

AUTOMATED THEOREM PROVING

Programming in Prolog

Exercise 1. Write a Prolog program to compute $n!$ for every natural number n .

Exercise 2. Write a Prolog program to compute the lowest common multiple of two natural numbers.

Exercise 3. Write a Prolog program to compute the length of a list.

Exercise 4. Write a Prolog program to find the last element of a list, without using the “append” predicate.

Exercise 5. Write a Prolog program to find the pairs of elements which are consecutive in a list.

Exercise 6. Write a Prolog program to obtain the union of two lists.

Exercise 7. Write a Prolog program to obtain the intersection of two lists.

Exercise 8. Write a Prolog program to determine whether a list is a subset of another list.

Exercise 9. Write a Prolog program that for a natural number n includes in a list all the prime factors of n .

Exercise 10. Write a Prolog program to solve the following problem. There are n men and n women that want to get married. Each man has a list of the n women ordered according to his preferences, and likewise each woman has a list of the n men according to her preferences. Then, we have to find a set of couples S in such a way that there is no pair of couples $A - X$, $B - Y$ in S such that one of the following conditions holds:

- (1) A prefers Y instead of X and Y prefers A instead of B ,
- (2) X prefers B instead of A and B prefers X instead of Y .