: MSVC 9.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, IRIX 6.5, Solaris 2.6, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, mingw, MSVC 9, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24, mingw, MSVC 9.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- This function behaves incorrectly when a '`-`' flag and a negative width are specified together, on some platforms: HP-UX 10.20.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, AIX 5.2, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: Solaris 10/x86, mingw, MSVC 9, BeOS.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.
- This function does not fully support the '`n`' directive on some platforms: HP-UX 11, mingw, MSVC 9.

Portability problems not fixed by Gnulib:

12.38 Glibc <printf.h>

12.38.1 parse_printf_format

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.2 printf_size

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.3 printf_size_info

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.4 register_printf_function

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.5 register_printf_modifier

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.6 `register_printf_specifier`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.38.7 `register_printf_type`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39 Glibc Extensions to `<pthread.h>`

12.39.1 `pthread_attr_getaffinity_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has a different signature on some platforms: glibc 2.3.3.

12.39.2 `pthread_attr_setaffinity_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has a different signature on some platforms: glibc 2.3.3.

12.39.3 `pthread_getaffinity_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has a different signature on some platforms: glibc 2.3.3.
- The third parameter has a different type on some platforms: FreeBSD 7.2, NetBSD 5.0.

12.39.4 `pthread_getattr_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.5 `pthread_getname_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.6 `pthread_kill_other_threads_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.7 `pthread_mutex_consistent_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 7, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.8 pthread_mutexattr_getrobust_np

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 7, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

This function has now been standardized by POSIX under the name `pthread_mutexattr_getrobust`.

12.39.9 pthread_mutexattr_setrobust_np

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 7, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

This function has now been standardized by POSIX under the name `pthread_mutexattr_setrobust`.

12.39.10 pthread_rwlockattr_getkind_np

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.11 pthread_rwlockattr_setkind_np

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.12 pthread_setaffinity_np

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has a different signature on some platforms: glibc 2.3.3.
- The third parameter has a different type on some platforms: FreeBSD 7.2, NetBSD 5.0.

12.39.13 `pthread_setname_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has a different signature on some platforms: NetBSD 5.0, OSF/1 5.1. On OSF/1 the third argument must be `NULL`. On NetBSD the second argument is interpreted as a `printf` format string, with the third argument as parameter.

12.39.14 `pthread_sigqueue`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.10, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.15 `pthread_timedjoin_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- FreeBSD 6.4 has a function of this name in `libthr` but not in `libpthread`, and it also is missing a declaration.

12.39.16 `pthread_tryjoin_np`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.3.2, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.39.17 `pthread_yield`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin 1.7.7, mingw, MSVC 9, Interix 3.5, BeOS.

12.40 Glibc `<pty.h>`

12.40.1 `forkpty`

Gnulib module: forkpty

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11.
- One some systems (at least including Cygwin, Interix, OSF/1 4 and 5, and Mac OS X) linking with `-lutil` is not required.
- On glibc, OpenBSD, NetBSD and FreeBSD linking with `-lutil` is required.
- The function is declared in pty.h on Cygwin, Interix, OSF/1 4 and 5, and glibc. It is declared in util.h on Mac OS X, OpenBSD and NetBSD. It is declared in libutil.h on FreeBSD.
- Some platforms declare the function without marking the last two parameters `const`. FreeBSD, Cygwin 1.7.1.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.

12.40.2 `openpty`

Gnulib module: openpty

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11.
- One some systems (at least including Cygwin, Interix, OSF/1 4 and 5, and Mac OS X) linking with `-lutil` is not required.

- On glibc, OpenBSD, NetBSD and FreeBSD linking with `-lutil` is required.
- The function is declared in pty.h on Cygwin, Interix, OSF/1 4 and 5, and glibc. It is declared in util.h on Mac OS X, OpenBSD and NetBSD. It is declared in libutil.h on FreeBSD.
- Some platforms declare the function without marking the last two parameters `const`. FreeBSD, Cygwin 1.7.1.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- After a successful call to `openpty`, the application needs to close the master's file descriptor before closing the slave's file descriptor, otherwise the process may hang in a state where it cannot be killed, on some platforms: Mac OS X 10.4.11.

12.41 Glibc Extensions to `<pwd.h>`

12.41.1 `fgetpwent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.41.2 `fgetpwent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.41.3 `getpw`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.41.4 `getpwent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.41.5 `putpwent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.42 Glibc Extensions to `<regex.h>`

12.42.1 `re_comp`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.2 `re_compile_fastmap`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.3 `re_compile_pattern`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.4 `re_exec`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.5 re_match

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.6 re_match_2

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.7 re_search

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.8 re_search_2

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.9 re_set_registers

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.10 `re_set_syntax`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.42.11 `re_syntax_options`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.43 Glibc `<regexp.h>`

12.43.1 `advance`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.43.2 `loc1`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.43.3 `loc2`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.43.4 `locs`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.43.5 `step`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.44 Glibc `<resolv.h>`

12.44.1 `dn_expand`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.44.2 `res_init`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.44.3 `res_mkquery`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.44.4 `res_query`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.44.5 `res_querydomain`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.44.6 `res_search`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5.

12.45 Glibc `<rpc/auth.h>`

12.45.1 `authdes_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.2 `authdes_pk_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.3 `authnone_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.45.4 `authunix_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.45.5 `authunix_create_default`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.45.6 `getnetname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.7 `host2netname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.8 `key_decryptsession`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.9 `key_decryptsession_pk`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.10 `key_encryptsession`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.11 `key_encryptsession_pk`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.12 `key_gendes`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.13 `key_get_conv`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.14 `key_secretkey_is_set`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.15 `key_setsecret`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.16 `netname2host`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.17 `netname2user`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.18 `user2netname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.45.19 `xdr_des_block`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.45.20 `xdr_opaque_auth`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.46 Glibc `<rpc/auth_des.h>`

12.46.1 `authdes_getucred`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.46.2 `getpublickey`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.46.3 `getsecretkey`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.46.4 `rtime`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.47 Glibc <rpc/auth_unix.h>

12.47.1 xdr_authunix_parms

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.48 Glibc <rpc/clnt.h>

12.48.1 callrpc

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.2 clnt_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.3 clnt_pcreateerror

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.4 clnt_perrno

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.5 `clnt_perror`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.6 `clnt_spcreateerror`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.7 `clnt_sperrno`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.8 `clnt_sperror`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.9 `clntraw_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.10 `clnttcp_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.11 clntudp_bufcreate

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.12 clntudp_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.13 clntunix_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.48.14 get_myaddress

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.48.15 getrpcport

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, Cygwin, mingw, MSVC 9, BeOS.

12.48.16 rpc_createerr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, BeOS.

12.49 Glibc <rpc/des_crypt.h>

12.49.1 cbc_crypt

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.49.2 des_setparity

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.49.3 ecb_crypt

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50 Glibc <rpc/key_prot.h>

12.50.1 xdr_cryptkeyarg

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.2 xdr_cryptkeyarg2

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.3 `xdr_cryptkeyres`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.4 `xdr_getcredres`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.5 `xdr_key_netstarg`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.6 `xdr_key_netstres`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.7 `xdr_keybuf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.8 `xdr_keystatus`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.9 `xdr_netnamestr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.50.10 `xdr_unixcred`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.51 Glibc `<rpc/netdb.h>`

12.51.1 `endrpcent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.51.2 `getrpcbyname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.51.3 `getrpcbyname_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.51.4 `getrpcbynumber`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.51.5 `getrpcbynumber_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.51.6 `getrpcent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.51.7 `getrpcent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.51.8 `setrpcent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52 Glibc <rpc/pmap_clnt.h>

12.52.1 clnt_broadcast

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52.2 pmap_getmaps

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52.3 pmap_getport

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52.4 pmap_rmtcall

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52.5 pmap_set

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.52.6 pmap_unset

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.53 Glibc <rpc/pmap_prot.h>

12.53.1 xdr_pmap

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.53.2 xdr_pmaplist

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.54 Glibc <rpc/pmap_rmt.h>

12.54.1 xdr_rmtcall_args

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.54.2 xdr_rmtcallres

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.55 Glibc <rpc/rpc_msg.h>

12.55.1 xdr_callhdr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.55.2 xdr_callmsg

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.55.3 xdr_replymsg

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56 Glibc <rpc/svc.h>

12.56.1 svc_exit

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.2 svc_fdset

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, BeOS.

12.56.3 svc_getreq

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.4 `svc_getreq_common`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.5 `svc_getreq_poll`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.6 `svc_getreqset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.7 `svc_max_pollfd`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.8 `svc_pollfd`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.9 `svc_register`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.10 `svc_run`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.11 `svc_sendreply`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.12 `svc_unregister`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.13 `svcerr_auth`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.14 `svcerr_decode`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.15 `svcerr_noproc`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.16 `svcerr_noprog`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.17 `svcerr_progvers`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.18 `svcerr_systemerr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.19 `svcerr_weakauth`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.20 `svcraw_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.21 svctcp_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.22 svcudp_bufcreate

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.23 svcudp_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.24 svcunix_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.56.25 xprt_register

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.56.26 xprt_unregister

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, BeOS.

12.57 Glibc <rpc/xdr.h>

12.57.1 xdr_array

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.2 xdr_bool

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.3 xdr_bytes

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.4 xdr_char

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.5 xdr_double

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.6 `xdr_enum`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.7 `xdr_float`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.8 `xdr_free`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.9 `xdr_hyper`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.10 `xdr_int`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.11 `xdr_int16_t`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.12 xdr_int32_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.13 xdr_int64_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.14 xdr_int8_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.15 xdr_long

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.16 xdr_longlong_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.17 `xdr_netobj`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.18 `xdr_opaque`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.19 `xdr_pointer`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.20 `xdr_quad_t`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.21 `xdr_reference`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.22 `xdr_short`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.23 `xdr_sizeof`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.24 `xdr_string`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.25 `xdr_u_char`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.26 `xdr_u_hyper`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, IRIX 5.3, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.27 `xdr_u_int`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.28 `xdr_u_long`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.29 xdr_u_longlong_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.3, OpenBSD 3.8, Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.30 xdr_u_quad_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.57.31 xdr_u_short

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.32 xdr_uint16_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin 1.7.4, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared in the header on some platforms: Cygwin 1.7.5.

12.57.33 xdr_uint32_t

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared in the header on some platforms: Cygwin 1.7.5.

12.57.34 `xdr_uint64_t`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared in the header on some platforms: Cygwin 1.7.5.

12.57.35 `xdr_uint8_t`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is not declared in the header on some platforms: Cygwin 1.7.5.

12.57.36 `xdr_union`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.37 `xdr_vector`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.38 `xdr_void`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.39 `xdr_wrapstring`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.40 `xdrmem_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.41 `xdrrec_create`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.42 `xdrrec_endofrecord`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.43 `xdrrec_eof`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.44 `xdrrec_skiprecord`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.57.45 xdrstdio_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin 1.7.4, mingw, MSVC 9, BeOS.

12.58 Glibc <rpcsvc/nislib.h>

12.58.1 nis_add

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.2 nis_add_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.3 nis_addmember

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.4 nis_checkpoint

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.5 nis_clone_object

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.6 nis_creategroup

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.7 nis_destroy_object

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.8 nis_destroygroup

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.9 nis_dir_cmp

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.10 nis_domain_of

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.11 nis_domain_of_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.12 nis_first_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.13 nis_freenames

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.14 nis_freeresult

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.15 nis_freeservlist

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.16 nis_freetags

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.17 nis_getnames

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.18 nis_getservlist

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.19 nis_ismember

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.20 nis_leaf_of

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.21 nis_leaf_of_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.22 nis_lerror

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.23 nis_list

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.24 nis_local_directory

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.25 nis_local_group

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.26 nis_local_host

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.27 nis_local_principal

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.28 nis_lookup

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.29 nis_mkdir

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.30 nis_modify

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.31 nis_modify_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.32 nis_name_of

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.33 nis_name_of_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.34 nis_next_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.35 nis_perror

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.36 nis_ping

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.37 nis_print_directory

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.38 nis_print_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.39 nis_print_group

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.40 nis_print_group_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.41 nis_print_link

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.42 nis_print_object

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.43 nis_print_result

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.44 nis_print_rights

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.45 nis_print_table

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.46 nis_remove

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.47 nis_remove_entry

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.48 nis_removemember

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.49 nis_rmdir

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.50 nis_servstate

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.51 nis_sperrno

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.52 nis_sperror

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.53 nis_sperror_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.54 nis_stats

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.58.55 nis_verifygroup

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.59 Glibc <rpcsvc/nis_callback.h>

12.59.1 xdr_cback_data

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.59.2 xdr_obj_p

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60 Glibc <rpcsvc/yp.h>

12.60.1 xdr_domainname

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.2 xdr_keydat

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.3 `xdr_mapname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.4 `xdr_peername`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.5 `xdr_valdat`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.6 `xdr_ypbind_binding`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.7 `xdr_ypbind_resp`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.8 xdr_ypbind_resptype

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.9 xdr_ypbind_setdom

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.10 xdr_ypmap_parms

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.11 xdr_ypmaplist

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.12 xdr_yppush_status

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.13 xdr_yppushresp_xfr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.14 `xdr_ypreq_key`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.15 `xdr_ypreq_nokey`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.16 `xdr_ypreq_xfr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.17 `xdr_ypresp_all`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.18 `xdr_ypresp_key_val`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.19 `xdr_ypresp_maplist`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.20 xdr_ypresp_master

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.21 xdr_ypresp_order

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.22 xdr_ypresp_val

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.23 xdr_ypresp_xfr

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.24 xdr_ypstat

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.60.25 `xdr_ypxfrstat`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.61 Glibc `<rpcsvc/yp_prot.h>`

12.61.1 `xdr_ypall`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62 Glibc `<rpcsvc/ypclnt.h>`

12.62.1 `yp_all`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.2 `yp_bind`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.3 `yp_first`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.4 yp_get_default_domain

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.5 yp_master

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.6 yp_match

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.7 yp_next

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.8 yp_order

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.9 yp_unbind

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.10 yp_update

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.11 ypbinderr_string

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.12 yperr_string

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.62.13 ypprot_err

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.63 Glibc <rpcsvc/ypupd.h>

12.63.1 xdr_yp_buf

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.63.2 `xdr_ypdelete_args`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.63.3 `xdr_ypupdate_args`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.64 Glibc Extensions to `<sched.h>`

12.64.1 `clone`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.64.2 `sched_getaffinity`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.64.3 `sched_setaffinity`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.64.4 `setns`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.65 Glibc Extensions to `<search.h>`

12.65.1 `hcreate_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.65.2 `hdestroy_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.65.3 `hsearch_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.65.4 `tdestroy`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.66 Glibc Extensions to <selinux/selinux.h>

12.66.1 fgetfilecon

Gnulib module: selinux-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS. On those platforms, this module provides a stub that always sets `errno` to `ENOTSUP` and returns '`-1`'.
- On systems with SELinux support, this module provides a wrapper for the `fgetfilecon` function that insulates the caller from API-nonconforming behavior. Without this wrapper, `fgetfilecon` can return '`0`' and set the `context` pointer to NULL, and in another scenario can return '`10`' and set the `context` pointer to '`unlabeled`'. This wrapper returns '`-1`' in each case and sets `errno` to `ENOTSUP` and `ENODATA` respectively. While the conditions that can provoke such behavior are rare, the average caller does not handle them because the possibility of such behavior is not documented.

Portability problems not fixed by Gnulib:

12.66.2 getfilecon

Gnulib module: selinux-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS. On those platforms, this module provides a stub that always sets `errno` to `ENOTSUP` and returns '`-1`'.
- On systems with SELinux support, this module provides a wrapper for the `getfilecon` function that insulates the caller from API-nonconforming behavior. Without this wrapper, `getfilecon` can return '`0`' and set the `context` pointer to NULL, and in another scenario can return '`10`' and set the `context` pointer to '`unlabeled`'. This wrapper returns '`-1`' in each case and sets `errno` to `ENOTSUP` and `ENODATA` respectively. While the conditions that can provoke such behavior are rare, the average caller does not handle them because the possibility of such behavior is not documented.

Portability problems not fixed by Gnulib:

12.66.3 lgetfilecon

Gnulib module: selinux-h

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS. On those platforms, this module provides a stub that always sets `errno` to `ENOTSUP` and returns '`-1`'.
- On systems with SELinux support, this module provides a wrapper for the `lgetfilecon` function that insulates the caller from API-nonconforming behavior.

Without this wrapper, `lgetfilecon` can return '`0`' and set the `context` pointer to NULL, and in another scenario can return '`10`' and set the `context` pointer to '`unlabeled`'. This wrapper returns '`-1`' in each case and sets `errno` to `ENOTSUP` and `ENODATA` respectively. While the conditions that can provoke such behavior are rare, the average caller does not handle them because the possibility of such behavior is not documented.

Portability problems not fixed by Gnulib:

12.67 Glibc `<shadow.h>`

12.67.1 `endspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.2 `fgetspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.3 `fgetspent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.4 `getspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.5 `getspent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.6 `getspnam`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.7 `getspnam_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 5.3, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.8 `lckpwdf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.9 `putspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.10 `setspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.11 `sgetspent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.12 `sgetspent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.67.13 `ulckpwdf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68 Glibc Extensions to `<signal.h>`

12.68.1 `gsignal`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.68.2 `sigandset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.3 `sigblock`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.68.4 `siggetmask`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.5 `sigisemptyset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.6 `sigorset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.7 sigreturn

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.8 sigsetmask

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.68.9 sigstack

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.68.10 sigvec

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, BeOS.

12.68.11 ssignal

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.68.12 sys_siglist

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This constant is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5.

12.68.13 `sysv_signal`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69 Glibc Extensions to `<stdio.h>`

12.69.1 `asprintf`

Gnulib module: vasprintf or vasprintf-posix

Portability problems fixed by either Gnulib module `vasprintf` or `vasprintf-posix`:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5.

Portability problems fixed by Gnulib module `vasprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: Cygwin 1.5.24, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: Solaris 11 2011-11.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, Solaris 11 2011-11, Cygwin 1.5.x, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, Cygwin 1.5.x, BeOS.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Solaris 11 2011-11, Cygwin 1.5.x.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: BeOS.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems not fixed by Gnulib:

12.69.2 `cuserid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, mingw, MSVC 9.

12.69.3 `clearerr_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.4 `fcloseall`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, Interix 3.5.

12.69.5 `feof_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.6 `ferror_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.7 `fflush_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.8 `fgetc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.69.9 `fgets_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.10 `fileno_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.11 `fopencookie`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.69.12 `fputc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.13 `fputs_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.69.14 `fread_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.15 `fwrite_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.69.16 `getw`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

12.69.17 `putw`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: BeOS.

12.69.18 `setbuffer`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, mingw, MSVC 9.

12.69.19 `setlinebuf`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11.23, mingw, MSVC 9.

12.69.20 `sys_errlist`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Minix 3.1.8, Mac OS X 10.5, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, Interix 3.5, BeOS.

12.69.21 `sys_nerr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This variable is missing on some platforms: Mac OS X 10.5, Minix 3.1.8, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, Interix 3.5, BeOS.

12.69.22 `tmpnam_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.69.23 `vasprintf`

Gnulib module: vasprintf or vasprintf-posix

Portability problems fixed by either Gnulib module `vasprintf` or `vasprintf-posix`:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5.

Portability problems fixed by Gnulib module `vasprintf-posix`:

- This function does not support size specifiers as in C99 (`hh`, `ll`, `j`, `t`, `z`) on some platforms: Cygwin 1.5.24, BeOS.
- printf of '`long double`' numbers is unsupported on some platforms: BeOS.
- printf `"%f"`, `"%e"`, `"%g"` of Infinity and NaN yields an incorrect result on some platforms: Solaris 11 2011-11.
- This function does not support the '`a`' and '`A`' directives on some platforms: glibc-2.3.6, Mac OS X 10.5, NetBSD 5.0, OpenBSD 4.0, Solaris 11 2011-11, Cygwin 1.5.x, BeOS.
- This function does not support the '`F`' directive on some platforms: NetBSD 3.0, Cygwin 1.5.x, BeOS.
- This function does not support the '`ls`' directive on some platforms: OpenBSD 4.0, Cygwin 1.5.x, Haiku.
- This function does not support precisions in the '`ls`' directive correctly on some platforms: Solaris 11 2011-11.
- This function does not support format directives that access arguments in an arbitrary order, such as `"%2$s"`, on some platforms: NetBSD 3.0, BeOS.
- This function doesn't support the `'` flag on some platforms: NetBSD 3.0, Cygwin 1.5.24.
- This function does not round the argument of the '`a`' directive correctly on some platforms: Mac OS X 10.12, FreeBSD 6.1.
- printf `"%010f"` of NaN and Infinity yields an incorrect result (padded with zeroes) on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Solaris 11 2011-11, Cygwin 1.5.x.
- This function does not support precisions larger than 512 or 1024 in integer, floating-point and pointer output on some platforms: BeOS.
- This function can crash in out-of-memory conditions on some platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0.

Portability problems not fixed by Gnulib:

12.70 Glibc Extensions to `<stdlib.h>`

12.70.1 `canonicalize_file_name`

Gnulib module: canonicalize-lgpl

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

- This function fails to detect trailing slashes on non-directories on some platforms: glibc 2.3.5.

Portability problems not fixed by Gnulib:

12.70.2 `cfree`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.3 `clearenv`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, IRIX 6.5, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.4 `drand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.5 `ecvt_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.6 `erand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.7 `fcvt_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.8 `getloadavg`

Gnulib module: getloadavg

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 2.6, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is declared in `<sys/loadavg.h>`, not `<stdlib.h>`, on some platforms: Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

12.70.9 `getpt`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.10 `initstate_r`

Gnulib module: random_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.
- This function has an incompatible declaration on some platforms: AIX 7.1, OSF/1 5.1.

