Week2 -Lab2

Exercises for the second lab

Prolog exercises in CodeQ and SWI Prolog.

a) CodeQ - the third section - Lists
b) Exercises in SWI Prolog or in CodeQ

Tasks - Working with *lists*

1. Define predicate that concatenates two lists.

```
        conc( L1, L2, L3)
  % conc( L1, L2, L3): L3 is concatenation of L1 and L2
```

What will Prolog return for:

```
   ?- conc([1, 2, 3],[a, b, c], L).
```

2. Write a Prolog Query: Which months are before "June", which after?
Try with different Months.

3. Write a Prolog Query: Delete from the list L1 everything from two 'x' onwards.

```
  L1 = [a, b, c, d, x, x, e, x, x, x, f].          % A list L1 with a pattern
  %  find he L2, which is L1 up to the pattern
```

Try to detect and delete all elements in the list after different patterns, for example: "aaa", "ccc" or different length of the pattern: "a", "aa",…"aaaaa"

4. Exercise for deleting and inserting elements in a List: Write a Prolog program

```
        del( X, L, NewL)
```

that deletes element X from a List L.

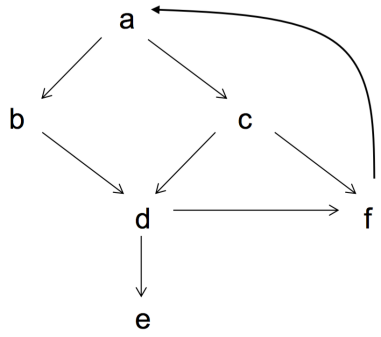
```
% del(X, List, NewList)
% delete X from the List  and return the NewList
```

5. Write a Prolog program that calculates the Length of a List L.

```
        length_List (L, Len)
% length_List (L, Len)
% returns the length of the list L
```

6. Path in a Graph

Define a Prolog program to find a path in the following graph.



a) describe the graph in Prolog:

for example: link(a, b). % you can use another relation name

b) write a program

path(StartNode, GoalNode)

% path(StartNode, GoalNode): path exists between the nodes

c) write a program that returns the list of nodes from *Start* to *Goal*.

path(Start, Goal, Path):

% path(Start, Goal, Path): % Path = list of nodes from Start to Goal

7. Working with lists: try the program "sublist" for a sublist in a list.

```
% sublist( List, Sublist): Sublist appears as a sublist in a List
        sublist( S, L) :-
              conc( L1, L2, L),
              conc( S, L3, L2).
```

8. What is the Prolog answer?

?- datum(Day, Month, 2000) = datum(D1, jun, Y1).

?- triangle(t(1, 1), A, t(2, 3)) = triangle(X, t(4,Y), t(2,Y)).

?- [a, b|X] = [a, b, c].