Use the Prolog system installed on your VM and write the following programs:

(1) Define a predicate `max/3` that takes two numbers as its first two arguments and unifies the last argument with the maximum of the two.

(2) Define a predicate `maxlist/2` that takes a list of numbers as its first argument and unifies the second argument with the maximum number in the list. The predicate should fail if the list is empty.

(3) Define a predicate `ordered/1` that takes a list of numbers as its argument and succeeds if and only if the list is in non-decreasing order.

(4) Define the predicate `member/2` that takes list as its first argument and a term as its second argument. The predicate is to return true if the term is in the list otherwise it is to return false.

**Hint:** the usual relational operators are supported in Prolog as predicates. For example,

\[ \text{bigger}(X,Y) :\text{-} X \geq Y. \]