Portability problems not fixed by Gnulib:

12.70.11 `jrand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.12 `lcong48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.13 `lrand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.14 `mkostemp`

Gnulib module: mkostemp

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.5, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, `mkostemp` may not work correctly to create files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

The gnulib module `clean-temp` can create temporary files that will not be left behind after signals such as SIGINT.

12.70.15 `mkostemps`

Gnulib module: mkostemps

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.10, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.5, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, `mkostemps` may not work correctly to create files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

The gnulib module `clean-temp` can create temporary files that will not be left behind after signals such as SIGINT.

12.70.16 `mrand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.17 `mkstemps`

Gnulib module: mkstemps

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.10, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is declared in `<unistd.h>` instead of `<stdlib.h>` on some platforms: Mac OS X 10.5.
- On platforms where `off_t` is a 32-bit type, `mkstemps` may not work correctly to create files larger than 2 GB. (Cf. `AC_SYS_LARGEFILE`.)

Portability problems not fixed by Gnulib:

The gnulib module `clean-temp` can create temporary files that will not be left behind after signals such as SIGINT.

12.70.18 `nrand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.19 `on_exit`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.20 ptsname_r

Gnulib module: ptsname_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, BeOS.
- This function is not declared unless `_REENTRANT` is defined, on some platforms: OSF/1 5.1.
- This function has an incompatible declaration on some platforms: OSF/1 5.1.

Portability problems not fixed by Gnulib:

12.70.21 qecvt

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.22 qecvt_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.23 qfcvt

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.24 qfcvt_r

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.25 qgcvt

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.26 qsort_r

Gnulib module: —

Portability problems fixed by Gnulib:

- This function has an incompatible API on some platforms: FreeBSD 10.
- This function is missing on some platforms: glibc 2.7, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.70.27 random_r

Gnulib module: random_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.
- This function has an incompatible declaration on some platforms: AIX 7.1, OSF/1 5.1.

Portability problems not fixed by Gnulib:

12.70.28 rpmatch

Gnulib module: rpmatch

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.70.29 secure_getenv

Gnulib module: secure_getenv

Portability problems fixed by Gnulib:

- This function is missing on some platforms: glibc 2.16, OS X 10.8, FreeBSD 9.1, NetBSD 6.0.1, OpenBSD 5.2, Minix 3.2.0, AIX 7.1, HP-UX 11, IRIX 6.5, Solaris 11, Cygwin, mingw, MSVC 9, Interix 6.1, BeOS.

Portability problems not fixed by Gnulib:

12.70.30 `seed48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.31 `setstate_r`

Gnulib module: random_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.
- This function has an incompatible declaration on some platforms: AIX 7.1, OSF/1 5.1.

Portability problems not fixed by Gnulib:

12.70.32 `srand48_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

12.70.33 `srandom_r`

Gnulib module: random_r

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5.

Portability problems not fixed by Gnulib:

12.70.34 `strtod_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.35 `strtof_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.36 `strtol_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.37 `strtold_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.38 `strtoll_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.39 `strtoq`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9.

12.70.40 `strtoul_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.41 `strtoull_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.70.42 `strtouq`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9.

12.70.43 `valloc`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5.

12.71 Glibc Extensions to `<string.h>`

12.71.1 `ffsl`

Gnulib module: ffsl

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 5.2.1, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.71.2 `ffsll`

Gnulib module: ffsll

Portability problems fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.71.3 `memfrob`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.71.4 `memmem`

Gnulib module: memmem or memmem-simple

Both modules implement the same replacement for the `memmem` function with the memmem module providing a replacement on more platforms where the existing `memmem` function has a quadratic worst-case complexity.

Portability problems fixed by either Gnulib module `memmem-simple` or `memmem`:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 5.2.1, OpenBSD 4.0, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has reversed arguments on some older platforms: Linux libc 5.0.9
- This function can trigger false positives for long periodic needles on some platforms: glibc 2.12, Cygwin 1.7.7.
- This function returns incorrect values in some cases, such as when given an empty needle: glibc <= 2.0, Solaris 11 2011-11, Cygwin 1.5.x.

Performance problems fixed by Gnulib module `memmem`:

- This function has quadratic instead of linear worst-case complexity on some platforms: glibc 2.8, FreeBSD 6.2, NetBSD 5.0, AIX 5.1, Solaris 11 2011-11, Cygwin 1.5.x. Note for small needles the replacement may be slower.

Portability problems not fixed by Gnulib:

12.71.5 `mempcpy`

Gnulib module: mempcpy

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.71.6 memrchr

Gnulib module: memrchr

Portability problems fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.71.7 rawmemchr

Gnulib module: rawmemchr

Portability problems fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.71.8 strcasestr

Gnulib module: strcasestr or strcasestr-simple

Portability problems fixed by either Gnulib module `strcasestr-simple` or `strcasestr`:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.5.x, mingw, MSVC 9, BeOS.
- This function can trigger memchr bugs on some platforms: glibc 2.10.
- This function can trigger false positives for long periodic needles on some platforms: glibc 2.12, Cygwin 1.7.7.

Portability problems fixed by Gnulib module `strcasestr`:

- This function has quadratic instead of linear worst-case complexity on some platforms: glibc 2.8, FreeBSD 6.2, NetBSD 5.0, OpenBSD 4.0, Solaris 11 2011-11.

Portability problems not fixed by Gnulib:

12.71.9 strchrnul

Gnulib module: strchrnul

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.7.8, mingw, MSVC 9, Interix 3.5, BeOS.
- This function crashes when no occurrence is found on some platforms: Cygwin 1.7.9.

Portability problems not fixed by Gnulib:

12.71.10 `strfry`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.71.11 `strsep`

Gnulib module: strsep

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, mingw, MSVC 9, BeOS.

Portability problems not fixed by Gnulib:

12.71.12 `strverscmp`

Gnulib module: strverscmp

Portability problems fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.72 Glibc `<sys/capability.h>`

12.72.1 `capget`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.72.2 `capset`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.73 Glibc <sys/epoll.h>

12.73.1 epoll_create

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.73.2 epoll_ctl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.73.3 epoll_wait

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.74 Glibc <sys/fanotify.h>

12.74.1 fanotify_init

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.12, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.74.2 fanotify_mark

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.12, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.75 Glibc <sys/file.h>

12.75.1 flock

Gnulib module: flock

Portability problems fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11.23, Solaris 11 2011-11, BeOS.

12.76 Glibc <sys/fsuid.h>

12.76.1 setfsgid

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.76.2 setfsuid

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.77 Glibc <sys/gmon.h>

12.77.1 monstartup

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.78 Glibc <sys/io.h>, <sys/perm.h>

12.78.1 ioperm

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.78.2 iopl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.79 Glibc <sys/kdaemon.h>

12.79.1 bdflush

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.80 Glibc <sys/klog.h>

12.80.1 klogctl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.81 Glibc Extensions to <sys/mman.h>

12.81.1 madvise

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin 1.7.7, mingw, MSVC 9, BeOS.

12.81.2 mincore

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.81.3 mremap

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 3.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.81.4 remap_file_pages

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.82 Glibc <sys/mount.h>

12.82.1 mount

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, Interix 3.5.

12.82.2 umount

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, AIX 5.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.82.3 umount2

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.23, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.83 Glibc <sys/personality.h>

12.83.1 personality

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.84 Glibc <sys/prctl.h>

12.84.1 prctl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.85 Glibc <sys/profil.h>

12.85.1 sprofil

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.11, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.86 Glibc <sys/ptrace.h>

12.86.1 ptrace

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.87 Glibc <sys/quota.h>

12.87.1 quotactl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.88 Glibc <sys/reboot.h>

12.88.1 reboot

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.89 Glibc Extensions to <sys/resource.h>

12.89.1 prlimit

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.12, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.90 Glibc Extensions to <sys/sem.h>

12.90.1 semtimedop

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11.11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.91 Glibc <sys/sendfile.h>

12.91.1 sendfile

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 4.0, Solaris 11 2010-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

12.92 Glibc Extensions to <sys/socket.h>

12.92.1 accept4

Gnulib module: accept4

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not atomic; this matters in multi-threaded programs that spawn child processes.

Portability problems not fixed by Gnulib:

- SOCK_CLOEXEC and SOCK_NONBLOCK may not be defined as they're also significant to the socket() function.

12.92.2 `isfdtype`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 4.0, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.92.3 `recvmmsg`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.92.4 `sendmmsg`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.93 Glibc Extensions to `<sys/stat.h>`

12.93.1 `lchmod`

Gnulib module: lchmod

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.94 Glibc <sys/statfs.h>

12.94.1 fstatfs

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `f_blocks` in '`struct statfs`' is a 32-bit value, this function may not work correctly on files systems larger than 4 TiB. The fix is to use the `AC_SYS_LARGEFILE` macro. This affects Mac OS X.

12.94.2 statfs

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `f_blocks` in '`struct statfs`' is a 32-bit value, this function may not work correctly on files systems larger than 4 TiB. The fix is to use the `AC_SYS_LARGEFILE` macro. This affects Mac OS X.

12.95 Glibc <sys/swap.h>

12.95.1 swapoff

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.95.2 swapon

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: OpenBSD 3.8, Minix 3.1.8, AIX 5.1, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.96 Glibc <sys/sysctl.h>

12.96.1 sysctl

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 5.3, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.97 Glibc <sys/sysinfo.h>

12.97.1 get_avphys_pages

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.97.2 get_nprocs

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.

Gnulib provides the module `nproc` that performs a similar function but is portable to more systems.

12.97.3 get_nprocs_conf

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 10, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.97.4 `get_phys_pages`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.97.5 `sysinfo`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.98 Glibc `<sys/syslog.h>`

12.98.1 `vsyslog`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, mingw, MSVC 9, BeOS.

12.99 Glibc `<sys/sysmacros.h>`

12.99.1 `gnu_dev_major`

Gnulib module: —

Portability problems fixed by Gnulib:

- The `AC_HEADER_MAJOR` macro in Autoconf 2.69 and earlier fails to set `MAJOR_IN_SYSMACROS` when it detects namespace pollution in `sys/types.h`; which in turn provokes deprecation warnings in glibc 2.25.

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.99.2 gnu_dev_makedev

Gnulib module: —

Portability problems fixed by Gnulib:

- The AC_HEADER_MAJOR macro in Autoconf 2.69 and earlier fails to set MAJOR_IN_SYSMACROS when it detects namespace pollution in sys/types.h; which in turn provokes deprecation warnings in glibc 2.25.

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.99.3 gnu_dev_minor

Gnulib module: —

Portability problems fixed by Gnulib:

- The AC_HEADER_MAJOR macro in Autoconf 2.69 and earlier fails to set MAJOR_IN_SYSMACROS when it detects namespace pollution in sys/types.h; which in turn provokes deprecation warnings in glibc 2.25.

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.100 Glibc Extensions to <sys/time.h>

12.100.1 adjtime

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.100.2 futimes

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function cannot set full timestamp resolution. Use futimens(fd,times) instead.

12.100.3 `futimesat`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.3.6, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 8, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- On some platforms, this function mis-handles trailing slash: Solaris 9.
- This function cannot set full timestamp resolution. Use `file ? utimensat(fd,file,times,0) : futimens(fd,times)`, or the gnulib module fdutimensat, instead.

12.100.4 `lutimes`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function cannot set full timestamp resolution. Use `utimensat(AT_FDCWD,file,times,AT_SYMLINK_NOFOLLOW)`, or the gnulib module utimens, instead.
- The mere act of using `lstat` modifies the access time of symlinks on some platforms, so `lutimes` can only effectively change modification time: Cygwin.

12.100.5 `settimeofday`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

12.101 Glibc `<sys/timex.h>`

12.101.1 `adjtimex`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.101.2 `ntp_adjtime`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.101.3 `ntp_gettime`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.101.4 `ntp_gettimex`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.11, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.102 Glibc Extensions to `<sys/uio.h>`

12.102.1 `preadv`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 5.2.1, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

12.102.2 `process_vm_readv`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.14, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.102.3 `process_vm_writev`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.14, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.102.4 `pwritev`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: glibc 2.9, Mac OS X 10.5, FreeBSD 5.2.1, Minix 3.1.8, AIX 5.2, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On platforms where `off_t` is a 32-bit type, this function may not work correctly on files larger than 2 GB. The fix is to use the `AC_SYS_LARGEFILE` macro.

12.103 Glibc `<sys/ustat.h>`

12.103.1 `ustat`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.104 Glibc `<sys/vlimit.h>`

12.104.1 `vlimit`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.105 Glibc <sys/vm86.h>

12.105.1 vm86

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.106 Glibc <sys/vtimes.h>

12.106.1 vtimes

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.107 Glibc Extensions to <sys/wait.h>

12.107.1 wait3

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.107.2 wait4

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, HP-UX 11.11, IRIX 6.5, mingw, MSVC 9, Interix 3.5, BeOS.

12.108 Glibc <sys/xattr.h>

12.108.1 `fgetxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has extra `offset` and `options` parameters: Mac OS X 10.4

12.108.2 `flistxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.3 `fremovexattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.4 `fsetxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.5 `getxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.
- This function has extra `offset` and `options` parameters: Mac OS X 10.4

12.108.6 `lgetxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.7 `listxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.8 `llistxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.9 `lremovexattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.10 `lsetxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.11 `removexattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.108.12 `setxattr`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.109 Glibc Extensions to `<termios.h>`

12.109.1 `cfmakeraw`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.109.2 `cfsetspeed`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.110 Glibc Extensions to `<time.h>`

12.110.1 `clock_adjtime`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.110.2 `dysize`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.110.3 `getdate_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.110.4 `stime`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Cygwin, mingw, MSVC 9, Interix 3.5.

12.110.5 `strptime_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.110.6 `timegm`

Gnulib module: timegm

Portability problems fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.110.7 `timelocal`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5.

12.110.8 `timespec_get`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.15, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.111 Glibc `<ttyent.h>`

12.111.1 `endttyent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.111.2 `getttyent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.111.3 `getttynam`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.111.4 `setttyent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112 Glibc Extensions to `<unistd.h>`

12.112.1 `acct`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.2 `brk`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, Cygwin, mingw, MSVC 9.

12.112.3 `chroot`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, mingw, MSVC 9, BeOS.

12.112.4 `daemon`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, mingw, MSVC 9, BeOS.

12.112.5 `dup3`

Gnulib module: dup3

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS.

- This function can crash on some platforms: Cygwin 1.7.25.

Portability problems not fixed by Gnulib:

12.112.6 `endusershell`

Gnulib module: getusershell

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is missing a declaration on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

12.112.7 `euidaccess`

Gnulib module: euidaccess

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

Other problems of this function:

- There is an inherent race between calling this function and performing some action based on the results; you should think twice before trusting this function, especially in a set-uid or set-gid program.
- This function does not have an option for not following symbolic links (like `stat` versus `lstat`). If you need this option, use the Gnulib module `faccessat` with the `AT_EACCESS` flag.

12.112.8 `execvpe`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: glibc 2.10, Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.5.x, mingw, Interix 3.5, BeOS.

12.112.9 `get_current_dir_name`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.9, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.10 `getdomainname`

Gnulib module: getdomainname

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is declared in `netdb.h`, not in `unistd.h`, on some platforms: AIX 7.1.
- This function is declared in `netdb.h` and in `sys/socket.h`, not in `unistd.h`, on some platforms: OSF/1 5.1.
- The second argument is of type `int`, not `size_t`, on some platforms: Mac OS X 10.5, FreeBSD 6.4, AIX 7.1, IRIX 6.5.

Portability problems not fixed by Gnulib:

12.112.11 `getdtablesize`

Gnulib module: getdtablesize

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Android LP64, mingw, MSVC 9.
- This function is not declared on some platforms: Android LP32.
- This function does not represent the true `RLIMIT_NOFILE` soft limit on some platforms: Android LP32, Cygwin 1.7.25.

Portability problems not fixed by Gnulib:

12.112.12 `getpagesize`

Gnulib module: getpagesize

Portability problems fixed by Gnulib:

- This function is missing on some platforms: MSVC 9, BeOS.
- This function is broken on some platforms: mingw.

Portability problems not fixed by Gnulib:

12.112.13 `getpass`

Gnulib module: getpass or getpass-gnu

Portability problems fixed by either Gnulib module `getpass` or `getpass-gnu`:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

Portability problems fixed by Gnulib module `getpass-gnu`:

- The returned password is truncated to PASS_MAX characters on some platforms: Mac OS X 10.5 (128), FreeBSD 6.2 (128), NetBSD 3.0 (128), OpenBSD 4.0 (128), AIX 5.1 (32), HP-UX 11 (8), IRIX 6.5 (32), OSF/1 5.1 (80), Solaris 11 2010-11 (8, even less than PASS_MAX), Cygwin (128). The gnulib implementation returns the password untruncated.

Portability problems not fixed by Gnulib:

12.112.14 `getresgid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11.00, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.15 `getresuid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, AIX 5.1, HP-UX 11.00, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.16 `getusershell`

Gnulib module: getusershell

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, mingw, MSVC 9, Interix 3.5, BeOS.
- This function is missing a declaration on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

12.112.17 `group_member`

Gnulib module: group-member

Portability problems fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

Portability problems not fixed by Gnulib:

12.112.18 `pipe2`

Gnulib module: pipe2

Portability problems fixed by Gnulib:

- This function is missing on many non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin 1.7.1, mingw, MSVC 9, Interix 3.5, BeOS. But the replacement function is not atomic; this matters in multi-threaded programs that spawn child processes.

Portability problems not fixed by Gnulib:

- This function crashes rather than failing with `EMFILE` if no resources are left on some platforms: Cygwin 1.7.9.

Note: This function portably supports the `O_NONBLOCK` flag only if the gnulib module `nonblocking` is also used.

12.112.19 `profil`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.20 `revoke`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.21 `sbrk`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: AIX 5.1, mingw, MSVC 9.

12.112.22 `setlogin`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.23 `setdomainname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.24 `sethostid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.25 `sethostname`

Gnulib module: sethostname

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS. Note that the Gnulib replacement may fail with ENOSYS on some platforms.
- This function is not declared on some platforms: AIX 7.1, OSF/1 5.1, Solaris 10.

Portability problems not fixed by Gnulib:

- The first parameter is `char *` instead of `const char *` on some platforms: Solaris 11 2010-11.
- The second parameter is `int` instead of `size_t` on some platforms: Mac OS X 10.12, Solaris 11 2010-11.

12.112.26 `setresgid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.27 `setresuid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, NetBSD 5.0, Minix 3.1.8, AIX 5.1, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.28 `setusershell`

Gnulib module: getusershell

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 4.3.2, IRIX 6.5, mingw, MSVC 9, Interix 3.5, BeOS.

- This function is missing a declaration on some platforms: Solaris 9.

Portability problems not fixed by Gnulib:

12.112.29 `syncfs`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: glibc 2.13, Mac OS X 10.5, FreeBSD 6.4, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.112.30 `syscall`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, Cygwin, mingw, MSVC 9, BeOS.

12.112.31 `ttyslot`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9, BeOS.

12.112.32 `vhangup`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, OSF/1 5.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.113 Glibc `<utmp.h>`

12.113.1 `endutent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.2 `getutent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.3 `getutent_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.4 `getutid`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.5 `getutid_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.6 `getutline`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.7 `getutline_r`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.8 `pututline`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.9 `setutent`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.10 `updwtmp`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 4.3.2, HP-UX 11, OSF/1 5.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.11 `utmpname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, mingw, MSVC 9, Interix 3.5, BeOS.

12.113.12 `login`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many non-glibc platforms: FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 7.1, HP-UX 11.31, IRIX 6.5, Solaris 11 2011-11, mingw, MSVC 9, BeOS.

12.113.13 `login_tty`

Gnulib module: login_tty

Portability problems fixed by Gnulib:

- This function is missing on some platforms: Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11.
- This function requires linking with `-lutil` on some platforms: glibc 2.3.6, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8. It is available without link options on other platforms: Mac OS X 10.5, OSF/1 5.1, Cygwin, Interix 3.5.

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: mingw, MSVC 9.
- This function is declared in `<utmp.h>` on glibc, Cygwin, in `<util.h>` on Mac OS X 10.5, NetBSD 5.0, OpenBSD 3.8, in `<libutil.h>` on FreeBSD 6.0, Haiku, and not declared at all on OSF/1 5.1, Interix 3.5. Also note that `<sys/types.h>` is a prerequisite of `<utmp.h>` on FreeBSD 8.0, OpenBSD 4.6 and of `<libutil.h>` on FreeBSD 8.0.

12.114 Glibc Extensions to `<utmpx.h>`

12.114.1 `getutmp`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.114.2 `getutmpx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.

12.114.3 `updwtmpx`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, Cygwin 1.5.x, mingw, MSVC 9, Interix 3.5, BeOS.

12.114.4 `utmpxname`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.4, FreeBSD 6.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, OSF/1 5.1, mingw, MSVC 9, Interix 3.5, BeOS.

12.115 Glibc Extensions to `<wchar.h>`

12.115.1 `fgetwc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.2 `fgetws_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.3 `fputwc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.4 `fputws_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.5 `getwc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.6 `getwchar_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.7 `putwc_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on some platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.8 `putwchar_unlocked`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.9 `wcschrnul`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.10 `wcsftime_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.11 `wcstod_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.12 `wcstof_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.13 `wcstol_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.14 `wcstold_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.15 `wcstoll_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.16 `wcstoq`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.17 `wcstoul_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.18 `wcstoull_l`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on many platforms: Mac OS X 10.3, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.19 `wcstouq`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

12.115.20 `wmempcpy`

Gnulib module: —

Portability problems fixed by Gnulib:

Portability problems not fixed by Gnulib:

- This function is missing on all non-glibc platforms: Mac OS X 10.5, FreeBSD 6.0, NetBSD 5.0, OpenBSD 3.8, Minix 3.1.8, AIX 5.1, HP-UX 11, IRIX 6.5, OSF/1 5.1, Solaris 11 2011-11, Cygwin, mingw, MSVC 9, Interix 3.5, BeOS.
- On AIX and Windows platforms, `wchar_t` is a 16-bit type and therefore cannot accommodate all Unicode characters.

