Prolog Programming Assignment

Page No. :
Date :

1) How does the queries in kb.pl file are executed?

→ code:

```
loves (vincent , mia)
loves ( marcellus , mia)
loves (Pumpkin , honey-bunny)
loves ( honey-bunny , pumpkin)

Jealous (X,Y) :-
    loves (X, Z),
    loves ( Y, Z).
```

Query: ? - loves (X, Mia).
output : X = vincent
X = marcellus

Explanation : Here as we know vincent loves mia as well as marcellus loves mia. Thus the kb assumes that x is either vincent or marcellus

query 2 : ? - jealous (X, Y),
output X = Y, X = vincent
X = vincent
Y = marcellus
X = marcellus
X = Y, Y = Marcellus
X = Y, Y = Pumpkin
X = Y, Y = Honey-bunny

Explanation: As there is no fixed parameters in our

The query will produce output of every jealous (x, Y) pair on our prolog code. The jealous () rule follows: jealous (x, Y) :- loves (x, Z), loves (Y, Z) initially, x and Y both were associated to vincent, i.e, self association. It then follows reflexive property for the rest of the prolog code.

2) How does the queries in lists.pl file are executed?

→ code:

```
suffix (Xs, Ys) :-
    append (_, Ys, Xs).

prefix (Xs, Ys) :-
    append (Ys, _, Xs).

sublist (Xs, Ys) :-
    suffix (Xs, Zs)
    prefix (Zs, Ys).

nrev ( [], []).
nrev ( [H|T0], L) :-
    nrev (T0, T)
    append (T, [H], L)
```

query: ?- sublist ([a, b, c, d, e], [c, d]).
output: True

Explanation: A, sublist, procedure looks for a match between the first elements of the sub-list and the main-list Here, [c,d] is the sub-list of the main list [a,b,c,d,e]. As the main list contains the sublist [c,d] the output is true. Else the output would have been false.

query 2 : ?- suffix ([a,b,c], zs)

output : zs = [a,b,c]
zs = [b,c]
zs = [c]
zs = []
false

Explanation: Suffix in general elimnates the front elements from a list Here, by using suffix procedure, [a,b,c] elements are removed from a and continues until all the elements are removed As there are no more elements in the list, the output will be displayed as false.

Q-3 Programming create a prolog code to find factorial of a number?

→ code

```
code  factorial(0,1).
      factorial(N,F):-
```

N>0
N1 is N-1,
factorial(N1,F1),
N is N*F1.

Query : ?- factorial(3,W).

output : W=6

Q.4) In examples data set movies.pl write query strings and results of query execution for any of 5 tasks :

a) In which year was the movie American Beauty released?

Query : ?- movie(american-beauty,Y).

output Y = 1999

b) Find the movies released in your 2000

Query : ?- movie(M,2000)

output M = down-from-the-mountain
M = o-brother_where-art-thou
M = ghost_world

c) Find moues released before 2000

Query : ?- movie (M, Y) , Y<2000

output : M = american-beauty
Y = 1999

M = anna
Y = 1987

M = barton - fink
Y = 1991

d] Find the movies released after 1990

query : ?- movie (M, Y) Y>1990

output : M = american-beauty
Y = 1999

M = barton-fink
Y = 1991

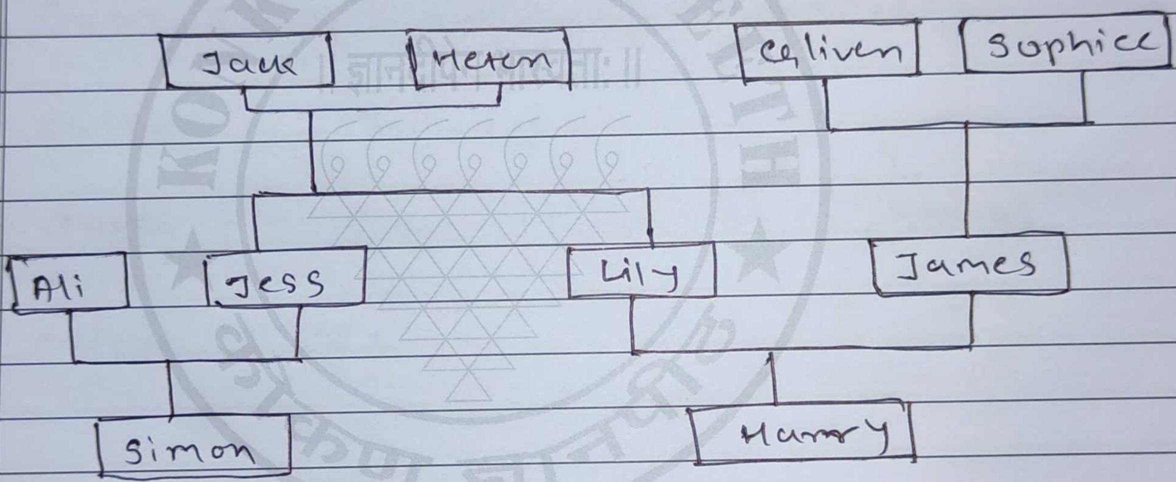
e) Find a director of a movie in which scarlett Johansson appeared

Query : ?- actress (M, scarlett-johanssion, _),
director (M, D)

output : D = peter - webber
M = girl-with-a-pearl-erring

Q.5 Draw a family ~~th~~ tree of you / any arbitrary family which has the following relations mother, father, doughter, son, grandson, grandmother, sibling, uncle, person male, female. you need to covert it into KG and write atleast 6 queries and query results on your KB.

→ Diagram



Family tree

Query 1 : ?- mother-of (x, jess).

output : x = helen

Query 2 : ? parent - of (x, simon)

output : x = jess

Query 3 : ?- sister_of(x, lily)

output : x - jess

Query 4 : ?- Parent of (x, harry).

output : x = lily
x = james

Query 5 : ?- aunt_of(x, simon).

output : x = lily

Query 6 : ?- grandfather_of(x, harry)
.

output : x = jack