Q-7 Write a program to solve N-Queens problem using Prolog.

```
% N-Queens Problem in Prolog
% Entry point: solve the problem for N queens
n_queens(N, Solution) :-
        range(1, N, Ns),
        permutation(Ns, Solution),
        safe(Solution).

% Generate a list from Low to High
 range(Low, High, [Low|Rest]) :-
        Low < High,
        Next is Low + 1,
        range(Next, High, Rest).
 range(High, High, [High]).

% Check that no two queens attack each
  other
  safe([]).
  safe(~~[Q]~~[Q|Others]) :-
        safe(Others),
        no_attack(Q, Others, 1).

% Check that a queen does not attack any
  others diagonally ~~no_attack~~
  no_attack(_, [], _).
  no_attack(Q, [Q1|Others], D) :-
        Q =\= Q1,
        abs(Q - Q1) =\= D,
        D1 is D+1,
        no_attack(Q, Others, D1).
```

```
% Permutation generator (built-in in some
  Prolog systems)
  permutation([], []).
  permutation(List, [H|Perm]):-
       select(H, List, Rest),
       permutation(Rest, Perm).

% Example query to solve for 4-queens:
% ?- n_queens(4, Solution).

% It will return:
% Solution = [2,4,1,3];
%  Solution = [3, 1,4, 2];
%  false
```

* Output

Input : ?- n_queens(4, Solution).

Output : Solution = [2,4,1,3];

Solution = [3,1,4,2];

False