13 Particular Modules

13.1 alloca

The alloca module provides for a function `alloca` which allocates memory on the stack, where the system allows it. A memory block allocated with `alloca` exists only until the function that calls `alloca` returns or exits abruptly.

There are a few systems where this is not possible: HP-UX systems, and some other platforms when the C++ compiler is used. On these platforms the alloca module provides a `malloc` based emulation. This emulation will not free a memory block immediately when the calling function returns, but rather will wait until the next `alloca` call from a function with the same or a shorter stack length. Thus, in some cases, a few memory blocks will be kept although they are not needed any more.

The user can `#include <alloca.h>` and use `alloca` on all platforms. Note that the `#include <alloca.h>` must be the first one after the autoconf-generated `config.h`, for AIX 3 compatibility. Thanks to IBM for this nice restriction!

Note that GCC 3.1 and 3.2 can *inline* functions that call `alloca`. When this happens, the memory blocks allocated with `alloca` will not be freed until *the end of the calling function*. If this calling function runs a loop calling the function that uses `alloca`, the program easily gets a stack overflow and crashes. To protect against this compiler behaviour, you can mark the function that uses `alloca` with the following attribute:

```
#ifdef __GNUC__
__attribute__ ((__noinline__))
#endif
```

An alternative to this module is the '`alloca-opt`' module.

13.2 alloca-opt

The alloca-opt module provides for a function `alloca` which allocates memory on the stack, where the system allows it. A memory block allocated with `alloca` exists only until the function that calls `alloca` returns or exits abruptly.

There are a few systems where this is not possible: HP-UX systems, and some other platforms when the C++ compiler is used. On these platforms the alloca-opt module provides no replacement, just a preprocessor macro HAVE_ALLOCA.

The user can `#include <alloca.h>` on all platforms, and use `alloca` on those platforms where the preprocessor macro HAVE_ALLOCA evaluates to true. If HAVE_ALLOCA is false, the code should use a heap-based memory allocation based on `malloc` or (in C++) `new`. Note that the `#include <alloca.h>` must be the first one after the autoconf-generated `config.h`, for AIX 3 compatibility. Thanks to IBM for this nice restriction!

Note that GCC 3.1 and 3.2 can *inline* functions that call `alloca`. When this happens, the memory blocks allocated with `alloca` will not be freed until *the end of the calling function*. If this calling function runs a loop calling the function that uses `alloca`, the program easily gets a stack overflow and crashes. To protect against this compiler behaviour, you can mark the function that uses `alloca` with the following attribute:

```
#ifdef __GNUC__
__attribute__ ((__noinline__))
#endif
```

13.3 Safe Allocation Macros

The standard C library malloc/realloc/calloc/free APIs are prone to a number of common coding errors. The `safe-alloc` module provides macros that make it easier to avoid many of them. It still uses the standard C allocation functions behind the scenes.

Some of the memory allocation mistakes that are commonly made are

- passing the incorrect number of bytes to `malloc`, especially when allocating an array,
- fail to check the return value of `malloc` and `realloc` for errors,
- forget to fully initialize memory just allocated with `malloc`,
- duplicate calls to `free` by forgetting to set the pointer variable to `NULL`,
- leaking memory in calls to `realloc` when that call fails.

The `safe-alloc` module addresses these problems in the following way:

- It defines macros that wrap around the standard C allocation functions. That makes it possible to use the compiler's knowledge of the size of objects for allocation; it also allows setting pointers passed in as arguments when appropriate.
- It uses return values only for a success/failure error condition flag, and annotates them with GCC's `__warn_unused_result__` attribute.
- It uses `calloc` instead of `malloc`.

`int` *ALLOC* (*ptr*) [Macro]
: Allocate `sizeof(*ptr)` bytes of memory and store the address of allocated memory in `ptr`. Fill the newly allocated memory with zeros.

  Returns −1 on failure, 0 on success.

`int` *ALLOC_N* (*ptr, count*) [Macro]
: Allocate an array of `count` elements, each `sizeof(*ptr)` bytes long, and store the address of allocated memory in `ptr`. Fill the newly allocated memory with zeros.

  Returns −1 on failure, 0 on success.

`int` *ALLOC_N_UNINITIALIZED* (*ptr, count*) [Macro]
: Allocate an array of `count` elements, each `sizeof(*ptr)` bytes long, and store the address of allocated memory in `ptr`. The allocated memory is not initialized.

  Returns −1 on failure, 0 on success.

`int` *REALLOC_N* (*ptr, count*) [Macro]
: Reallocate the memory pointed to by `ptr` to be big enough to hold at least `count` elements, each `sizeof(*ptr)` bytes long, and store the address of allocated memory in `ptr`. If reallocation fails, the `ptr` variable is not modified.

  Returns −1 on failure, 0 on success.

`void` *FREE* (*ptr*) [Macro]
: Free the memory stored in `ptr` and set `ptr` to `NULL`.

13.4 Compile-time Assertions

This module provides a header file `verify.h` that defines macros related to compile-time verification.

Two of these macros are `verify (V)` and `verify_expr (V, EXPR)`. Both accept an integer constant expression argument V and verify that it is nonzero. If not, a compile-time error results.

These two macros implement compile-time tests, as opposed to the standard `assert` macro which supports only runtime tests. Since the tests occur at compile-time, they are more reliable, and they require no runtime overhead.

`verify (V);` is a declaration; it can occur outside of functions. In contrast, `verify_expr (V, EXPR)` is an expression that returns the value of *EXPR*; it can be used in macros that expand to expressions. If *EXPR* is an integer constant expression, then `verify_expr (V, EXPR)` is also an integer constant expression. Although *EXPR* and `verify_expr (V, EXPR)` are guaranteed to have the same side effects and value and type (after integer promotion), they need not have the same type if *EXPR*'s type is an integer that is narrower than `int` or `unsigned int`.

V should be an integer constant expression in the sense of the C standard. Its leaf operands should be integer, enumeration, or character constants; or `sizeof` expressions that return constants; or floating constants that are the immediate operands of casts. Outside a `sizeof` subexpression, V should not contain any assignments, function calls, comma operators, casts to non-integer types, or subexpressions whose values are outside the representable ranges for their types. If V is not an integer constant expression, then a compiler might reject a usage like '`verify (V);`' even when V is nonzero.

Although the standard `assert` macro is a runtime test, C11 specifies a builtin `_Static_assert (V, STRING-LITERAL)`, its `assert.h` header has a similar macro named `static_assert`, and C++11 has a similar `static_assert` builtin. These builtins and macros differ from `verify` in two major ways. First, they can also be used within a `struct` or `union` specifier, in place of an ordinary member declaration. Second, they require the programmer to specify a compile-time diagnostic as a string literal.

The `verify.h` header defines one more macro, `assume (E)`, which expands to an expression of type `void` that causes the compiler to assume that E yields a nonzero value. E should be a scalar expression, and should not have side effects; it may or may not be evaluated. The behavior is undefined if E would yield zero. The main use of `assume` is optimization, as the compiler may be able to generate better code if it assumes E. For best results, E should be simple enough that a compiler can determine that it has no side effects: if E calls an external function or accesses volatile storage the compiler may not be able to optimize E away and `assume (E)` may therefore slow down the program.

Here are some example uses of these macros.

```
#include <verify.h>

#include <limits.h>
#include <time.h>

/* Verify that time_t is an integer type.  */
verify ((time_t) 1.5 == 1);
```

```
/* Verify that time_t is no smaller than int.  */
verify (sizeof (int) <= sizeof (time_t));

/* Verify that time_t is signed.  */
verify ((time_t) -1 < 0);

/* Verify that time_t uses two's complement representation.  */
verify (~ (time_t) -1 == 0);

/* Return the maximum value of the integer type T,
   verifying that T is an unsigned integer type.
   The cast to (T) is outside the call to verify_expr
   so that the result is of type T
   even when T is narrower than unsigned int.  */
#define MAX_UNSIGNED_VAL(t) \
   ((T) verify_expr (0 < (T) -1, -1))

/* Return T divided by CHAR_MAX + 1, where behavior is
   undefined if T < 0.  In the common case where CHAR_MAX
   is 127 the compiler can therefore implement the division
   by shifting T right 7 bits, an optimization that would
   not be valid if T were negative.  */
time_t
time_index (time_t t)
{
  assume (0 <= t);
  return t / (CHAR_MAX + 1);
}
```

13.5 Integer Properties

The `intprops` module consists of an include file `<intprops.h>` that defines several macros useful for testing properties of integer types.

Integer overflow is a common source of problems in programs written in C and other languages. In some cases, such as signed integer arithmetic in C programs, the resulting behavior is undefined, and practical platforms do not always behave as if integers wrap around reliably. In other cases, such as unsigned integer arithmetic in C, the resulting behavior is well-defined, but programs may still misbehave badly after overflow occurs.

Many techniques have been proposed to attack these problems. These include precondition testing, wraparound behavior where signed integer arithmetic is guaranteed to be modular, saturation semantics where overflow reliably yields an extreme value, undefined behavior sanitizers where overflow is guaranteed to trap, and various static analysis techniques.

Gnulib supports wraparound arithmetic and precondition testing, as these are relatively easy to support portably and efficiently. There are two families of precondition tests: the first, for integer types, is easier to use, while the second, for integer ranges, has a simple and straightforward portable implementation.

13.5.1 Arithmetic Type Properties

`TYPE_IS_INTEGER (t)` is an arithmetic constant expression that is 1 if the arithmetic type t is an integer type. `_Bool` counts as an integer type.

`TYPE_SIGNED (t)` is an arithmetic constant expression that is 1 if the real type t is a signed integer type or a floating type. If t is an integer type, `TYPE_SIGNED (t)` is an integer constant expression.

`EXPR_SIGNED (e)` is 1 if the real expression e has a signed integer type or a floating type. If e is an integer constant expression or an arithmetic constant expression, `EXPR_SIGNED (e)` is likewise. Although e is evaluated, if e is free of side effects then `EXPR_SIGNED (e)` is typically optimized to a constant.

Example usage:

```
#include <intprops.h>
#include <time.h>

enum
{
  time_t_is_signed_integer =
    TYPE_IS_INTEGER (time_t) && TYPE_SIGNED (time_t)
};

int
CLOCKS_PER_SEC_is_signed (void)
{
  return EXPR_SIGNED (CLOCKS_PER_SEC);
}
```

13.5.2 Integer Bounds

`INT_BUFSIZE_BOUND (t)` is an integer constant expression that is a bound on the size of the string representing an integer type or expression t in decimal notation, including the terminating null character and any leading `-` character. For example, if `INT_STRLEN_BOUND (int)` is 12, any value of type `int` can be represented in 12 bytes or less, including the terminating null. The bound is not necessarily tight.

Example usage:

```
#include <intprops.h>
#include <stdio.h>
int
int_strlen (int i)
{
  char buf[INT_BUFSIZE_BOUND (int)];
  return sprintf (buf, "%d", i);
```

```
}
```

`INT_STRLEN_BOUND (t)` is an integer constant expression that is a bound on the length of the string representing an integer type or expression t in decimal notation, including any leading `-` character. This is one less than `INT_BUFSIZE_BOUND (t)`.

`TYPE_MINIMUM (t)` and `TYPE_MAXIMUM (t)` are integer constant expressions equal to the minimum and maximum values of the integer type t. These expressions are of the type t (or more precisely, the type t after integer promotions).

Example usage:

```
#include <stdint.h>
#include <sys/types.h>
#include <intprops.h>
int
in_off_t_range (intmax_t a)
{
  return TYPE_MINIMUM (off_t) <= a && a <= TYPE_MAXIMUM (off_t);
}
```

13.5.3 Wraparound Arithmetic with Signed Integers

Signed integer arithmetic has undefined behavior on overflow in C. Although almost all modern computers use two's complement signed arithmetic that is well-defined to wrap around, C compilers routinely optimize assuming that signed integer overflow cannot occur, which means that a C program cannot easily get at the underlying machine arithmetic. For example, on a typical machine with 32-bit two's complement `int` the expression `INT_MAX + 1` does not necessarily yield `INT_MIN`, because the compiler may do calculations with a 64-bit register, or may generate code that traps on signed integer overflow.

The following macros work around this problem by storing the wraparound value, i.e., the low-order bits of the correct answer, and by returning an overflow indication. For example, if `i` is of type `int`, `INT_ADD_WRAPV (INT_MAX, 1, &i)` sets `i` to `INT_MIN` and returns 1 on a two's complement machine. On newer platforms, these macros are typically more efficient than the overflow-checking macros. See Section 13.5.4 [Integer Type Overflow], page 624.

Example usage:

```
#include <intprops.h>
#include <stdio.h>

/* Print the low order bits of A * B,
   reporting whether overflow occurred.  */
void
print_product (long int a, long int b)
{
  long int r;
  int overflow = INT_MULTIPLY_WRAPV (a, b, &r);
  printf ("result is %ld (%s)\n", r,
          (overflow
           ? "after overflow"
           : "no overflow"));
```

```
}
```

These macros have the following restrictions:

- Their first two arguments must be integer expressions.
- Their last argument must be a non-null pointer to a signed integer. To calculate a wraparound unsigned integer you can use ordinary C arithmetic; to tell whether it overflowed, you can use the overflow-checking macros.
- They may evaluate their arguments zero or multiple times, so the arguments should not have side effects.
- They are not necessarily constant expressions, even if all their arguments are constant expressions.

`INT_ADD_WRAPV (a, b, r)`
: Store the low-order bits of the sum of *a* and *b* into `*r`. Return true if overflow occurred, false if the low-order bits are the mathematically-correct sum. See above for restrictions.

`INT_SUBTRACT_WRAPV (a, b, r)`
: Store the low-order bits of the difference between *a* and *b* into `*r`. Return true if overflow occurred, false if the low-order bits are the mathematically-correct difference. See above for restrictions.

`INT_MULTIPLY_WRAPV (a, b, r)`
: Store the low-order bits of the product of *a* and *b* into `*r`. Return true if overflow occurred, false if the low-order bits are the mathematically-correct product. See above for restrictions.

13.5.4 Integer Type Overflow

Although unsigned integer arithmetic wraps around modulo a power of two, signed integer arithmetic has undefined behavior on overflow in C. Almost all modern computers use two's complement signed arithmetic that is well-defined to wrap around, but C compilers routinely optimize based on the assumption that signed integer overflow cannot occur, which means that a C program cannot easily get at the underlying machine behavior. For example, the signed integer expression `(a + b < b) != (a < 0)` is not a reliable test for whether `a + b` overflows, because a compiler can assume that signed overflow cannot occur and treat the entire expression as if it were false.

These macros yield 1 if the corresponding C operators might not yield numerically correct answers due to arithmetic overflow of an integer type. They work correctly on all known practical hosts, and do not rely on undefined behavior due to signed arithmetic overflow. They are integer constant expressions if their arguments are. They are typically easier to use than the integer range overflow macros (see Section 13.5.5 [Integer Range Overflow], page 626), and they support more operations and evaluation contexts than the wraparound macros (see Section 13.5.3 [Wraparound Arithmetic], page 623).

Example usage:

```
#include <intprops.h>
#include <limits.h>
#include <stdio.h>
```

```
/* Print A * B if in range, an overflow
   indicator otherwise.  */
void
print_product (long int a, long int b)
{
  if (INT_MULTIPLY_OVERFLOW (a, b))
    printf ("multiply would overflow");
  else
    printf ("product is %ld", a * b);
}

/* Does the product of two ints always fit
   in a long int?  */
enum {
  INT_PRODUCTS_FIT_IN_LONG
    = ! (INT_MULTIPLY_OVERFLOW
         ((long int) INT_MIN, INT_MIN))
};
```

These macros have the following restrictions:

- Their arguments must be integer expressions.
- They may evaluate their arguments zero or multiple times, so the arguments should not have side effects.

These macros are tuned for their last argument being a constant.

`INT_ADD_OVERFLOW (a, b)`
: Yield 1 if `a + b` would overflow. See above for restrictions.

`INT_SUBTRACT_OVERFLOW (a, b)`
: Yield 1 if `a - b` would overflow. See above for restrictions.

`INT_NEGATE_OVERFLOW (a)`
: Yields 1 if `-a` would overflow. See above for restrictions.

`INT_MULTIPLY_OVERFLOW (a, b)`
: Yield 1 if `a * b` would overflow. See above for restrictions.

`INT_DIVIDE_OVERFLOW (a, b)`
: Yields 1 if `a / b` would overflow. See above for restrictions. Division overflow can happen on two's complement hosts when dividing the most negative integer by -1. This macro does not check for division by zero.

`INT_REMAINDER_OVERFLOW (a, b)`
: Yield 1 if `a % b` would overflow. See above for restrictions. Remainder overflow can happen on two's complement hosts when dividing the most negative integer by -1; although the mathematical result is always 0, in practice some implementations trap, so this counts as an overflow. This macro does not check for division by zero.

`INT_LEFT_SHIFT_OVERFLOW (a, b)`
: Yield 1 if `a << b` would overflow. See above for restrictions. The C standard says that behavior is undefined for shifts unless $0 \leq b < w$ where w is a's word

width, and that when *a* is negative then `a << b` has undefined behavior, but this macro does not check these other restrictions.

13.5.5 Integer Range Overflow

These macros yield 1 if the corresponding C operators might not yield numerically correct answers due to arithmetic overflow. They do not rely on undefined or implementation-defined behavior. They are integer constant expressions if their arguments are. Their implementations are simple and straightforward, but they are typically harder to use than the integer type overflow macros. See Section 13.5.4 [Integer Type Overflow], page 624.

Although the implementation of these macros is similar to that suggested in Seacord R, The CERT C Secure Coding Standard (2009, revised 2011), in its two sections "INT30-C. Ensure that unsigned integer operations do not wrap (`https: / / www . securecoding . cert . org / confluence / display / c / INT30-C . +Ensure+that+unsigned+integer+operations+do+not+wrap`)" and "INT32-C. Ensure that operations on signed integers do not result in overflow (`https: / / www . securecoding . cert . org / confluence / display / c / INT32-C . +Ensure+that+operations+on+signed+integers+do+not+result+in+overflow`)", Gnulib's implementation was derived independently of CERT's suggestions.

Example usage:

```
#include <intprops.h>
#include <limits.h>
#include <stdio.h>

void
print_product (long int a, long int b)
{
  if (INT_MULTIPLY_RANGE_OVERFLOW (a, b, LONG_MIN, LONG_MAX))
    printf ("multiply would overflow");
  else
    printf ("product is %ld", a * b);
}

/* Does the product of two ints always fit
   in a long int?  */
enum {
  INT_PRODUCTS_FIT_IN_LONG
    = ! (INT_MULTIPLY_RANGE_OVERFLOW
         ((long int) INT_MIN, (long int) INT_MIN,
          LONG_MIN, LONG_MAX))
};
```

These macros have the following restrictions:

- Their arguments must be integer expressions.
- They may evaluate their arguments zero or multiple times, so the arguments should not have side effects.

- The arithmetic arguments (including the *min* and *max* arguments) must be of the same integer type after the usual arithmetic conversions, and the type must have minimum value *min* and maximum *max*. Unsigned values should use a zero *min* of the proper type, for example, `(unsigned int) 0`.

These macros are tuned for constant *min* and *max*. For commutative operations such as `a + b`, they are also tuned for constant *b*.

`INT_ADD_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a + b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions.

`INT_SUBTRACT_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a - b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions.

`INT_NEGATE_RANGE_OVERFLOW (a, min, max)`
: Yield 1 if `-a` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions.

`INT_MULTIPLY_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a * b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions.

`INT_DIVIDE_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a / b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions. Division overflow can happen on two's complement hosts when dividing the most negative integer by −1. This macro does not check for division by zero.

`INT_REMAINDER_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a % b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions. Remainder overflow can happen on two's complement hosts when dividing the most negative integer by −1; although the mathematical result is always 0, in practice some implementations trap, so this counts as an overflow. This macro does not check for division by zero.

`INT_LEFT_SHIFT_RANGE_OVERFLOW (a, b, min, max)`
: Yield 1 if `a << b` would overflow in [*min*,*max*] integer arithmetic. See above for restrictions. Here, *min* and *max* are for *a* only, and *b* need not be of the same type as the other arguments. The C standard says that behavior is undefined for shifts unless $0 \le b < w$ where w is *a*'s word width, and that when *a* is negative then `a << b` has undefined behavior, but this macro does not check these other restrictions.

13.6 Extern inline functions

The `extern-inline` module supports the use of C99-style `extern inline` functions so that the code still runs on compilers that do not support this feature correctly.

C code ordinarily should not use `inline`. Typically it is better to let the compiler figure out whether to inline, as compilers are pretty good about optimization nowadays. In this sense, `inline` is like `register`, another keyword that is typically no longer needed.

Functions defined (not merely declared) in headers are an exception, as avoiding `inline` would commonly cause problems for these functions. Suppose `aaa.h` defines the function `aaa_fun`, and `aaa.c`, `bbb.c` and `ccc.c` all include `aaa.h`. If code is intended to portable to non-C99 compilers, `aaa_fun` cannot be declared with the C99 `inline` keyword. This problem cannot be worked around by making `aaa_fun` an ordinary function, as it would be defined three times with external linkage and the definitions would clash. Although `aaa_fun` could be a static function, with separate compilation if `aaa_fun` is not inlined its code will appear in the executable three times.

To avoid this code bloat, `aaa.h` can do this:

```
/* aaa.h */
/* #include any other headers here */
#ifndef _GL_INLINE_HEADER_BEGIN
 #error "Please include config.h first."
#endif
_GL_INLINE_HEADER_BEGIN
#ifndef AAA_INLINE
# define AAA_INLINE _GL_INLINE
#endif
...
AAA_INLINE int
aaa_fun (int i)
{
  return i + 1;
}
...
_GL_INLINE_HEADER_END
```

and `aaa.c` can do this:

```
/* aaa.c */
#include <config.h>
#define AAA_INLINE _GL_EXTERN_INLINE
#include <aaa.h>
```

whereas `bbb.c` and `ccc.c` can include `aaa.h` in the usual way. C99 compilers expand `AAA_INLINE` to C99-style `inline` usage, where `aaa_fun` is declared `extern inline` in `aaa.c` and plain `inline` in other modules. Non-C99 compilers that are compatible with GCC use GCC-specific syntax to accomplish the same ends. Other non-C99 compilers use `static inline` so they suffer from code bloat, but they are not mainline platforms and will die out eventually.

`_GL_INLINE` is a portable alternative to C99 plain `inline`.

`_GL_EXTERN_INLINE` is a portable alternative to C99 `extern inline`.

Invoke `_GL_INLINE_HEADER_BEGIN` before all uses of `_GL_INLINE` in an include file. This suppresses some bogus warnings in GCC versions before 5.1. If an include file includes other files, it is better to invoke this macro after including the other files.

Invoke `_GL_INLINE_HEADER_END` after all uses of `_GL_INLINE` in an include file.

13.7 Character and String Functions in C Locale

The functions in this section are similar to the generic string functions from the standard C library, except that

- They behave as if the locale was set to the "C" locale, even when the locale is different, and/or
- They are specially optimized for the case where all characters are plain ASCII characters.

13.7.1 c-ctype

The `c-ctype` module contains functions operating on single-byte characters, like the functions in `<ctype.h>`, that operate as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The functions are:

```
extern bool c_isascii (int c);

extern bool c_isalnum (int c);
extern bool c_isalpha (int c);
extern bool c_isblank (int c);
extern bool c_iscntrl (int c);
extern bool c_isdigit (int c);
extern bool c_islower (int c);
extern bool c_isgraph (int c);
extern bool c_isprint (int c);
extern bool c_ispunct (int c);
extern bool c_isspace (int c);
extern bool c_isupper (int c);
extern bool c_isxdigit (int c);

extern int c_tolower (int c);
extern int c_toupper (int c);
```

These functions assign properties only to ASCII characters.

The *c* argument can be a `char` or `unsigned char` value, whereas the corresponding functions in `<ctype.h>` take an argument that is actually an `unsigned char` value.

The `c_is*` functions return '`bool`', where the corresponding functions in `<ctype.h>` return '`int`' for historical reasons.

Note: The `<ctype.h>` functions support only unibyte locales.

13.7.2 c-strcase

The `c-strcase` module contains case-insensitive string comparison functions operating on single-byte character strings, like the functions in `<strings.h>`, that operate as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The functions are:

```
extern int c_strcasecmp (const char *s1, const char *s2);
extern int c_strncasecmp (const char *s1, const char *s2, size_t n);
```

For case conversion here, only ASCII characters are considered to be upper case or lower case.

Note: The functions `strcasecmp`, `strncasecmp` from `<strings.h>` support only unibyte locales; for multibyte locales, you need the functions `mbscasecmp`, `mbsncasecmp`, `mbspcasecmp`.

13.7.3 c-strcaseeq

The `c-strcaseeq` module contains an optimized case-insensitive string comparison function operating on single-byte character strings, that operate as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The functions is actually implemented as a macro:

```
extern int STRCASEEQ (const char *s1, const char *s2,
                      int s20, int s21, int s22, int s23, int s24, int s25,
                      int s26, int s27, int s28);
```

s2 should be a short literal ASCII string, and *s20*, *s21*, ... the individual characters of *s2*.

For case conversion here, only ASCII characters are considered to be upper case or lower case.

13.7.4 c-strcasestr

The `c-strcasestr` module contains a case-insensitive string search function operating on single-byte character strings, that operate as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The function is:

```
extern char *c_strcasestr (const char *haystack, const char *needle);
```

For case conversion here, only ASCII characters are considered to be upper case or lower case.

Note: The function `strcasestr` from `<string.h>` supports only unibyte locales; for multibyte locales, you need the function `mbscasestr`.

13.7.5 c-strstr

The `c-strstr` module contains a substring search function operating on single-byte character strings, that operate as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The function is:

```
extern char *c_strstr (const char *haystack, const char *needle);
```

Note: The function `strstr` from `<string.h>` supports only unibyte locales; for multibyte locales, you need the function `mbsstr`.

13.7.6 c-strtod

The `c-strtod` module contains a string to number (‘`double`’) conversion function operating on single-byte character strings, that operates as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The function is:

```
extern double c_strtod (const char *string, char **endp);
```

In particular, only a period '.' is accepted as decimal point, even when the current locale's notion of decimal point is a comma ',', and no characters outside the basic character set are accepted.

On platforms without `strtod_l`, this function is not safe for use in multi-threaded applications since it calls `setlocale`.

13.7.7 c-strtold

The `c-strtold` module contains a string to number ('`long double`') conversion function operating on single-byte character strings, that operates as if the locale encoding was ASCII. (The "C" locale on many systems has the locale encoding "ASCII".)

The function is:

```
extern long double c_strtold (const char *string, char **endp);
```

In particular, only a period '.' is accepted as decimal point, even when the current locale's notion of decimal point is a comma ','.

13.8 Quoting

Gnulib provides '`quote`' and '`quotearg`' modules to help with quoting text, such as file names, in messages to the user. Here's an example of using '`quote`':

```
#include <quote.h>
 ...
  error (0, errno, _("cannot change owner of %s"), quote (fname));
```

This differs from

```
  error (0, errno, _("cannot change owner of '%s'"), fname);
```

in that `quote` escapes unusual characters in `fname`, e.g., "'" and control characters like '`\n`'.

However, a caveat: `quote` reuses the storage that it returns. Hence if you need more than one thing quoted at the same time, you need to use `quote_n`.

Also, the quote module is not suited for multithreaded applications. In that case, you have to use `quotearg_alloc`, defined in the '`quotearg`' module, which is decidedly less convenient.

13.9 error and progname

The `error` function uses the `program_name` variable, but does not depend on the `progname` module. Why? Because `error` is released under the LGPL, whereas `progname` is GPL. RMS does not want additional baggage accompanying the `error` module, so an LGPL user must provide their own replacement `program_name`, and a GPL user should manually specify using the `progname` module.

Additionally, using the `progname` module is not something that can be done implicitly. It requires that every `main` function be modified to set `program_name` as one of its first actions.

13.10 gcd: greatest common divisor

The `gcd` function returns the greatest common divisor of two numbers `a > 0` and `b > 0`. It is the caller's responsibility to ensure that the arguments are non-zero.

If you need a gcd function for an integer type larger than '`unsigned long`', you can include the `gcd.c` implementation file with parametrization. The parameters are:

- WORD_T Define this to the unsigned integer type that you need this function for.
- GCD Define this to the name of the function to be created.

The created function has the prototype

```
WORD_T GCD (WORD_T a, WORD_T b);
```

If you need the least common multiple of two numbers, it can be computed like this: `lcm(a,b) = (a / gcd(a,b)) * b` or `lcm(a,b) = a * (b / gcd(a,b))`. Avoid the formula `lcm(a,b) = (a * b) / gcd(a,b)` because—although mathematically correct—it can yield a wrong result, due to integer overflow.

In some applications it is useful to have a function taking the gcd of two signed numbers. In this case, the gcd function result is usually normalized to be non-negative (so that two gcd results can be compared in magnitude or compared against 1, etc.). Note that in this case the prototype of the function has to be

```
unsigned long gcd (long a, long b);
```

and not

```
long gcd (long a, long b);
```

because `gcd(LONG_MIN,LONG_MIN) = -LONG_MIN = LONG_MAX + 1` does not fit into a signed '`long`'.

13.11 Searching for Libraries

The following macros check for the presence or location of certain C, C++, or Fortran library archive files.

Simple Library Tests

The macros `AC_CHECK_LIB`, `AC_SEARCH_LIBS` from GNU Autoconf check for the presence of certain C, C++, or Fortran library archive files. The libraries are looked up in the default linker path—a system dependent list of directories, that usually contains the `/usr/lib` directory—and those directories given by `-L` options in the `LDFLAGS` variable.

Locating Libraries

The following macros, defined in the Gnulib module `havelib`, search for the location of certain C, C++, or Fortran library archive files and make the found location available to the compilation process and to further Autoconf tests.

`AC_LIB_LINKFLAGS(`*name*`, [`*dependencies*`])` [Macro]

Searches for `lib<`*name*`>` and the libraries corresponding to explicit and implicit dependencies. Sets and AC_SUBSTs the `LIB<`*NAME*`>` and `LTLIB<`*NAME*`>` variables (with `<`*NAME*`>` in upper case) and augments the `CPPFLAGS` variable by `-I` options.

This macro should be used when `lib<`*name*`>` is expected to be found.

`AC_LIB_HAVE_LINKFLAGS(`*name*`, [`*dependencies*`], [`*includes*`], [`*testcode*`], [`*missing-message*`])` [Macro]

Searches for `lib<`*name*`>` and the libraries corresponding to explicit and implicit dependencies, together with the specified include files and the ability to compile and link the specified *testcode*. The *missing-message* defaults to `no` and may contain additional hints for the user. If found, it sets and AC_SUBSTs `HAVE_LIB<`*NAME*`>=yes` and the `LIB<`*NAME*`>` and `LTLIB<`*NAME*`>` variables (with `<`*NAME*`>` in upper case) and augments the `CPPFLAGS` variable by `-I` options, and #defines `HAVE_LIB<`*NAME*`>` to 1. Otherwise, it sets and AC_SUBSTs `HAVE_LIB<`*NAME*`>=no` and `LIB<`*NAME*`>` and `LTLIB<`*NAME*`>` to empty.

These macros assume that when a library is installed in *some_directory*`/lib`, its include files are installed in *some_directory*`/include`.

The complexities that `AC_LIB_LINKFLAGS` and `AC_LIB_HAVE_LINKFLAGS` deal with are the following:

- The library is not necessarily already in the search path (`CPPFLAGS` for the include file search path, `LDFLAGS` for the library search path). The macro provides a '`--with-lib<`*name*`>`' option. The user of the '`configure`' script can use this option to indicate the location of the library and its include files. If not provided, the `--prefix` directory is searched as well.
- The library is not necessarily already in the run time library search path. To avoid the need for setting an environment variable like `LD_LIBRARY_PATH`, the macro adds the appropriate run time search path options to the `LIB<`*NAME*`>` variable. This works on most systems. It can also be inhibited: The user of '`configure`' can use the `--disable-rpath` option to force an installation that doesn't contain hardcoded library search paths but instead may require the use of an environment variable like `LD_LIBRARY_PATH`.

The macros also set a variable `LTLIB<`*NAME*`>`, that should be used when linking with libtool. Both `LTLIB<`*NAME*`>` and `LIB<`*NAME*`>` contain essentially the same option, but where `LIB<`*NAME*`>` contains platform dependent flags like '`-Wl,-rpath`', `LTLIB<`*NAME*`>` contains platform independent flags like '`-R`'.

Example of using `AC_LIB_LINKFLAGS`

Suppose you want to use `libz`, the compression library.

1. In configure.ac you add the line

   ```
   AC_CONFIG_AUX_DIR([build-aux])
   AC_LIB_LINKFLAGS([z])
   ```

   Note that since the `AC_LIB_LINKFLAGS` invocation modifies the CPPFLAGS, it should precede all tests that check for header files, declarations, structures or types.
2. To the package's `build-aux` directory you add the file `config.rpath`, also part of the Gnulib `havelib` module. (`gnulib-tool` will usually do this for you automatically.)
3. In `Makefile.in` you add `@LIBZ@` to the link command line of your program. Or, if you are using Automake, you add `$(LIBZ)` to the `LDADD` variable that corresponds to your program.

Dependencies

The dependencies list is a space separated list of library names that `lib`*`name`* is known to depend upon. Example: If `libfooy` depends on `libfoox`, and `libfooz` depends on `libfoox` and `libfooy`, you can write:

```
AC_LIB_LINKFLAGS([foox])
AC_LIB_LINKFLAGS([fooy], [foox])
AC_LIB_LINKFLAGS([fooz], [foox fooy])
```

Explicit dependencies are necessary if you cannot assume that a `.la` file, created by libtool, is installed. If you can assume that `libfooy.la` is installed by libtool (and has not been omitted by the package distributor!), you can omit the explicit dependency and just write

```
AC_LIB_LINKFLAGS([fooy])
```

This way, you don't need to know in advance which libraries the needed library depends upon.

Static vs. shared

The macros find the libraries regardless whether they are installed as shared or static libraries.

CPPFLAGS vs. LDFLAGS

The macros determine the directories that should be added to the compiler preprocessor's search path and to the linker's search path. For the compiler preprocessor, `-I` options with the necessary directories are added to the `CPPFLAGS` variable, for use by the whole package. For the linker, appropriate options are added to the `LIB<`*`NAME`*`>` and `LTLIB<`*`NAME`*`>` variables, for use during linking by those programs and libraries that need the dependency on `lib<`*`name`*`>`. You need to use the value of `LIB<`*`NAME`*`>` or `LTLIB<`*`NAME`*`>` in the Makefiles. `LTLIB<`*`NAME`*`>` is for use with libtool, whereas `LIB<`*`NAME`*`>` is for when libtool is not involved in linking.

The macros do not check whether the include files and the library found match. If you want to verify this at configure time, one technique is to have a version number in the include files and a version number in the library, like this:

```
#define LIBNAME_VERSION 10203
extern int libname_version; /* initialized to LIBNAME_VERSION */
```

and use a test like

```
AC_TRY_RUN([int main () { return libname_version != LIBNAME_VERSION; }])
```

Bi-arch systems

A bi-arch system is one where

- the processor has a 32-bit execution mode and a 64-bit execution mode (for example, x86_64, ia64, sparc64, powerpc64), and
- 32-bit mode libraries and executables and 64-bit mode libraries are both installed, and
- 32-bit mode libraries and object files cannot be mixed with 64-bit mode ones.

On several types of such systems, for historical reasons, the 32-bit libraries are installed in *`prefix`*`/lib`, whereas the 64-bit libraries are installed in

- *`prefix`*`/lib64` on many glibc systems,

- *prefix*/lib/64 on Solaris systems.

On such systems, in 64-bit mode, `configure` will search for the libraries in *prefix*/lib64 or *prefix*/lib/64, respectively, not in *prefix*/lib. A user can adhere to these system-wide conventions by using the '`--libdir`' option when installing packages. When a user has already installed packages in 64-bit mode using the GNU default '`--libdir=`*prefix*`/lib`', he can make this directory adhere to the system-wide convention by placing a symbolic link:

On glibc systems:

```
ln -s lib prefix/lib64
```

On Solaris systems:

```
ln -s . prefix/lib/64
```

13.12 Controlling the Exported Symbols of Shared Libraries

The `lib-symbol-visibility` module allows precise control of the symbols exported by a shared library. This is useful because

- It prevents abuse of undocumented APIs of your library. Symbols that are not exported from the library cannot be used. This eliminates the problem that when the maintainer of the library changes internals of the library, maintainers of other projects cry "breakage". Instead, these maintainers are forced to negotiate the desired API from the maintainer of the library.
- It reduces the risk of symbol collision between your library and other libraries. For example, the symbol '`readline`' is defined in several libraries, most of which don't have the same semantics and the same calling convention as the GNU readline library.
- It reduces the startup time of programs linked to the library. This is because the dynamic loader has less symbols to process.
- It allows the compiler to generate better code. Within a shared library, a call to a function that is a global symbol costs a "call" instruction to a code location in the so-called PLT (procedure linkage table) which contains a "jump" instruction to the actual function's code. (This is needed so that the function can be overridden, for example by a function with the same name in the executable or in a shared library interposed with `LD_PRELOAD`.) Whereas a call to a function for which the compiler can assume that it is in the same shared library is just a direct "call" instructions. Similarly for variables: A reference to a global variable fetches a pointer in the so-called GOT (global offset table); this is a pointer to the variable's memory. So the code to access it is two memory load instructions. Whereas for a variable which is known to reside in the same shared library, it is just a direct memory access: one memory load instruction.

There are traditionally three ways to specify the exported symbols of a shared library.

- The programmer specifies the list of symbols to be exported when the shared library is created. Usually a command-line option is passed to the linker, with the name of a file containing the symbols.

  The upside of this approach is flexibility: it allows the same code to be used in different libraries with different export lists. The downsides are: 1. it's a lot of maintenance overhead when the symbol list is platform dependent, 2. it doesn't work well with C++, due to name mangling.

- The programmer specifies a "hidden" attribute for every variable and function that shall not be exported.

  The drawbacks of this approach are: Symbols are still exported from the library by default. It's a lot of maintenance work to mark every non- exported variable and function. But usually the exported API is quite small, compared to the internal API of the library. And it's the wrong paradigm: It doesn't force thinking when introducing new exported API.
- The programmer specifies a "hidden" attribute for all files that make up the shared library, and an "exported" attribute for those symbols in these files that shall be exported.

  This is perfect: It burdens the maintainer only for exported API, not for library-internal API. And it keeps the annotations in the source code.

GNU libtool's `-export-symbols` option implements the first approach.

This gnulib module implements the third approach. For this it relies on GNU GCC 4.0 or newer, namely on its '`-fvisibility=hidden`' command-line option and the "visibility" attribute. (The "visibility" attribute was already supported in GCC 3.4, but without the command line option, introduced in GCC 4.0, the third approach could not be used.)

More explanations on this subject can be found in `http://gcc.gnu.org/wiki/Visibility`, which contains more details on the GCC features and additional advice for C++ libraries, and in Ulrich Drepper's paper `http://people.redhat.com/drepper/dsohowto.pdf`, which also explains other tricks for reducing the startup time impact of shared libraries.

The gnulib autoconf macro `gl_VISIBILITY` tests for GCC 4.0 or newer. It defines a Makefile variable `@CFLAG_VISIBILITY@` containing '`-fvisibility=hidden`' or nothing. It also defines as a C macro and as a substituted variable: @HAVE_VISIBILITY@. Its value is 1 when symbol visibility control is supported, and 0 otherwise.

To use this module in a library, say libfoo, you will do these steps:

1. Add `@CFLAG_VISIBILITY@` or (in a Makefile.am) `$(CFLAG_VISIBILITY)` to the CFLAGS for the compilation of the sources that make up the library.
2. Add a C macro definition, say '`-DBUILDING_LIBFOO`', to the CPPFLAGS for the compilation of the sources that make up the library.
3. Define a macro specific to your library like this.

   ```
   #if BUILDING_LIBFOO && HAVE_VISIBILITY
   #define LIBFOO_DLL_EXPORTED __attribute__((__visibility__("default")))
   #else
   #define LIBFOO_DLL_EXPORTED
   #endif
   ```

   This macro should be enabled in all public header files of your library.
4. Annotate all variable, function and class declarations in all public header files of your library with '`LIBFOO_DLL_EXPORTED`'. This annotation can occur at different locations: between the '`extern`' and the type or return type, or just before the entity being declared, or after the entire declarator. My preference is to put it right after '`extern`', so that the declarations in the header files remain halfway readable.

Note that the precise control of the exported symbols will not work with other compilers than GCC >= 4.0, and will not work on systems where the assembler or linker lack the

support of "hidden" visibility. Therefore, it's good if, in order to reduce the risk of collisions with symbols in other libraries, you continue to use a prefix specific to your library for all non-static variables and functions and for all C++ classes in your library.

Note about other compilers: MSVC support can be added easily, by extending the definition of the macro mentioned above, to something like this:

```
#if BUILDING_LIBFOO && HAVE_VISIBILITY
#define LIBFOO_DLL_EXPORTED __attribute__((__visibility__("default")))
#elif BUILDING_LIBFOO && defined _MSC_VER
#define LIBFOO_DLL_EXPORTED __declspec(dllexport)
#elif defined _MSC_VER
#define LIBFOO_DLL_EXPORTED __declspec(dllimport)
#else
#define LIBFOO_DLL_EXPORTED
#endif
```

13.13 LD Version Scripts

The `lib-symbol-versions` module can be used to add shared library versioning support. Currently, only GNU LD and the Solaris linker supports this.

Version scripts provides information that can be used by GNU/Linux distribution packaging tools. For example, Debian has a tool `dpkg-shlibdeps` that can determine the minimal required version of each dependency (by looking at the symbol list) and stuff the information into the Debian specific packaging files.

For more information and other uses of version scripts, see Ulrich Drepper's paper `http://people.redhat.com/drepper/dsohowto.pdf`

You use the module by importing it to your library, and then add the following lines to the `Makefile.am` that builds the library:

```
if HAVE_LD_VERSION_SCRIPT
libfoo_la_LDFLAGS += -Wl,--version-script=$(srcdir)/libfoo.map
endif
```

The version script file format is documented in the GNU LD manual, but a small example would be:

```
LIBFOO_1.0 {
  global:
    libfoo_init; libfoo_doit; libfoo_done;

  local:
    *;
};
```

If you target platforms that do not support linker scripts (i.e., all platforms that doesn't use GNU LD) you may want to consider a more portable but less powerful alternative: libtool `-export-symbols`. It will hide internal symbols from your library, but will not add ELF versioning symbols. Your usage would then be something like:

```
if HAVE_LD_VERSION_SCRIPT
libfoo_la_LDFLAGS += -Wl,--version-script=$(srcdir)/libfoo.map
else
libfoo_la_LDFLAGS += -export-symbols $(srcdir)/libfoo.sym
endif
```

See the Libtool manual for the file syntax, but a small example would be:

```
libfoo_init
```

```
libfoo_doit
libfoo_done
```

To avoid the need for a `*.sym` file if your symbols are easily expressed using a regular expression, you may use `-export-symbols-regex`:

```
if HAVE_LD_VERSION_SCRIPT
libfoo_la_LDFLAGS += -Wl,--version-script=$(srcdir)/libfoo.map
else
libfoo_la_LDFLAGS += -export-symbols-regex '^libfoo_.*'
endif
```

For more discussions about symbol visibility, rather than shared library versioning, see the `visibility` module (see Section 13.12 [Exported Symbols of Shared Libraries], page 635).

13.14 Visual Studio Compatibility

The `lib-msvc-compat` module detects whether the linker supports `--output-def` when building a library. That parameter is used to generate a DEF file for a shared library (DLL). DEF files are useful for developers that use Visual Studio to develop programs that links to your library. See the GNU LD manual for more information.

There are other ways to create a DEF file, but we believe they are all sub-optimal to using `--output-def` during the build process. The variants we have considered include:

- Use DUMPBIN /EXPORTS. This is explained in `http://support.microsoft.com/kb/131313/en-us`. The tool does not generate DEF files directly, so its output needs to be post processed manually:

  ```
  $ { echo EXPORTS; \
      dumpbin /EXPORTS libfoo-0.dll | tail -n+20 | awk '{ print $4 }'; \
    } > libfoo-0.def
  $ lib /def:libfoo-0.def
  ```

- Use IMPDEF. There is a tool called IMPDEF (`http://sei.pku.edu.cn/~caodg/course/c/reference/win32/tools/dlltool.html`) that can generate DEF files. However, it is not part of a standard Visual Studio installation. Further, it is documented as being an unreliable process.
- Use DLLTOOL. The dlltool is part of the MinGW suite, and thus not part of a standard Visual Studio installation. The documentation for the IMPDEF tool claims that DLLTOOL is the wrong tool for this job. Finally, DLLTOOL does not generate DEF files directly, so it requires post-processing of the output.

If you are using libtool to build your shared library, here is how to use this module. Import `lib-msvc-compat` to your project, and then add the following lines to the `Makefile.am` that builds the library:

```
if HAVE_LD_OUTPUT_DEF
libfoo_la_LDFLAGS += -Wl,--output-def,libfoo-$(DLL_VERSION).def
defexecdir = $(bindir)
defexec_DATA = libfoo-$(DLL_VERSION).def
DISTCLEANFILES += $(defexec_DATA)
endif
```

The `DLL_VERSION` variable needs to be defined. It should be the shared library version number used in the DLL filename. For Windows targets you compute this value from the values you pass to Libtool's `-version-info`. Assuming you have variables `LT_CURRENT` and

LT_AGE defined for the CURRENT and AGE libtool version integers, you compute DLL_VERSION as follows:

```
DLL_VERSION=`expr ${LT_CURRENT} - ${LT_AGE}`
AC_SUBST(DLL_VERSION)
```

13.15 Supporting Relocation

It has been a pain for many users of GNU packages for a long time that packages are not relocatable. It means a user cannot copy a program, installed by another user on the same machine, to his home directory, and have it work correctly (including i18n). So many users need to go through `configure; make; make install` with all its dependencies, options, and hurdles.

Red Hat, Debian, and other binary distributions solve the "ease of installation" problem, but they hardwire path names, usually to `/usr` or `/usr/local`. This means that users need root privileges to install a binary package, and prevents installing two different versions of the same binary package.

A relocatable program can be moved or copied to a different location on the file system. It is possible to make symlinks to the installed and moved programs, and invoke them through the symlink. It is possible to do the same thing with a hard link *only* if the hard link file is in the same directory as the real program.

The `relocatable-prog` module aims to ease the process of making a GNU program relocatable. It helps overcome two obstacles. First, it aids with relocating the hard-coded references to absolute file names that GNU programs often contain. These references must be fixed up at runtime if a program is to be successfully relocated. The `relocatable-prog` module provides a function `relocate` that does this job.

Second, the loader must be able to find shared libraries linked to relocatable executables or referenced by other shared libraries linked to relocatable executables. The `relocatable-prog` module helps out here in a platform-specific way:

- On GNU/Linux, it adds a linker option (`-rpath`) that causes the dynamic linker to search for libraries in a directory relative to the location of the invoked executable.
- On other Unix systems, it installs a wrapper executable. The wrapper sets the environment variable that controls shared library searching (usually `LD_LIBRARY_PATH`) and then invokes the real executable.

  This approach does not always work. On OpenBSD and OpenServer, prereleases of Libtool 1.5 put absolute file names of libraries in executables, which prevents searching any other locations.
- On Windows, the executable's own directory is searched for libraries, so installing shared libraries into the executable's directory is sufficient.

You can make your program relocatable by following these steps:

1. Import the `relocatable-prog` module.
2. In every program, add to `main` as the first statement (even before setting the locale or doing anything related to libintl):

   ```
   set_program_name (argv[0]);
   ```

   The prototype for this function is in `progname.h`.

3. Everywhere where you use a constant pathname from installation-time, wrap it in `relocate` so it gets translated to the run-time situation. Example:

   ```
   bindtextdomain (PACKAGE, LOCALEDIR);
   ```

   becomes:

   ```
   bindtextdomain (PACKAGE, relocate (LOCALEDIR));
   ```

   The prototype for this function is in `relocatable.h`.

4. The `set_program_name` function can also configure some additional libraries to relocate files that they access, by defining corresponding C preprocessor symbols to 1. The libraries for which this is supported and the corresponding preprocessor symbols are:

   libcharset `DEPENDS_ON_LIBCHARSET`

   libiconv `DEPENDS_ON_LIBICONV`

   libintl `DEPENDS_ON_LIBINTL`

   Defining the symbol for a library makes every program in the package depend on that library, whether the program really uses the library or not, so this feature should be used with some caution.

5. If your package installs shell scripts, also import the `relocatable-script` module. Then, near the beginning of each shell script that your package installs, add the following:

   ```
   @relocatable_sh@
   if test "@RELOCATABLE@" = yes; then
     exec_prefix="@exec_prefix@"
     bindir="@bindir@"
     orig_installdir="$bindir" # see Makefile.am's *_SCRIPTS variables
     func_find_curr_installdir # determine curr_installdir
     func_find_prefixes
     relocate () {
       echo "$1/" \
       | sed -e "s%^${orig_installprefix}/%${curr_installprefix}/%" \
       | sed -e 's,/$,,'
     }
   else
     relocate () {
       echo "$1"
     }
   fi

   # Get some relocated directory names.
   sysconfdir=`relocate "@sysconfdir@"`
   some_datadir=`relocate "@datadir@/something"`
   ```

   You must adapt the definition of `orig_installdir`, depending on where the script gets installed. Also, at the end, instead of `sysconfdir` and `some_datadir`, transform those variables that you need.

6. If your package installs Perl scripts, also import the `relocatable-perl` module. Then, near the beginning of each Perl script that your package installs, add the following:

```
@relocatable_pl@
if ("@RELOCATABLE@" eq "yes") {
  my $exec_prefix = "@exec_prefix@";
  my $orig_installdir = "@bindir@"; # see Makefile.am's *_SCRIPTS variables
  my ($orig_installprefix, $curr_installprefix) = find_prefixes($orig_installdir, '
  sub relocate { # the subroutine is defined whether or not the enclosing block is
    my ($dir) = @_;
    if ("@RELOCATABLE@" eq "yes") {
      $dir =~ s%^$orig_installprefix/%$curr_installprefix/%;
      $dir =~ s,/$,,;
    }
    return $dir;
  }
}

# Get some relocated directory names.
$sysconfdir = relocate("@sysconfdir@");
$some_datadir = relocate(@datadir@/something");
```

   You must adapt the definition of `$orig_installdir`, depending on where the script gets installed. Also, at the end, instead of `sysconfdir` and `some_datadir`, transform those variables that you need.

7. In your `Makefile.am`, for every program `foo` that gets installed in, say, `$(bindir)`, you add:

```
foo_CPPFLAGS = -DINSTALLDIR=\"$(bindir)\"
if RELOCATABLE_VIA_LD
foo_LDFLAGS = `$(RELOCATABLE_LDFLAGS) $(bindir)`
endif
```

8. You may also need to add a couple of variable assignments to your `configure.ac`.

   If your package (or any package you rely on, e.g. gettext-runtime) will be relocated together with a set of installed shared libraries, then set *RELOCATABLE_LIBRARY_PATH* to a colon-separated list of those libraries' directories, e.g.

```
RELOCATABLE_LIBRARY_PATH='$(libdir)'
```

   If your `config.h` is not in `$(top_builddir)`, then set *RELOCATABLE_CONFIG_H_DIR* to its directory, e.g.

```
RELOCATABLE_CONFIG_H_DIR='$(top_builddir)/src'
```

13.16 func

The `func` module makes sure that you can use the predefined identifier `__func__` as defined by C99 in your code.

A small example is:

```
#include <config.h>
```

```
#include <stdio.h> /* for printf */

int main (void)
{
    printf ("%s: hello world\n", __func__);
}
```

Note that `sizeof` cannot be applied to `__func__`: On SunPRO C compiler, `sizeof __func__` evaluates to 0.

13.17 configmake

The `configmake` module builds a C include file named `configmake.h` containing the usual installation directory values; for example, those specified by `--prefix` or `--libdir` to configure. Each variable is given a `#define` with an all-uppercase macro name, such as `PREFIX` and `LIBDIR`. (Automake cannot create this file directly because the user might override directory values at `make` time.)

Specifically, the module retrieves values of the variables through `configure` followed by `make`, not directly through `configure`, so that a user who sets some of these variables consistently on the `make` command line gets correct results.

One advantage of this approach, compared to the classical approach of adding `-DLIBDIR=\"$(libdir)\"` etc. to `AM_CPPFLAGS`, is that it protects against the use of undefined variables. That is, if, say, `$(libdir)` is not set in the Makefile, `LIBDIR` is not defined by this module, and code using `LIBDIR` gives a compilation error.

Another advantage is that `make` output is shorter.

For the complete list of variables which are `#define`d this way, see the file `gnulib/modules/configmake`, or inspect your resulting gnulib Makefile.

13.18 warnings

The `warnings` module allows to regularly build a package with more GCC warnings than the default warnings emitted by GCC.

It provides the following functionality:

- You can select some warning options, such as '`-Wall`', to be enabled whenever building with a GCC version that supports these options. The user can choose to override these warning options by providing the opposite options in the `CFLAGS` variable at configuration time.
- You can make these warnings apply to selected directories only. In projects where subprojects are maintained by different people, or where parts of the source code are imported from external sources (for example from gnulib), it is useful to apply different warning options to different directories.
- It lets you use '`-Werror`' at '`make distcheck`' time, to verify that on the maintainer's system, no warnings remain. (Note that use of '`-Werror`' in `CFLAGS` does not work in general, because it may break autoconfiguration.)
- Similarly, it lets you use '`-Werror`' when the builder runs `configure` with an option such as `--enable-gcc-warnings`.

To use this module, you need the following:

1. In `configure.ac`, use for example

   ```
   gl_WARN_ADD([-Wall], [WARN_CFLAGS])
   gl_WARN_ADD([-Wpointer-arith], [WARN_CFLAGS])
   ```

2. In the directories which shall use `WARN_CFLAGS`, use it in the definition of `AM_CFLAGS`, like this:

   ```
   AM_CFLAGS = $(WARN_CFLAGS)
   ```

   Note that the `AM_CFLAGS` is used in combination with `CFLAGS` and before `CFLAGS` in build rules emitted by Automake. This allows the user to provide `CFLAGS` that override the `WARN_CFLAGS`.

'`gl_WARN_ADD([-Werror])`' is intended for developers, and should be avoided in contexts where it would affect ordinary installation builds. The warnings emitted by GCC depend, to some extent, on the contents of the system header files, on the size and signedness of built-in types, etc. Use of '`-Werror`' would cause frustration to all users on platforms that the maintainer has not tested before the release. It is better if '`-Werror`' is off by default, and is enabled only by developers. For example, '`-Werror`' could affect '`make distcheck`' or '`configure --enable-gcc-warnings`' as mentioned above.

13.19 manywarnings

The `manywarnings` module allows you to enable as many GCC warnings as possible for your package. The purpose is to protect against introducing new code that triggers warnings that weren't already triggered by the existing code base.

An example use of the module is as follows:

```
gl_MANYWARN_ALL_GCC([warnings])
# Set up the list of the pointless, undesired warnings.
nw=
nw="$nw -Wsystem-headers"       # Don't let system headers trigger warnings
nw="$nw -Wundef"                # All compiler preprocessors support #if UNDEF
nw="$nw -Wtraditional"          # All compilers nowadays support ANSI C
nw="$nw -Wconversion"           # These warnings usually don't point to mistakes.
nw="$nw -Wsign-conversion"      # Likewise.
# Enable all GCC warnings not in this list.
gl_MANYWARN_COMPLEMENT([warnings], [$warnings], [$nw])
for w in $warnings; do
  gl_WARN_ADD([$w])
done
```

This module is meant to be used by developers who are not very experienced regarding the various GCC warning options. In the beginning you will set the list of undesired warnings ('`nw`' in the example above) to empty, and compile the package with all possible warnings enabled. The GCC option `-fdiagnostics-show-option`, available in GCC 4.1 or newer, helps understanding which warnings originated from which option. Then you will go through the list of warnings. You will likely deactivate warnings that occur often and don't point to mistakes in the code, by adding them to the '`nw`' variable, then reconfiguring and recompiling. When warnings point to real mistakes and bugs in the code, you will of course not disable them.

There are also many GCC warning options which usually don't point to mistakes in the code; these warnings enforce a certain programming style. It is a project management

decision whether you want your code to follow any of these styles. Note that some of these programming styles are conflicting. You cannot have them all; you have to choose among them.

When a new version of GCC is released, you can add the new warning options that it introduces into the `gl_MANYWARN_ALL_GCC` macro (and submit your modification to the Gnulib maintainers :-)), and enjoy the benefits of the new warnings, while adding the undesired ones to the '`nw`' variable.

13.20 Running self-tests under valgrind

For projects written in C or similar languages, running the self-tests under Valgrind can reveal hard to find memory issues. The `valgrind-tests` module searches for Valgrind and declares the `VALGRIND` automake variable for use with automake's `TESTS_ENVIRONMENT`.

After importing the `valgrind-tests` module to your project, you use it by adding the following to the `Makefile.am` that runs the self-tests:

```
TESTS_ENVIRONMENT = $(VALGRIND)
```

This will run all self-checks under valgrind. This can be wasteful if you have many shell scripts or other non-binaries. Using the Automake parallel-tests feature, this can be avoided by using the following instead:

```
AUTOMAKE_OPTIONS = parallel-tests
TEST_EXTENSIONS = .pl .sh
LOG_COMPILER = $(VALGRIND)
```

Then valgrind will only be used for the non-.sh and non-.pl tests. However, this means that binaries invoked through scripts will not be invoked under valgrind, which could be solved by adding the following:

```
TESTS_ENVIRONMENT = VALGRIND='$(VALGRIND)'
```

And then modify the shell scripts to invoke the binary prefixed with `$VALGRIND`.

13.21 stat-size

The `stat-size` module provides a small number of macros intended for interpreting the file size information in an instance of `struct stat`.

On POSIX systems, the `st_blocks` member of `struct stat` contains the number of disk blocks occupied by a file. The `ST_NBLOCKS` macro is used to estimate this quantity on systems which don't actually have `st_blocks`. Each of these blocks contains `ST_NBLOCKSIZE` bytes.

The value of `ST_NBLOCKSIZE` is often quite small, small enough that performing I/O in chunks that size would be inefficient. `ST_BLKSIZE` is the I/O block size recommended for I/O to this file. This is not guaranteed to give optimum performance, but it should be reasonably efficient.

14 Regular expressions

14.1 Overview

A *regular expression* (or *regexp*, or *pattern*) is a text string that describes some (mathematical) set of strings. A regexp *r matches* a string *s* if *s* is in the set of strings described by *r*.

Using the Regex library, you can:

- see if a string matches a specified pattern as a whole, and
- search within a string for a substring matching a specified pattern.

Some regular expressions match only one string, i.e., the set they describe has only one member. For example, the regular expression '`foo`' matches the string '`foo`' and no others. Other regular expressions match more than one string, i.e., the set they describe has more than one member. For example, the regular expression '`f*`' matches the set of strings made up of any number (including zero) of '`f`'s. As you can see, some characters in regular expressions match themselves (such as '`f`') and some don't (such as '`*`'); the ones that don't match themselves instead let you specify patterns that describe many different strings.

To either match or search for a regular expression with the Regex library functions, you must first compile it with a Regex pattern compiling function. A *compiled pattern* is a regular expression converted to the internal format used by the library functions. Once you've compiled a pattern, you can use it for matching or searching any number of times.

The Regex library is used by including `regex.h`. Regex provides three groups of functions with which you can operate on regular expressions. One group—the GNU group—is more powerful but not completely compatible with the other two, namely the POSIX and Berkeley Unix groups; its interface was designed specifically for GNU.

We wrote this chapter with programmers in mind, not users of programs—such as Emacs—that use Regex. We describe the Regex library in its entirety, not how to write regular expressions that a particular program understands.

14.2 Regular Expression Syntax

Characters are things you can type. *Operators* are things in a regular expression that match one or more characters. You compose regular expressions from operators, which in turn you specify using one or more characters.

Most characters represent what we call the match-self operator, i.e., they match themselves; we call these characters *ordinary*. Other characters represent either all or parts of fancier operators; e.g., '`.`' represents what we call the match-any-character operator (which, no surprise, matches (almost) any character); we call these characters *special*. Two different things determine what characters represent what operators:

1. the regular expression syntax your program has told the Regex library to recognize, and
2. the context of the character in the regular expression.

In the following sections, we describe these things in more detail.

14.2.1 Syntax Bits

In any particular syntax for regular expressions, some characters are always special, others are sometimes special, and others are never special. The particular syntax that Regex recognizes for a given regular expression depends on the current syntax (as set by `re_set_syntax`) when the pattern buffer of that regular expression was compiled.

You get a pattern buffer by compiling a regular expression. See Section 14.7.1.1 [GNU Pattern Buffers], page 661, for more information on pattern buffers. See Section 14.7.1.2 [GNU Regular Expression Compiling], page 661, and Section 14.7.2.1 [BSD Regular Expression Compiling], page 668, for more information on compiling.

Regex considers the current syntax to be a collection of bits; we refer to these bits as *syntax bits*. In most cases, they affect what characters represent what operators. We describe the meanings of the operators to which we refer in Section 14.3 [Common Operators], page 651, Section 14.4 [GNU Operators], page 658, and Section 14.5 [GNU Emacs Operators], page 660.

For reference, here is the complete list of syntax bits, in alphabetical order:

`RE_BACKSLASH_ESCAPE_IN_LISTS`
: If this bit is set, then '`\`' inside a list (see Section 14.3.6 [List Operators], page 654, quotes (makes ordinary, if it's special) the following character; if this bit isn't set, then '`\`' is an ordinary character inside lists. (See Section 14.2.4 [The Backslash Character], page 650, for what '`\`' does outside of lists.)

`RE_BK_PLUS_QM`
: If this bit is set, then '`\+`' represents the match-one-or-more operator and '`\?`' represents the match-zero-or-more operator; if this bit isn't set, then '`+`' represents the match-one-or-more operator and '`?`' represents the match-zero-or-one operator. This bit is irrelevant if `RE_LIMITED_OPS` is set.

`RE_CHAR_CLASSES`
: If this bit is set, then you can use character classes in lists; if this bit isn't set, then you can't.

`RE_CONTEXT_INDEP_ANCHORS`
: If this bit is set, then '`^`' and '`$`' are special anywhere outside a list; if this bit isn't set, then these characters are special only in certain contexts. See Section 14.3.9.1 [Match-beginning-of-line Operator], page 658, and Section 14.3.9.2 [Match-end-of-line Operator], page 658.

`RE_CONTEXT_INDEP_OPS`
: If this bit is set, then certain characters are special anywhere outside a list; if this bit isn't set, then those characters are special only in some contexts and are ordinary elsewhere. Specifically, if this bit isn't set then '`*`', and (if the syntax bit `RE_LIMITED_OPS` isn't set) '`+`' and '`?`' (or '`\+`' and '`\?`', depending on the syntax bit `RE_BK_PLUS_QM`) represent repetition operators only if they're not first in a regular expression or just after an open-group or alternation operator. The same holds for '`{`' (or '`\{`', depending on the syntax bit `RE_NO_BK_BRACES`) if it is the beginning of a valid interval and the syntax bit `RE_INTERVALS` is set.

`RE_CONTEXT_INVALID_DUP`
: If this bit is set, then an open-interval operator cannot occur at the start of a regular expression, or immediately after an alternation, open-group or close-interval operator.

`RE_CONTEXT_INVALID_OPS`
: If this bit is set, then repetition and alternation operators can't be in certain positions within a regular expression. Specifically, the regular expression is invalid if it has:

  - a repetition operator first in the regular expression or just after a match-beginning-of-line, open-group, or alternation operator; or
  - an alternation operator first or last in the regular expression, just before a match-end-of-line operator, or just after an alternation or open-group operator.

  If this bit isn't set, then you can put the characters representing the repetition and alternation characters anywhere in a regular expression. Whether or not they will in fact be operators in certain positions depends on other syntax bits.

`RE_DEBUG` If this bit is set, and the regex library was compiled with `-DDEBUG`, then internal debugging is turned on; if unset, then it is turned off.

`RE_DOT_NEWLINE`
: If this bit is set, then the match-any-character operator matches a newline; if this bit isn't set, then it doesn't.

`RE_DOT_NOT_NULL`
: If this bit is set, then the match-any-character operator doesn't match a null character; if this bit isn't set, then it does.

`RE_HAT_LISTS_NOT_NEWLINE`
: If this bit is set, nonmatching lists '`[^...]`' do not match newline; if not set, they do.

`RE_ICASE` If this bit is set, then ignore case when matching; otherwise, case is significant.

`RE_INTERVALS`
: If this bit is set, then Regex recognizes interval operators; if this bit isn't set, then it doesn't.

`RE_INVALID_INTERVAL_ORD`
: If this bit is set, a syntactically invalid interval is treated as a string of ordinary characters. For example, the extended regular expression '`a{1`' is treated as '`a\{1`'.

`RE_LIMITED_OPS`
: If this bit is set, then Regex doesn't recognize the match-one-or-more, match-zero-or-one or alternation operators; if this bit isn't set, then it does.

`RE_NEWLINE_ALT`
: If this bit is set, then newline represents the alternation operator; if this bit isn't set, then newline is ordinary.

`RE_NO_BK_BRACES`
: If this bit is set, then '`{`' represents the open-interval operator and '`}`' represents the close-interval operator; if this bit isn't set, then '`\{`' represents the open-interval operator and '`\}`' represents the close-interval operator. This bit is relevant only if `RE_INTERVALS` is set.

`RE_NO_BK_PARENS`
: If this bit is set, then '`(`' represents the open-group operator and '`)`' represents the close-group operator; if this bit isn't set, then '`\(`' represents the open-group operator and '`\)`' represents the close-group operator.

`RE_NO_BK_REFS`
: If this bit is set, then Regex doesn't recognize '`\`*digit*' as the back reference operator; if this bit isn't set, then it does.

`RE_NO_BK_VBAR`
: If this bit is set, then '`|`' represents the alternation operator; if this bit isn't set, then '`\|`' represents the alternation operator. This bit is irrelevant if `RE_LIMITED_OPS` is set.

`RE_NO_EMPTY_RANGES`
: If this bit is set, then a regular expression with a range whose ending point collates lower than its starting point is invalid; if this bit isn't set, then Regex considers such a range to be empty.

`RE_NO_GNU_OPS`
: If this bit is set, GNU regex operators are not recognized; otherwise, they are.

`RE_NO_POSIX_BACKTRACKING`
: If this bit is set, succeed as soon as we match the whole pattern, without further backtracking. This means that a match may not be the leftmost longest; see Section 14.6 [What Gets Matched?], page 660, for what this means.

`RE_NO_SUB`
: If this bit is set, then `no_sub` will be set to one during `re_compile_pattern`. This causes matching and searching routines not to record substring match information.

`RE_UNMATCHED_RIGHT_PAREN_ORD`
: If this bit is set and the regular expression has no matching open-group operator, then Regex considers what would otherwise be a close-group operator (based on how `RE_NO_BK_PARENS` is set) to match '`)`'.

14.2.2 Predefined Syntaxes

If you're programming with Regex, you can set a pattern buffer's (see Section 14.7.1.1 [GNU Pattern Buffers], page 661) syntax either to an arbitrary combination of syntax bits (see Section 14.2.1 [Syntax Bits], page 646) or else to the configurations defined by Regex. These configurations define the syntaxes used by certain programs—GNU Emacs, POSIX Awk, traditional Awk, Grep, Egrep—in addition to syntaxes for POSIX basic and extended regular expressions.

The predefined syntaxes—taken directly from `regex.h`—are:

```
#define RE_SYNTAX_EMACS 0
```

```
#define RE_SYNTAX_AWK                                                   \
  (RE_BACKSLASH_ESCAPE_IN_LISTS | RE_DOT_NOT_NULL                       \
   | RE_NO_BK_PARENS            | RE_NO_BK_REFS                        \
   | RE_NO_BK_VBAR               | RE_NO_EMPTY_RANGES                  \
   | RE_UNMATCHED_RIGHT_PAREN_ORD)

#define RE_SYNTAX_POSIX_AWK                                             \
  (RE_SYNTAX_POSIX_EXTENDED | RE_BACKSLASH_ESCAPE_IN_LISTS)

#define RE_SYNTAX_GREP                                                  \
  (RE_BK_PLUS_QM              | RE_CHAR_CLASSES                        \
   | RE_HAT_LISTS_NOT_NEWLINE | RE_INTERVALS                          \
   | RE_NEWLINE_ALT)

#define RE_SYNTAX_EGREP                                                 \
  (RE_CHAR_CLASSES        | RE_CONTEXT_INDEP_ANCHORS                   \
   | RE_CONTEXT_INDEP_OPS | RE_HAT_LISTS_NOT_NEWLINE                   \
   | RE_NEWLINE_ALT       | RE_NO_BK_PARENS                           \
   | RE_NO_BK_VBAR)

#define RE_SYNTAX_POSIX_EGREP                                           \
  (RE_SYNTAX_EGREP | RE_INTERVALS | RE_NO_BK_BRACES)

/* P1003.2/D11.2, section 4.20.7.1, lines 5078ff.  */
#define RE_SYNTAX_ED RE_SYNTAX_POSIX_BASIC

#define RE_SYNTAX_SED RE_SYNTAX_POSIX_BASIC

/* Syntax bits common to both basic and extended POSIX regex syntax.  */
#define _RE_SYNTAX_POSIX_COMMON                                         \
  (RE_CHAR_CLASSES | RE_DOT_NEWLINE      | RE_DOT_NOT_NULL             \
   | RE_INTERVALS  | RE_NO_EMPTY_RANGES)

#define RE_SYNTAX_POSIX_BASIC                                           \
  (_RE_SYNTAX_POSIX_COMMON | RE_BK_PLUS_QM)

/* Differs from ..._POSIX_BASIC only in that RE_BK_PLUS_QM becomes
   RE_LIMITED_OPS, i.e., \? \+ \| are not recognized.  Actually, this
   isn't minimal, since other operators, such as \`, aren't disabled.  */
#define RE_SYNTAX_POSIX_MINIMAL_BASIC                                   \
  (_RE_SYNTAX_POSIX_COMMON | RE_LIMITED_OPS)

#define RE_SYNTAX_POSIX_EXTENDED                                        \
  (_RE_SYNTAX_POSIX_COMMON | RE_CONTEXT_INDEP_ANCHORS                   \
   | RE_CONTEXT_INDEP_OPS  | RE_NO_BK_BRACES                          \
   | RE_NO_BK_PARENS       | RE_NO_BK_VBAR                             \
   | RE_UNMATCHED_RIGHT_PAREN_ORD)

/* Differs from ..._POSIX_EXTENDED in that RE_CONTEXT_INVALID_OPS
   replaces RE_CONTEXT_INDEP_OPS and RE_NO_BK_REFS is added.  */
#define RE_SYNTAX_POSIX_MINIMAL_EXTENDED                                \
  (_RE_SYNTAX_POSIX_COMMON  | RE_CONTEXT_INDEP_ANCHORS                  \
   | RE_CONTEXT_INVALID_OPS | RE_NO_BK_BRACES                          \
   | RE_NO_BK_PARENS        | RE_NO_BK_REFS                           \
   | RE_NO_BK_VBAR          | RE_UNMATCHED_RIGHT_PAREN_ORD)
```

14.2.3 Collating Elements vs. Characters

POSIX generalizes the notion of a character to that of a collating element. It defines a *collating element* to be "a sequence of one or more bytes defined in the current collating sequence as a unit of collation."

This generalizes the notion of a character in two ways. First, a single character can map into two or more collating elements. For example, the German "ß" collates as the collating element '`s`' followed by another collating element '`s`'. Second, two or more characters can map into one collating element. For example, the Spanish '`ll`' collates after '`l`' and before '`m`'.

Since POSIX's "collating element" preserves the essential idea of a "character," we use the latter, more familiar, term in this document.

14.2.4 The Backslash Character

The '\' character has one of four different meanings, depending on the context in which you use it and what syntax bits are set (see Section 14.2.1 [Syntax Bits], page 646). It can: 1) stand for itself, 2) quote the next character, 3) introduce an operator, or 4) do nothing.

1. It stands for itself inside a list (see Section 14.3.6 [List Operators], page 654) if the syntax bit `RE_BACKSLASH_ESCAPE_IN_LISTS` is not set. For example, '`[\]`' would match '\'.
2. It quotes (makes ordinary, if it's special) the next character when you use it either:
   - outside a list,[1] or
   - inside a list and the syntax bit `RE_BACKSLASH_ESCAPE_IN_LISTS` is set.
3. It introduces an operator when followed by certain ordinary characters—sometimes only when certain syntax bits are set. See the cases `RE_BK_PLUS_QM`, `RE_NO_BK_BRACES`, `RE_NO_BK_VAR`, `RE_NO_BK_PARENS`, `RE_NO_BK_REF` in Section 14.2.1 [Syntax Bits], page 646. Also:
   - '`\b`' represents the match-word-boundary operator (see Section 14.4.1.2 [Match-word-boundary Operator], page 659).
   - '`\B`' represents the match-within-word operator (see Section 14.4.1.3 [Match-within-word Operator], page 659).
   - '`\<`' represents the match-beginning-of-word operator (see Section 14.4.1.4 [Match-beginning-of-word Operator], page 659).
   - '`\>`' represents the match-end-of-word operator (see Section 14.4.1.5 [Match-end-of-word Operator], page 659).
   - '`\w`' represents the match-word-constituent operator (see Section 14.4.1.6 [Match-word-constituent Operator], page 659).

[1] Sometimes you don't have to explicitly quote special characters to make them ordinary. For instance, most characters lose any special meaning inside a list (see Section 14.3.6 [List Operators], page 654). In addition, if the syntax bits `RE_CONTEXT_INVALID_OPS` and `RE_CONTEXT_INDEP_OPS` aren't set, then (for historical reasons) the matcher considers special characters ordinary if they are in contexts where the operations they represent make no sense; for example, then the match-zero-or-more operator (represented by '`*`') matches itself in the regular expression '`*foo`' because there is no preceding expression on which it can operate. It is poor practice, however, to depend on this behavior; if you want a special character to be ordinary outside a list, it's better to always quote it, regardless.

- '`\W`' represents the match-non-word-constituent operator (see Section 14.4.1.7 [Match-non-word-constituent Operator], page 659).
- '`\‘`' represents the match-beginning-of-buffer operator and '`\’`' represents the match-end-of-buffer operator (see Section 14.4.2 [Buffer Operators], page 659).
- If Regex was compiled with the C preprocessor symbol `emacs` defined, then '`\sclass`' represents the match-syntactic-class operator and '`\Sclass`' represents the match-not-syntactic-class operator (see Section 14.5.1 [Syntactic Class Operators], page 660).

4. In all other cases, Regex ignores '`\`'. For example, '`\n`' matches '`n`'.

14.3 Common Operators

You compose regular expressions from operators. In the following sections, we describe the regular expression operators specified by POSIX; GNU also uses these. Most operators have more than one representation as characters. See Section 14.2 [Regular Expression Syntax], page 645, for what characters represent what operators under what circumstances.

For most operators that can be represented in two ways, one representation is a single character and the other is that character preceded by '`\`'. For example, either '`(`' or '`\(`' represents the open-group operator. Which one does depends on the setting of a syntax bit, in this case `RE_NO_BK_PARENS`. Why is this so? Historical reasons dictate some of the varying representations, while POSIX dictates others.

Finally, almost all characters lose any special meaning inside a list (see Section 14.3.6 [List Operators], page 654).

14.3.1 The Match-self Operator (*ordinary character*)

This operator matches the character itself. All ordinary characters (see Section 14.2 [Regular Expression Syntax], page 645) represent this operator. For example, '`f`' is always an ordinary character, so the regular expression '`f`' matches only the string '`f`'. In particular, it does *not* match the string '`ff`'.

14.3.2 The Match-any-character Operator (`.`)

This operator matches any single printing or nonprinting character except it won't match a:

newline if the syntax bit `RE_DOT_NEWLINE` isn't set.

null if the syntax bit `RE_DOT_NOT_NULL` is set.

The '`.`' (period) character represents this operator. For example, '`a.b`' matches any three-character string beginning with '`a`' and ending with '`b`'.

14.3.3 The Concatenation Operator

This operator concatenates two regular expressions *a* and *b*. No character represents this operator; you simply put *b* after *a*. The result is a regular expression that will match a string if *a* matches its first part and *b* matches the rest. For example, '`xy`' (two match-self operators) matches '`xy`'.

14.3.4 Repetition Operators

Repetition operators repeat the preceding regular expression a specified number of times.

14.3.4.1 The Match-zero-or-more Operator (*)

This operator repeats the smallest possible preceding regular expression as many times as necessary (including zero) to match the pattern. '`*`' represents this operator. For example, '`o*`' matches any string made up of zero or more '`o`'s. Since this operator operates on the smallest preceding regular expression, '`fo*`' has a repeating '`o`', not a repeating '`fo`'. So, '`fo*`' matches '`f`', '`fo`', '`foo`', and so on.

Since the match-zero-or-more operator is a suffix operator, it may be useless as such when no regular expression precedes it. This is the case when it:

- is first in a regular expression, or
- follows a match-beginning-of-line, open-group, or alternation operator.

Three different things can happen in these cases:

1. If the syntax bit `RE_CONTEXT_INVALID_OPS` is set, then the regular expression is invalid.
2. If `RE_CONTEXT_INVALID_OPS` isn't set, but `RE_CONTEXT_INDEP_OPS` is, then '`*`' represents the match-zero-or-more operator (which then operates on the empty string).
3. Otherwise, '`*`' is ordinary.

The matcher processes a match-zero-or-more operator by first matching as many repetitions of the smallest preceding regular expression as it can. Then it continues to match the rest of the pattern.

If it can't match the rest of the pattern, it backtracks (as many times as necessary), each time discarding one of the matches until it can either match the entire pattern or be certain that it cannot get a match. For example, when matching '`ca*ar`' against '`caaar`', the matcher first matches all three '`a`'s of the string with the '`a*`' of the regular expression. However, it cannot then match the final '`ar`' of the regular expression against the final '`r`' of the string. So it backtracks, discarding the match of the last '`a`' in the string. It can then match the remaining '`ar`'.

14.3.4.2 The Match-one-or-more Operator (+ or \+)

If the syntax bit `RE_LIMITED_OPS` is set, then Regex doesn't recognize this operator. Otherwise, if the syntax bit `RE_BK_PLUS_QM` isn't set, then '`+`' represents this operator; if it is, then '`\+`' does.

This operator is similar to the match-zero-or-more operator except that it repeats the preceding regular expression at least once; see Section 14.3.4.1 [Match-zero-or-more Operator], page 652, for what it operates on, how some syntax bits affect it, and how Regex backtracks to match it.

For example, supposing that '`+`' represents the match-one-or-more operator; then '`ca+r`' matches, e.g., '`car`' and '`caaaar`', but not '`cr`'.

14.3.4.3 The Match-zero-or-one Operator (? or \?)

If the syntax bit `RE_LIMITED_OPS` is set, then Regex doesn't recognize this operator. Otherwise, if the syntax bit `RE_BK_PLUS_QM` isn't set, then '`?`' represents this operator; if it is, then '`\?`' does.

This operator is similar to the match-zero-or-more operator except that it repeats the preceding regular expression once or not at all; see Section 14.3.4.1 [Match-zero-or-more Operator], page 652, to see what it operates on, how some syntax bits affect it, and how Regex backtracks to match it.

For example, supposing that '`?`' represents the match-zero-or-one operator; then '`ca?r`' matches both '`car`' and '`cr`', but nothing else.

14.3.4.4 Interval Operators (`{ ... }` or `\{ ... \}`)

If the syntax bit `RE_INTERVALS` is set, then Regex recognizes *interval expressions*. They repeat the smallest possible preceding regular expression a specified number of times.

If the syntax bit `RE_NO_BK_BRACES` is set, '`{`' represents the *open-interval operator* and '`}`' represents the *close-interval operator* ; otherwise, '`\{`' and '`\}`' do.

Specifically, supposing that '`{`' and '`}`' represent the open-interval and close-interval operators; then:

`{`*count*`}` matches exactly *count* occurrences of the preceding regular expression.

`{`*min*`,}` matches *min* or more occurrences of the preceding regular expression.

`{`*min*`,` *max*`}`
matches at least *min* but no more than *max* occurrences of the preceding regular expression.

The interval expression (but not necessarily the regular expression that contains it) is invalid if:

- *min* is greater than *max*, or
- any of *count*, *min*, or *max* are outside the range zero to `RE_DUP_MAX` (which symbol `regex.h` defines).

If the interval expression is invalid and the syntax bit `RE_NO_BK_BRACES` is set, then Regex considers all the characters in the would-be interval to be ordinary. If that bit isn't set, then the regular expression is invalid.

If the interval expression is valid but there is no preceding regular expression on which to operate, then if the syntax bit `RE_CONTEXT_INVALID_OPS` is set, the regular expression is invalid. If that bit isn't set, then Regex considers all the characters—other than backslashes, which it ignores—in the would-be interval to be ordinary.

14.3.5 The Alternation Operator (`|` or `\|`)

If the syntax bit `RE_LIMITED_OPS` is set, then Regex doesn't recognize this operator. Otherwise, if the syntax bit `RE_NO_BK_VBAR` is set, then '`|`' represents this operator; otherwise, '`\|`' does.

Alternatives match one of a choice of regular expressions: if you put the character(s) representing the alternation operator between any two regular expressions *a* and *b*, the result matches the union of the strings that *a* and *b* match. For example, supposing that '`|`' is the alternation operator, then '`foo|bar|quux`' would match any of '`foo`', '`bar`' or '`quux`'.

The alternation operator operates on the *largest* possible surrounding regular expressions. (Put another way, it has the lowest precedence of any regular expression operator.) Thus, the only way you can delimit its arguments is to use grouping. For example, if '`(`' and

‘)’ are the open and close-group operators, then ‘fo(o|b)ar’ would match either ‘fooar’ or ‘fobar’. (‘foo|bar’ would match ‘foo’ or ‘bar’.)

The matcher usually tries all combinations of alternatives so as to match the longest possible string. For example, when matching ‘(fooq|foo)*(qbarquux|bar)’ against ‘fooqbarquux’, it cannot take, say, the first (“depth-first”) combination it could match, since then it would be content to match just ‘fooqbar’.

Note that since the default behavior is to return the leftmost longest match, when more than one of a series of alternatives matches the actual match will be the longest matching alternative, not necessarily the first in the list.

14.3.6 List Operators ([...] and [^ ...])

Lists, also called *bracket expressions*, are a set of one or more items. An *item* is a character, a collating symbol, an equivalence class expression, a character class expression, or a range expression. The syntax bits affect which kinds of items you can put in a list. We explain the last four items in subsections below. Empty lists are invalid.

A *matching list* matches a single character represented by one of the list items. You form a matching list by enclosing one or more items within an *open-matching-list operator* (represented by ‘[’) and a *close-list operator* (represented by ‘]’).

For example, ‘[ab]’ matches either ‘a’ or ‘b’. ‘[ad]*’ matches the empty string and any string composed of just ‘a’s and ‘d’s in any order. Regex considers invalid a regular expression with a ‘[’ but no matching ‘]’.

Nonmatching lists are similar to matching lists except that they match a single character *not* represented by one of the list items. You use an *open-nonmatching-list operator* (represented by ‘[^’[2]) instead of an open-matching-list operator to start a nonmatching list.

For example, ‘[^ab]’ matches any character except ‘a’ or ‘b’.

If the syntax bit RE_HAT_LISTS_NOT_NEWLINE is set, then nonmatching lists do not match a newline.

Most characters lose any special meaning inside a list. The special characters inside a list follow.

‘]’ ends the list if it’s not the first list item. So, if you want to make the ‘]’ character a list item, you must put it first.

‘\’ quotes the next character if the syntax bit RE_BACKSLASH_ESCAPE_IN_LISTS is set.

‘[.’ represents the open-collating-symbol operator (see Section 14.3.6.1 [Collating Symbol Operators], page 655).

‘.]’ represents the close-collating-symbol operator.

‘[=’ represents the open-equivalence-class operator (see Section 14.3.6.2 [Equivalence Class Operators], page 655).

‘=]’ represents the close-equivalence-class operator.

[2] Regex therefore doesn’t consider the ‘^’ to be the first character in the list. If you put a ‘^’ character first in (what you think is) a matching list, you’ll turn it into a nonmatching list.

'`[:`' represents the open-character-class operator (see Section 14.3.6.3 [Character Class Operators], page 655) if the syntax bit `RE_CHAR_CLASSES` is set and what follows is a valid character class expression.

'`:]`' represents the close-character-class operator if the syntax bit `RE_CHAR_CLASSES` is set and what precedes it is an open-character-class operator followed by a valid character class name.

'`-`' represents the range operator (see Section 14.3.6.4 [Range Operator], page 656) if it's not first or last in a list or the ending point of a range.

All other characters are ordinary. For example, '`[.*]`' matches '`.`' and '`*`'.

14.3.6.1 Collating Symbol Operators (`[. ... .]`)

Collating symbols can be represented inside lists. You form a *collating symbol* by putting a collating element between an *open-collating-symbol operator* and a *close-collating-symbol operator*. '`[.`' represents the open-collating-symbol operator and '`.]`' represents the close-collating-symbol operator. For example, if '`ll`' is a collating element, then '`[[.ll.]]`' would match '`ll`'.

14.3.6.2 Equivalence Class Operators (`[= ... =]`)

Regex recognizes equivalence class expressions inside lists. A *equivalence class expression* is a set of collating elements which all belong to the same equivalence class. You form an equivalence class expression by putting a collating element between an *open-equivalence-class operator* and a *close-equivalence-class operator*. '`[=`' represents the open-equivalence-class operator and '`=]`' represents the close-equivalence-class operator. For example, if '`a`' and '`A`' were an equivalence class, then both '`[[=a=]]`' and '`[[=A=]]`' would match both '`a`' and '`A`'. If the collating element in an equivalence class expression isn't part of an equivalence class, then the matcher considers the equivalence class expression to be a collating symbol.

14.3.6.3 Character Class Operators (`[: ... :]`)

If the syntax bit `RE_CHAR_CLASSES` is set, then Regex recognizes character class expressions inside lists. A *character class expression* matches one character from a given class. You form a character class expression by putting a character class name between an *open-character-class operator* (represented by '`[:`') and a *close-character-class operator* (represented by '`:]`'). The character class names and their meanings are:

`alnum` letters and digits

`alpha` letters

`blank` system-dependent; for GNU, a space or tab

`cntrl` control characters (in the ASCII encoding, code 0177 and codes less than 040)

`digit` digits

`graph` same as `print` except omits space

`lower` lowercase letters

`print` printable characters (in the ASCII encoding, space tilde—codes 040 through 0176)

`punct`	neither control nor alphanumeric characters
`space`	space, carriage return, newline, vertical tab, and form feed
`upper`	uppercase letters
`xdigit`	hexadecimal digits: `0`–`9`, `a`–`f`, `A`–`F`

These correspond to the definitions in the C library's `<ctype.h>` facility. For example, '`[:alpha:]`' corresponds to the standard facility `isalpha`. Regex recognizes character class expressions only inside of lists; so '`[[:alpha:]]`' matches any letter, but '`[:alpha:]`' outside of a bracket expression and not followed by a repetition operator matches just itself.

14.3.6.4 The Range Operator (-)

Regex recognizes *range expressions* inside a list. They represent those characters that fall between two elements in the current collating sequence. You form a range expression by putting a *range operator* between two of any of the following: characters, collating elements, collating symbols, and equivalence class expressions. The starting point of the range and the ending point of the range don't have to be the same kind of item, e.g., the starting point could be a collating element and the ending point could be an equivalence class expression. If a range's ending point is an equivalence class, then all the collating elements in that class will be in the range.[3] '`-`' represents the range operator. For example, '`a-f`' within a list represents all the characters from '`a`' through '`f`' inclusively.

If the syntax bit `RE_NO_EMPTY_RANGES` is set, then if the range's ending point collates less than its starting point, the range (and the regular expression containing it) is invalid. For example, the regular expression '`[z-a]`' would be invalid. If this bit isn't set, then Regex considers such a range to be empty.

Since '`-`' represents the range operator, if you want to make a '`-`' character itself a list item, you must do one of the following:

- Put the '`-`' either first or last in the list.
- Include a range whose starting point collates strictly lower than '`-`' and whose ending point collates equal or higher. Unless a range is the first item in a list, a '`-`' can't be its starting point, but *can* be its ending point. That is because Regex considers '`-`' to be the range operator unless it is preceded by another '`-`'. For example, in the ASCII encoding, '`)`', '`*`', '`+`', '`,`', '`-`', '`.`', and '`/`' are contiguous characters in the collating sequence. You might think that '`[)-+--/]`' has two ranges: '`)-+`' and '`--/`'. Rather, it has the ranges '`)-+`' and '`+--`', plus the character '`/`', so it matches, e.g., '`,`', not '`.`'.
- Put a range whose starting point is '`-`' first in the list.

For example, '`[-a-z]`' matches a lowercase letter or a hyphen (in English, in ASCII).

14.3.7 Grouping Operators (`( ... )` or `\( ... \)`)

A *group*, also known as a *subexpression*, consists of an *open-group operator*, any number of other operators, and a *close-group operator*. Regex treats this sequence as a unit, just as mathematics and programming languages treat a parenthesized expression as a unit.

[3] You can't use a character class for the starting or ending point of a range, since a character class is not a single character.

Therefore, using *groups*, you can:

- delimit the argument(s) to an alternation operator (see Section 14.3.5 [Alternation Operator], page 653) or a repetition operator (see Section 14.3.4 [Repetition Operators], page 652).
- keep track of the indices of the substring that matched a given group. See Section 14.7.1.8 [Using Registers], page 665, for a precise explanation. This lets you:
  - use the back-reference operator (see Section 14.3.8 [Back-reference Operator], page 657).
  - use registers (see Section 14.7.1.8 [Using Registers], page 665).

If the syntax bit `RE_NO_BK_PARENS` is set, then '`(`' represents the open-group operator and '`)`' represents the close-group operator; otherwise, '`\(`' and '`\)`' do.

If the syntax bit `RE_UNMATCHED_RIGHT_PAREN_ORD` is set and a close-group operator has no matching open-group operator, then Regex considers it to match '`)`'.

14.3.8 The Back-reference Operator (*digit*)

If the syntax bit `RE_NO_BK_REF` isn't set, then Regex recognizes back references. A back reference matches a specified preceding group. The back reference operator is represented by '`\digit`' anywhere after the end of a regular expression's *digit*-th group (see Section 14.3.7 [Grouping Operators], page 656).

digit must be between '`1`' and '`9`'. The matcher assigns numbers 1 through 9 to the first nine groups it encounters. By using one of '`\1`' through '`\9`' after the corresponding group's close-group operator, you can match a substring identical to the one that the group does.

Back references match according to the following (in all examples below, '`(`' represents the open-group, '`)`' the close-group, '`{`' the open-interval and '`}`' the close-interval operator):

- If the group matches a substring, the back reference matches an identical substring. For example, '`(a)\1`' matches '`aa`' and '`(bana)na\1bo\1`' matches '`bananabanabobana`'. Likewise, '`(.*)\1`' matches any (newline-free if the syntax bit `RE_DOT_NEWLINE` isn't set) string that is composed of two identical halves; the '`(.*)`' matches the first half and the '`\1`' matches the second half.
- If the group matches more than once (as it might if followed by, e.g., a repetition operator), then the back reference matches the substring the group *last* matched. For example, '`((a*)b)*\1\2`' matches '`aababababa`'; first group 1 (the outer one) matches '`aab`' and group 2 (the inner one) matches '`aa`'. Then group 1 matches '`ab`' and group 2 matches '`a`'. So, '`\1`' matches '`ab`' and '`\2`' matches '`a`'.
- If the group doesn't participate in a match, i.e., it is part of an alternative not taken or a repetition operator allows zero repetitions of it, then the back reference makes the whole match fail. For example, '`(one()|two())-and-(three\2|four\3)`' matches '`one-and-three`' and '`two-and-four`', but not '`one-and-four`' or '`two-and-three`'. For example, if the pattern matches '`one-and-`', then its group 2 matches the empty string and its group 3 doesn't participate in the match. So, if it then matches '`four`', then when it tries to back reference group 3—which it will attempt to do because '`\3`' follows the '`four`'—the match will fail because group 3 didn't participate in the match.

You can use a back reference as an argument to a repetition operator. For example, '`(a(b))\2*`' matches '`a`' followed by two or more '`b`'s. Similarly, '`(a(b))\2{3}`' matches '`abbbb`'.

If there is no preceding *digit*-th subexpression, the regular expression is invalid.

14.3.9 Anchoring Operators

These operators can constrain a pattern to match only at the beginning or end of the entire string or at the beginning or end of a line.

14.3.9.1 The Match-beginning-of-line Operator (`^`)

This operator can match the empty string either at the beginning of the string or after a newline character. Thus, it is said to *anchor* the pattern to the beginning of a line.

In the cases following, '`^`' represents this operator. (Otherwise, '`^`' is ordinary.)

- It (the '`^`') is first in the pattern, as in '`^foo`'.
- The syntax bit `RE_CONTEXT_INDEP_ANCHORS` is set, and it is outside a bracket expression.
- It follows an open-group or alternation operator, as in '`a\(^b\)`' and '`a\|^b`'. See Section 14.3.7 [Grouping Operators], page 656, and Section 14.3.5 [Alternation Operator], page 653.

These rules imply that some valid patterns containing '`^`' cannot be matched; for example, '`foo^bar`' if `RE_CONTEXT_INDEP_ANCHORS` is set.

If the `not_bol` field is set in the pattern buffer (see Section 14.7.1.1 [GNU Pattern Buffers], page 661), then '`^`' fails to match at the beginning of the string. This lets you match against pieces of a line, as you would need to if, say, searching for repeated instances of a given pattern in a line; it would work correctly for patterns both with and without match-beginning-of-line operators.

14.3.9.2 The Match-end-of-line Operator (`$`)

This operator can match the empty string either at the end of the string or before a newline character in the string. Thus, it is said to *anchor* the pattern to the end of a line.

It is always represented by '`$`'. For example, '`foo$`' usually matches, e.g., '`foo`' and, e.g., the first three characters of '`foo\nbar`'.

Its interaction with the syntax bits and pattern buffer fields is exactly the dual of '`^`''s; see the previous section. (That is, "'`^`'" becomes "'`$`'", "beginning" becomes "end", "next" becomes "previous", "after" becomes "before", and "`not_bol`" becomes "`not_eol`".)

14.4 GNU Operators

Following are operators that GNU defines (and POSIX doesn't).

14.4.1 Word Operators

The operators in this section require Regex to recognize parts of words. Regex uses a syntax table to determine whether or not a character is part of a word, i.e., whether or not it is *word-constituent*.

14.4.1.1 Non-Emacs Syntax Tables

A *syntax table* is an array indexed by the characters in your character set. In the ASCII encoding, therefore, a syntax table has 256 elements. Regex always uses a `char *` variable `re_syntax_table` as its syntax table. In some cases, it initializes this variable and in others it expects you to initialize it.

- If Regex is compiled with the preprocessor symbols `emacs` and `SYNTAX_TABLE` both undefined, then Regex allocates `re_syntax_table` and initializes an element *i* either to `Sword` (which it defines) if *i* is a letter, number, or '`_`', or to zero if it's not.
- If Regex is compiled with `emacs` undefined but `SYNTAX_TABLE` defined, then Regex expects you to define a `char *` variable `re_syntax_table` to be a valid syntax table.
- See Section 14.5.1.1 [Emacs Syntax Tables], page 660, for what happens when Regex is compiled with the preprocessor symbol `emacs` defined.

14.4.1.2 The Match-word-boundary Operator (\b)

This operator (represented by '`\b`') matches the empty string at either the beginning or the end of a word. For example, '`\brat\b`' matches the separate word '`rat`'.

14.4.1.3 The Match-within-word Operator (\B)

This operator (represented by '`\B`') matches the empty string within a word. For example, '`c\Brat\Be`' matches '`crate`', but '`dirty \Brat`' doesn't match '`dirty rat`'.

14.4.1.4 The Match-beginning-of-word Operator (\<)

This operator (represented by '`\<`') matches the empty string at the beginning of a word.

14.4.1.5 The Match-end-of-word Operator (\>)

This operator (represented by '`\>`') matches the empty string at the end of a word.

14.4.1.6 The Match-word-constituent Operator (\w)

This operator (represented by '`\w`') matches any word-constituent character.

14.4.1.7 The Match-non-word-constituent Operator (\W)

This operator (represented by '`\W`') matches any character that is not word-constituent.

14.4.2 Buffer Operators

Following are operators which work on buffers. In Emacs, a *buffer* is, naturally, an Emacs buffer. For other programs, Regex considers the entire string to be matched as the buffer.

14.4.2.1 The Match-beginning-of-buffer Operator (\`)

This operator (represented by '`\``') matches the empty string at the beginning of the buffer.

14.4.2.2 The Match-end-of-buffer Operator (\')

This operator (represented by '`\'`') matches the empty string at the end of the buffer.

14.5 GNU Emacs Operators

Following are operators that GNU defines (and POSIX doesn't) that you can use only when Regex is compiled with the preprocessor symbol `emacs` defined.

14.5.1 Syntactic Class Operators

The operators in this section require Regex to recognize the syntactic classes of characters. Regex uses a syntax table to determine this.

14.5.1.1 Emacs Syntax Tables

A *syntax table* is an array indexed by the characters in your character set. In the ASCII encoding, therefore, a syntax table has 256 elements.

If Regex is compiled with the preprocessor symbol `emacs` defined, then Regex expects you to define and initialize the variable `re_syntax_table` to be an Emacs syntax table. Emacs' syntax tables are more complicated than Regex's own (see Section 14.4.1.1 [Non-Emacs Syntax Tables], page 659). See Section "Syntax" in *The GNU Emacs User's Manual*, for a description of Emacs' syntax tables.

14.5.1.2 The Match-syntactic-class Operator (\s*class*)

This operator matches any character whose syntactic class is represented by a specified character. '`\s`*class*' represents this operator where *class* is the character representing the syntactic class you want. For example, '`w`' represents the syntactic class of word-constituent characters, so '`\sw`' matches any word-constituent character.

14.5.1.3 The Match-not-syntactic-class Operator (\S*class*)

This operator is similar to the match-syntactic-class operator except that it matches any character whose syntactic class is *not* represented by the specified character. '`\S`*class*' represents this operator. For example, '`w`' represents the syntactic class of word-constituent characters, so '`\Sw`' matches any character that is not word-constituent.

14.6 What Gets Matched?

Regex usually matches strings according to the "leftmost longest" rule; that is, it chooses the longest of the leftmost matches. This does not mean that for a regular expression containing subexpressions that it simply chooses the longest match for each subexpression, left to right; the overall match must also be the longest possible one.

For example, '`(ac*)(c*d[ac]*)\1`' matches '`acdacaaa`', not '`acdac`', as it would if it were to choose the longest match for the first subexpression.

14.7 Programming with Regex

Here we describe how you use the Regex data structures and functions in C programs. Regex has three interfaces: one designed for GNU, one compatible with POSIX (as specified by POSIX, draft 1003.2/D11.2), and one compatible with Berkeley Unix. The POSIX interface is not documented here; see the documentation of GNU libc, or the POSIX man pages. The Berkeley Unix interface is documented here for convenience, since its documentation is not otherwise readily available on GNU systems.

14.7.1 GNU Regex Functions

If you're writing code that doesn't need to be compatible with either POSIX or Berkeley Unix, you can use these functions. They provide more options than the other interfaces.

14.7.1.1 GNU Pattern Buffers

To compile, match, or search for a given regular expression, you must supply a pattern buffer. A *pattern buffer* holds one compiled regular expression.[4]

You can have several different pattern buffers simultaneously, each holding a compiled pattern for a different regular expression.

`regex.h` defines the pattern buffer `struct` with the following public fields:

```
unsigned char *buffer;
unsigned long allocated;
char *fastmap;
char *translate;
size_t re_nsub;
unsigned no_sub : 1;
unsigned not_bol : 1;
unsigned not_eol : 1;
```

14.7.1.2 GNU Regular Expression Compiling

In GNU, you can both match and search for a given regular expression. To do either, you must first compile it in a pattern buffer (see Section 14.7.1.1 [GNU Pattern Buffers], page 661).

Regular expressions match according to the syntax with which they were compiled; with GNU, you indicate what syntax you want by setting the variable `re_syntax_options` (declared in `regex.h`) before calling the compiling function, `re_compile_pattern` (see below). See Section 14.2.1 [Syntax Bits], page 646, and Section 14.2.2 [Predefined Syntaxes], page 648.

You can change the value of `re_syntax_options` at any time. Usually, however, you set its value once and then never change it.

`re_compile_pattern` takes a pattern buffer as an argument. You must initialize the following fields:

`translate` initialization

`translate`
: Initialize this to point to a translate table if you want one, or to zero if you don't. We explain translate tables in Section 14.7.1.7 [GNU Translate Tables], page 665.

`fastmap`
: Initialize this to nonzero if you want a fastmap, or to zero if you don't.

`buffer`
`allocated`
: If you want `re_compile_pattern` to allocate memory for the compiled pattern, set both of these to zero. If you have an existing block of memory (allocated

[4] Regular expressions are also referred to as "patterns," hence the name "pattern buffer."

with `malloc`) you want Regex to use, set `buffer` to its address and `allocated` to its size (in bytes).

`re_compile_pattern` uses `realloc` to extend the space for the compiled pattern as necessary.

To compile a pattern buffer, use:

```
char *
re_compile_pattern (const char *regex, const int regex_size,
                    struct re_pattern_buffer *pattern_buffer)
```

regex is the regular expression's address, *regex_size* is its length, and *pattern_buffer* is the pattern buffer's address.

If `re_compile_pattern` successfully compiles the regular expression, it returns zero and sets `*pattern_buffer` to the compiled pattern. It sets the pattern buffer's fields as follows:

`buffer` to the compiled pattern.

`syntax` to the current value of `re_syntax_options`.

`re_nsub` to the number of subexpressions in *regex*.

If `re_compile_pattern` can't compile *regex*, it returns an error string corresponding to a POSIX error code.

14.7.1.3 GNU Matching

Matching the GNU way means trying to match as much of a string as possible starting at a position within it you specify. Once you've compiled a pattern into a pattern buffer (see Section 14.7.1.2 [GNU Regular Expression Compiling], page 661), you can ask the matcher to match that pattern against a string using:

```
int
re_match (struct re_pattern_buffer *pattern_buffer,
          const char *string, const int size,
          const int start, struct re_registers *regs)
```

pattern_buffer is the address of a pattern buffer containing a compiled pattern. *string* is the string you want to match; it can contain newline and null characters. *size* is the length of that string. *start* is the string index at which you want to begin matching; the first character of *string* is at index zero. See Section 14.7.1.8 [Using Registers], page 665, for an explanation of *regs*; you can safely pass zero.

`re_match` matches the regular expression in *pattern_buffer* against the string *string* according to the syntax of *pattern_buffer*. (See Section 14.7.1.2 [GNU Regular Expression Compiling], page 661, for how to set it.) The function returns -1 if the compiled pattern does not match any part of *string* and -2 if an internal error happens; otherwise, it returns how many (possibly zero) characters of *string* the pattern matched.

An example: suppose *pattern_buffer* points to a pattern buffer containing the compiled pattern for '`a*`', and *string* points to '`aaaaab`' (whereupon *size* should be 6). Then if *start* is 2, `re_match` returns 3, i.e., '`a*`' would have matched the last three '`a`'s in *string*. If *start* is 0, `re_match` returns 5, i.e., '`a*`' would have matched all the '`a`'s in *string*. If *start* is either 5 or 6, it returns zero.

If *start* is not between zero and *size*, then `re_match` returns -1.

14.7.1.4 GNU Searching

Searching means trying to match starting at successive positions within a string. The function `re_search` does this.

Before calling `re_search`, you must compile your regular expression. See Section 14.7.1.2 [GNU Regular Expression Compiling], page 661.

Here is the function declaration:

```
int
re_search (struct re_pattern_buffer *pattern_buffer,
           const char *string, const int size,
           const int start, const int range,
           struct re_registers *regs)
```

whose arguments are the same as those to `re_match` (see Section 14.7.1.3 [GNU Matching], page 662) except that the two arguments *start* and *range* replace `re_match`'s argument *start*.

If *range* is positive, then `re_search` attempts a match starting first at index *start*, then at *start* + 1 if that fails, and so on, up to *start* + *range*; if *range* is negative, then it attempts a match starting first at index *start*, then at *start* − 1 if that fails, and so on.

If *start* is not between zero and *size*, then `re_search` returns −1. When *range* is positive, `re_search` adjusts *range* so that *start* + *range* − 1 is between zero and *size*, if necessary; that way it won't search outside of *string*. Similarly, when *range* is negative, `re_search` adjusts *range* so that *start* + *range* + 1 is between zero and *size*, if necessary.

If the `fastmap` field of *pattern_buffer* is zero, `re_search` matches starting at consecutive positions; otherwise, it uses `fastmap` to make the search more efficient. See Section 14.7.1.6 [Searching with Fastmaps], page 664.

If no match is found, `re_search` returns −1. If a match is found, it returns the index where the match began. If an internal error happens, it returns −2.

14.7.1.5 Matching and Searching with Split Data

Using the functions `re_match_2` and `re_search_2`, you can match or search in data that is divided into two strings.

The function:

```
int
re_match_2 (struct re_pattern_buffer *buffer,
            const char *string1, const int size1,
            const char *string2, const int size2,
            const int start,
            struct re_registers *regs,
            const int stop)
```

is similar to `re_match` (see Section 14.7.1.3 [GNU Matching], page 662) except that you pass *two* data strings and sizes, and an index *stop* beyond which you don't want the matcher to try matching. As with `re_match`, if it succeeds, `re_match_2` returns how many characters of *string* it matched. Regard *string1* and *string2* as concatenated when you set the arguments *start* and *stop* and use the contents of *regs*; `re_match_2` never returns a value larger than *size1* + *size2*.

The function:

```
int
re_search_2 (struct re_pattern_buffer *buffer,
             const char *string1, const int size1,
             const char *string2, const int size2,
             const int start, const int range,
             struct re_registers *regs,
             const int stop)
```

is similarly related to `re_search`.

14.7.1.6 Searching with Fastmaps

If you're searching through a long string, you should use a fastmap. Without one, the searcher tries to match at consecutive positions in the string. Generally, most of the characters in the string could not start a match. It takes much longer to try matching at a given position in the string than it does to check in a table whether or not the character at that position could start a match. A *fastmap* is such a table.

More specifically, a fastmap is an array indexed by the characters in your character set. Under the ASCII encoding, therefore, a fastmap has 256 elements. If you want the searcher to use a fastmap with a given pattern buffer, you must allocate the array and assign the array's address to the pattern buffer's `fastmap` field. You either can compile the fastmap yourself or have `re_search` do it for you; when `fastmap` is nonzero, it automatically compiles a fastmap the first time you search using a particular compiled pattern.

By setting the buffer's `fastmap` field before calling `re_compile_pattern`, you can reuse a buffer data structure across multiple searches with different patterns, and allocate the fastmap only once. Nonetheless, the fastmap must be recompiled each time the buffer has a new pattern compiled into it.

To compile a fastmap yourself, use:

```
int
re_compile_fastmap (struct re_pattern_buffer *pattern_buffer)
```

pattern_buffer is the address of a pattern buffer. If the character *c* could start a match for the pattern, `re_compile_fastmap` makes *pattern_buffer*`->fastmap[`*c*`]` nonzero. It returns 0 if it can compile a fastmap and −2 if there is an internal error. For example, if '`|`' is the alternation operator and *pattern_buffer* holds the compiled pattern for '`a|b`', then `re_compile_fastmap` sets `fastmap['a']` and `fastmap['b']` (and no others).

`re_search` uses a fastmap as it moves along in the string: it checks the string's characters until it finds one that's in the fastmap. Then it tries matching at that character. If the match fails, it repeats the process. So, by using a fastmap, `re_search` doesn't waste time trying to match at positions in the string that couldn't start a match.

If you don't want `re_search` to use a fastmap, store zero in the `fastmap` field of the pattern buffer before calling `re_search`.

Once you've initialized a pattern buffer's `fastmap` field, you need never do so again—even if you compile a new pattern in it—provided the way the field is set still reflects whether or not you want a fastmap. `re_search` will still either do nothing if `fastmap` is null or, if it isn't, compile a new fastmap for the new pattern.

14.7.1.7 GNU Translate Tables

If you set the `translate` field of a pattern buffer to a translate table, then the GNU Regex functions to which you've passed that pattern buffer use it to apply a simple transformation to all the regular expression and string characters at which they look.

A *translate table* is an array indexed by the characters in your character set. Under the ASCII encoding, therefore, a translate table has 256 elements. The array's elements are also characters in your character set. When the Regex functions see a character *c*, they use `translate[c]` in its place, with one exception: the character after a '`\`' is not translated. (This ensures that, the operators, e.g., '`\B`' and '`\b`', are always distinguishable.)

For example, a table that maps all lowercase letters to the corresponding uppercase ones would cause the matcher to ignore differences in case.[5] Such a table would map all characters except lowercase letters to themselves, and lowercase letters to the corresponding uppercase ones. Under the ASCII encoding, here's how you could initialize such a table (we'll call it `case_fold`):

```
for (i = 0; i < 256; i++)
  case_fold[i] = i;
for (i = 'a'; i <= 'z'; i++)
  case_fold[i] = i - ('a' - 'A');
```

You tell Regex to use a translate table on a given pattern buffer by assigning that table's address to the `translate` field of that buffer. If you don't want Regex to do any translation, put zero into this field. You'll get weird results if you change the table's contents anytime between compiling the pattern buffer, compiling its fastmap, and matching or searching with the pattern buffer.

14.7.1.8 Using Registers

A group in a regular expression can match a (possibly empty) substring of the string that regular expression as a whole matched. The matcher remembers the beginning and end of the substring matched by each group.

To find out what they matched, pass a nonzero *regs* argument to a GNU matching or searching function (see Section 14.7.1.3 [GNU Matching], page 662, and Section 14.7.1.4 [GNU Searching], page 663), i.e., the address of a structure of this type, as defined in `regex.h`:

```
struct re_registers
{
  unsigned num_regs;
  regoff_t *start;
  regoff_t *end;
};
```

Except for (possibly) the *num_regs*'th element (see below), the *i*th element of the `start` and `end` arrays records information about the *i*th group in the pattern. (They're declared as C pointers, but this is only because not all C compilers accept zero-length arrays; conceptually, it is simplest to think of them as arrays.)

[5] A table that maps all uppercase letters to the corresponding lowercase ones would work just as well for this purpose.

The `start` and `end` arrays are allocated in one of two ways. The simplest and perhaps most useful is to let the matcher (re)allocate enough space to record information for all the groups in the regular expression. If `re_set_registers` is not called before searching or matching, then the matcher allocates two arrays each of $1 + re\_nsub$ elements (*re_nsub* is another field in the pattern buffer; see Section 14.7.1.1 [GNU Pattern Buffers], page 661). The extra element is set to -1. Then on subsequent calls with the same pattern buffer and *regs* arguments, the matcher reallocates more space if necessary.

The function:

```
void
re_set_registers (struct re_pattern_buffer *buffer,
      struct re_registers *regs,
      size_t num_regs,
      regoff_t *starts, regoff_t *ends)
```

sets *regs* to hold *num_regs* registers, storing them in *starts* and *ends*. Subsequent matches using *buffer* and *regs* will use this memory for recording register information. *starts* and *ends* must be allocated with malloc, and must each be at least *num_regs*`*sizeof(regoff_t)` bytes long.

If *num_regs* is zero, then subsequent matches should allocate their own register data.

Unless this function is called, the first search or match using *buffer* will allocate its own register data, without freeing the old data.

The following examples illustrate the information recorded in the `re_registers` structure. (In all of them, '`(`' represents the open-group and '`)`' the close-group operator. The first character in the string *string* is at index 0.)

- If the regular expression has an *i*-th group that matches a substring of *string*, then the function sets *regs*`->start[i]` to the index in *string* where the substring matched by the *i*-th group begins, and *regs*`->end[i]` to the index just beyond that substring's end. The function sets *regs*`->start[0]` and *regs*`->end[0]` to analogous information about the entire pattern.

  For example, when you match '`((a)(b))`' against '`ab`', you get:

  - 0 in *regs*`->start[0]` and 2 in *regs*`->end[0]`
  - 0 in *regs*`->start[1]` and 2 in *regs*`->end[1]`
  - 0 in *regs*`->start[2]` and 1 in *regs*`->end[2]`
  - 1 in *regs*`->start[3]` and 2 in *regs*`->end[3]`

- If a group matches more than once (as it might if followed by, e.g., a repetition operator), then the function reports the information about what the group *last* matched.

  For example, when you match the pattern '`(a)*`' against the string '`aa`', you get:

  - 0 in *regs*`->start[0]` and 2 in *regs*`->end[0]`
  - 1 in *regs*`->start[1]` and 2 in *regs*`->end[1]`

- If the *i*-th group does not participate in a successful match, e.g., it is an alternative not taken or a repetition operator allows zero repetitions of it, then the function sets *regs*`->start[i]` and *regs*`->end[i]` to -1.

  For example, when you match the pattern '`(a)*b`' against the string '`b`', you get:

  - 0 in *regs*`->start[0]` and 1 in *regs*`->end[0]`

  - −1 in *regs*->start[1] and −1 in *regs*->end[1]

- If the *i*-th group matches a zero-length string, then the function sets *regs*->start[*i*] and *regs*->end[*i*] to the index just beyond that zero-length string.

  For example, when you match the pattern '(a*)b' against the string 'b', you get:

  - 0 in *regs*->start[0] and 1 in *regs*->end[0]
  - 0 in *regs*->start[1] and 0 in *regs*->end[1]

- If an *i*-th group contains a *j*-th group in turn not contained within any other group within group *i* and the function reports a match of the *i*-th group, then it records in *regs*->start[*j*] and *regs*->end[*j*] the last match (if it matched) of the *j*-th group.

  For example, when you match the pattern '((a*)b)*' against the string 'abb', group 2 last matches the empty string, so you get what it previously matched:

  - 0 in *regs*->start[0] and 3 in *regs*->end[0]
  - 2 in *regs*->start[1] and 3 in *regs*->end[1]
  - 2 in *regs*->start[2] and 2 in *regs*->end[2]

  When you match the pattern '((a)*b)*' against the string 'abb', group 2 doesn't participate in the last match, so you get:

  - 0 in *regs*->start[0] and 3 in *regs*->end[0]
  - 2 in *regs*->start[1] and 3 in *regs*->end[1]
  - 0 in *regs*->start[2] and 1 in *regs*->end[2]

- If an *i*-th group contains a *j*-th group in turn not contained within any other group within group *i* and the function sets *regs*->start[*i*] and *regs*->end[*i*] to −1, then it also sets *regs*->start[*j*] and *regs*->end[*j*] to −1.

  For example, when you match the pattern '((a)*b)*c' against the string 'c', you get:

  - 0 in *regs*->start[0] and 1 in *regs*->end[0]
  - −1 in *regs*->start[1] and −1 in *regs*->end[1]
  - −1 in *regs*->start[2] and −1 in *regs*->end[2]

14.7.1.9 Freeing GNU Pattern Buffers

To free any allocated fields of a pattern buffer, use the POSIX function `regfree`:

```
void
regfree (regex_t *preg)
```

preg is the pattern buffer whose allocated fields you want freed; this works because since the type `regex_t`—the type for POSIX pattern buffers—is equivalent to the type `re_pattern_buffer`.

`regfree` also sets *preg*'s `allocated` field to zero. After a buffer has been freed, it must have a regular expression compiled in it before passing it to a matching or searching function.

14.7.2 BSD Regex Functions

If you're writing code that has to be Berkeley Unix compatible, you'll need to use these functions whose interfaces are the same as those in Berkeley Unix.

14.7.2.1 BSD Regular Expression Compiling

With Berkeley Unix, you can only search for a given regular expression; you can't match one. To search for it, you must first compile it. Before you compile it, you must indicate the regular expression syntax you want it compiled according to by setting the variable `re_syntax_options` (declared in `regex.h` to some syntax (see Section 14.2 [Regular Expression Syntax], page 645).

To compile a regular expression use:

```
char *
re_comp (char *regex)
```

regex is the address of a null-terminated regular expression. `re_comp` uses an internal pattern buffer, so you can use only the most recently compiled pattern buffer. This means that if you want to use a given regular expression that you've already compiled—but it isn't the latest one you've compiled—you'll have to recompile it. If you call `re_comp` with the null string (*not* the empty string) as the argument, it doesn't change the contents of the pattern buffer.

If `re_comp` successfully compiles the regular expression, it returns zero. If it can't compile the regular expression, it returns an error string. `re_comp`'s error messages are identical to those of `re_compile_pattern` (see Section 14.7.1.2 [GNU Regular Expression Compiling], page 661).

14.7.2.2 BSD Searching

Searching the Berkeley Unix way means searching in a string starting at its first character and trying successive positions within it to find a match. Once you've compiled a pattern using `re_comp` (see Section 14.7.2.1 [BSD Regular Expression Compiling], page 668), you can ask Regex to search for that pattern in a string using:

```
int
re_exec (char *string)
```

string is the address of the null-terminated string in which you want to search.

`re_exec` returns either 1 for success or 0 for failure. It automatically uses a GNU fastmap (see Section 14.7.1.6 [Searching with Fastmaps], page 664).

14.8 Regular expression syntaxes

Gnulib supports many different types of regular expressions; although the underlying features are the same or identical, the syntax used varies. The descriptions given here for the different types are generated automatically.

14.8.1 'awk' regular expression syntax

The character '`.`' matches any single character except the null character.

'`+`' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'`?`' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'`\+`' matches a '`+`'

‘`\?`’ matches a ‘`?`’.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example ‘`[z-a]`’, are invalid. Within square brackets, ‘`\`’ can be used to quote the following character. Character classes are supported; for example ‘`[[:digit:]]`’ will match a single decimal digit.

GNU extensions are not supported and so ‘`\w`’, ‘`\W`’, ‘`\<`’, ‘`\>`’, ‘`\b`’, ‘`\B`’, ‘`\‘`’, and ‘`\’`’ match ‘`w`’, ‘`W`’, ‘`<`’, ‘`>`’, ‘`b`’, ‘`B`’, ‘‘’, and ‘’’ respectively.

Grouping is performed with parentheses ‘`()`’. An unmatched ‘`)`’ matches just itself. A backslash followed by a digit matches that digit.

The alternation operator is ‘`|`’.

The characters ‘`^`’ and ‘`$`’ always represent the beginning and end of a string respectively, except within square brackets. Within brackets, ‘`^`’ can be used to invert the membership of the character class being specified.

‘`*`’, ‘`+`’ and ‘`?`’ are special at any point in a regular expression except:

1. At the beginning of a regular expression
2. After an open-group, signified by ‘`(`’
3. After the alternation operator ‘`|`’

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.2 ‘`egrep`’ regular expression syntax

The character ‘`.`’ matches any single character.

‘`+`’ indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

‘`?`’ indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

‘`\+`’ matches a ‘`+`’

‘`\?`’ matches a ‘`?`’.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example ‘`[z-a]`’, are invalid. Within square brackets, ‘`\`’ is taken literally. Character classes are supported; for example ‘`[[:digit:]]`’ will match a single decimal digit.

GNU extensions are supported:

1. ‘`\w`’ matches a character within a word
2. ‘`\W`’ matches a character which is not within a word
3. ‘`\<`’ matches the beginning of a word
4. ‘`\>`’ matches the end of a word
5. ‘`\b`’ matches a word boundary
6. ‘`\B`’ matches characters which are not a word boundary
7. ‘`\‘`’ matches the beginning of the whole input

8. '\'' matches the end of the whole input

Grouping is performed with parentheses '()'. An unmatched ')' matches just itself. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '('.

The alternation operator is '|'.

The characters '^' and '$' always represent the beginning and end of a string respectively, except within square brackets. Within brackets, '^' can be used to invert the membership of the character class being specified.

The characters '*', '+' and '?' are special anywhere in a regular expression.

Intervals are specified by '{' and '}'. Invalid intervals are treated as literals, for example 'a{1' is treated as 'a\{1'

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.3 'ed' regular expression syntax

The character '.' matches any single character except the null character.

'\+' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'\?' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'+ and ?' match themselves.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '[z-a]', are invalid. Within square brackets, '\' is taken literally. Character classes are supported; for example '[[:digit:]]' will match a single decimal digit.

GNU extensions are supported:

1. '\w' matches a character within a word
2. '\W' matches a character which is not within a word
3. '\<' matches the beginning of a word
4. '\>' matches the end of a word
5. '\b' matches a word boundary
6. '\B' matches characters which are not a word boundary
7. '\`' matches the beginning of the whole input
8. '\'' matches the end of the whole input

Grouping is performed with backslashes followed by parentheses '\(', '\)'. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '\('.

The alternation operator is '`\|`'.

The character '`^`' only represents the beginning of a string when it appears:

1. At the beginning of a regular expression
2. After an open-group, signified by '`\(`'
3. After the alternation operator '`\|`'

The character '`$`' only represents the end of a string when it appears:

1. At the end of a regular expression
2. Before a close-group, signified by '`\)`'
3. Before the alternation operator '`\|`'

'`\*`', '`\+`' and '`\?`' are special at any point in a regular expression except:

1. At the beginning of a regular expression
2. After an open-group, signified by '`\(`'
3. After the alternation operator '`\|`'

Intervals are specified by '`\{`' and '`\}`'. Invalid intervals such as '`a\{1z`' are not accepted.

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.4 'emacs' regular expression syntax

The character '`.`' matches any single character except newline.

'`+`' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'`?`' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'`\+`' matches a '`+`'

'`\?`' matches a '`?`'.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '`[z-a]`', are ignored. Within square brackets, '`\`' is taken literally. Character classes are not supported, so for example you would need to use '`[0-9]`' instead of '`[[:digit:]]`'.

GNU extensions are supported:

1. '`\w`' matches a character within a word
2. '`\W`' matches a character which is not within a word
3. '`\<`' matches the beginning of a word
4. '`\>`' matches the end of a word
5. '`\b`' matches a word boundary
6. '`\B`' matches characters which are not a word boundary
7. '`\‘`' matches the beginning of the whole input
8. '`\’`' matches the end of the whole input

Grouping is performed with backslashes followed by parentheses '`\(`', '`\)`'. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '`\2`' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '`\(`'.

The alternation operator is '`\|`'.

The character '`^`' only represents the beginning of a string when it appears:

1. At the beginning of a regular expression
2. After an open-group, signified by '`\(`'
3. After the alternation operator '`\|`'

The character '`$`' only represents the end of a string when it appears:

1. At the end of a regular expression
2. Before a close-group, signified by '`\)`'
3. Before the alternation operator '`\|`'

'`*`', '`+`' and '`?`' are special at any point in a regular expression except:

1. At the beginning of a regular expression
2. After an open-group, signified by '`\(`'
3. After the alternation operator '`\|`'

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.5 'gnu-awk' regular expression syntax

The character '`.`' matches any single character.

'`+`' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'`?`' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'`\+`' matches a '`+`'

'`\?`' matches a '`?`'.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '`[z-a]`', are invalid. Within square brackets, '`\`' can be used to quote the following character. Character classes are supported; for example '`[[:digit:]]`' will match a single decimal digit.

GNU extensions are supported:

1. '`\w`' matches a character within a word
2. '`\W`' matches a character which is not within a word
3. '`\<`' matches the beginning of a word
4. '`\>`' matches the end of a word
5. '`\b`' matches a word boundary

6. '\B' matches characters which are not a word boundary
7. '\`' matches the beginning of the whole input
8. '\'' matches the end of the whole input

Grouping is performed with parentheses '()'. An unmatched ')' matches just itself. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '('.

The alternation operator is '|'.

The characters '^' and '$' always represent the beginning and end of a string respectively, except within square brackets. Within brackets, '^' can be used to invert the membership of the character class being specified.

'*', '+' and '?' are special at any point in a regular expression except:

1. At the beginning of a regular expression
2. After an open-group, signified by '('
3. After the alternation operator '|'

Intervals are specified by '{' and '}'. Invalid intervals are treated as literals, for example 'a{1' is treated as 'a\{1'

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.6 'grep' regular expression syntax

The character '.' matches any single character.

'\+' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'\?' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'+ and ?' match themselves.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '[z-a]', are invalid. Within square brackets, '\' is taken literally. Character classes are supported; for example '[[:digit:]]' will match a single decimal digit.

GNU extensions are supported:

1. '\w' matches a character within a word
2. '\W' matches a character which is not within a word
3. '\<' matches the beginning of a word
4. '\>' matches the end of a word
5. '\b' matches a word boundary
6. '\B' matches characters which are not a word boundary
7. '\`' matches the beginning of the whole input

8. '\'' matches the end of the whole input

Grouping is performed with backslashes followed by parentheses '\(', '\)'. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '\('.

The alternation operator is '\|'.

The character '^' only represents the beginning of a string when it appears:

1. At the beginning of a regular expression
2. After an open-group, signified by '\('
3. After a newline
4. After the alternation operator '\|'

The character '$' only represents the end of a string when it appears:

1. At the end of a regular expression
2. Before a close-group, signified by '\)'
3. Before a newline
4. Before the alternation operator '\|'

'*', '\+' and '\?' are special at any point in a regular expression except:

1. At the beginning of a regular expression
2. After an open-group, signified by '\('
3. After a newline
4. After the alternation operator '\|'

Intervals are specified by '\{' and '\}'. Invalid intervals such as 'a\{1z' are not accepted.

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.7 'posix-awk' regular expression syntax

The character '.' matches any single character except the null character.

'+' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'?' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'\+' matches a '+'

'\?' matches a '?'.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '[z-a]', are invalid. Within square brackets, '\' can be used to quote the following character. Character classes are supported; for example '[[:digit:]]' will match a single decimal digit.

GNU extensions are not supported and so '\w', '\W', '\<', '\>', '\b', '\B', '\‘', and '\’' match 'w', 'W', '<', '>', 'b', 'B', '‘', and '’' respectively.

Grouping is performed with parentheses '`()`'. An unmatched '`)`' matches just itself. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '`\2`' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '`(`'.

The alternation operator is '`|`'.

The characters '`^`' and '`$`' always represent the beginning and end of a string respectively, except within square brackets. Within brackets, '`^`' can be used to invert the membership of the character class being specified.

'`*`', '`+`' and '`?`' are special at any point in a regular expression except the following places, where they are not allowed:

1. At the beginning of a regular expression
2. After an open-group, signified by '`(`'
3. After the alternation operator '`|`'

Intervals are specified by '`{`' and '`}`'. Invalid intervals are treated as literals, for example '`a{1`' is treated as '`a\{1`'

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.8 'posix-basic' regular expression syntax

This is a synonym for ed.

14.8.9 'posix-egrep' regular expression syntax

This is a synonym for egrep.

14.8.10 'posix-extended' regular expression syntax

The character '`.`' matches any single character except the null character.

'`+`' indicates that the regular expression should match one or more occurrences of the previous atom or regexp.

'`?`' indicates that the regular expression should match zero or one occurrence of the previous atom or regexp.

'`\+`' matches a '`+`'

'`\?`' matches a '`?`'.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '`[z-a]`', are invalid. Within square brackets, '`\`' is taken literally. Character classes are supported; for example '`[[:digit:]]`' will match a single decimal digit.

GNU extensions are supported:

1. '`\w`' matches a character within a word
2. '`\W`' matches a character which is not within a word
3. '`\<`' matches the beginning of a word

4. '\>' matches the end of a word
5. '\b' matches a word boundary
6. '\B' matches characters which are not a word boundary
7. '\`' matches the beginning of the whole input
8. '\'' matches the end of the whole input

Grouping is performed with parentheses '()'. An unmatched ')' matches just itself. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group expression. The order of group expressions is determined by the position of their opening parenthesis '('.

The alternation operator is '|'.

The characters '^' and '$' always represent the beginning and end of a string respectively, except within square brackets. Within brackets, '^' can be used to invert the membership of the character class being specified.

'*', '+' and '?' are special at any point in a regular expression except the following places, where they are not allowed:

1. At the beginning of a regular expression
2. After an open-group, signified by '('
3. After the alternation operator '|'

Intervals are specified by '{' and '}'. Invalid intervals such as 'a{1z' are not accepted.

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.11 'posix-minimal-basic' regular expression syntax

The character '.' matches any single character except the null character.

Bracket expressions are used to match ranges of characters. Bracket expressions where the range is backward, for example '[z-a]', are invalid. Within square brackets, '\' is taken literally. Character classes are supported; for example '[[:digit:]]' will match a single decimal digit.

GNU extensions are supported:

1. '\w' matches a character within a word
2. '\W' matches a character which is not within a word
3. '\<' matches the beginning of a word
4. '\>' matches the end of a word
5. '\b' matches a word boundary
6. '\B' matches characters which are not a word boundary
7. '\`' matches the beginning of the whole input
8. '\'' matches the end of the whole input

Grouping is performed with backslashes followed by parentheses '\(', '\)'. A backslash followed by a digit acts as a back-reference and matches the same thing as the previous grouped expression indicated by that number. For example '\2' matches the second group

expression. The order of group expressions is determined by the position of their opening parenthesis '`\(`'.

The character '`^`' only represents the beginning of a string when it appears:

1. At the beginning of a regular expression
2. After an open-group, signified by '`\(`'

The character '`$`' only represents the end of a string when it appears:

1. At the end of a regular expression
2. Before a close-group, signified by '`\)`'

Intervals are specified by '`\{`' and '`\}`'. Invalid intervals such as '`a\{1z`' are not accepted.

The longest possible match is returned; this applies to the regular expression as a whole and (subject to this constraint) to subexpressions within groups.

14.8.12 '`sed`' regular expression syntax

This is a synonym for ed.

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Version 1.3, 3 November 2008

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