Prolog Programming language

Q1) How does the query in Knowledge base are executed?

→ Code :- % Knowledge base

```
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)

O/P :- X = vincent
Y = 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.

(Q2) How does the queries in list.pl are executed?

→ code : suffix (XS, YS)
append (-YS, XS)

prefix (XS, YS) :-
append (YS, -XS)

sublist (XS, XS) :-
suffix (XS, ZS)
prefix (ZS, YS)

new ([], [])
new ([H], [Φ], L) :-
new [TΦ, T]
append [T, [H]], L)

Query 1 :- ?-sublist ([[a,b,[c,d],e], [[c,d]])
output :- True

Explanation :- A sublist procedure works for a match between the first elements of the sublist and main list. Here [[c,d] is the sublist 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,[],2S)
output :- ZS - [a,b,[] , ZS = [b,[]) , ZS = [[], ZS = []
Explanation :- suffix in general eliminates front elements from a list. Here by using suffix procedure are removed from

Q3) create a prolog code to find Factorial of a number

→ Factorial (0,1)

Factorial (N,F)

N>0

N1 is N-1

Factorial (N1,F1),

F is N*F1.

Query :- ? - Factorial (5,W).

output :- W=6

Q4) In example data set movies.pl write query strings and result of query execution for any 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 year 2000

Query :- ? - movie (M, 2000)

output :- M = Queen_from_the_mountain

M = O_brother_where_art_thou

M = Ghost_bound

c) Find movies released before 2000

Query ? - movie (M, Y1), Y<2000

output M = american_Beauty

Y = 1999

M = anna, Y = 1987 M = bottom_Rink, Y = 1991

d) Find the movies released after 1990

Query :- ? - movie (m, y), y > 1990,

output :- m = american_beauty

m = bottom_fink

y = 1991

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

Query :- ? - actress (m, scarlett_Johansson), director (m, d)

output d = peter_webber

m = girl with a pearl earring

a) Find memes released before 2000

Query :- ? - movie (m, y), y < 2000

output :- m = american beauty

y = 1999

m = ama

y = 1987

m = bottom - fink

y = 1991

d) Find the movies released after 1990

Query :- ? - movie (m, y), y < 1990

output :- m = american_beauty

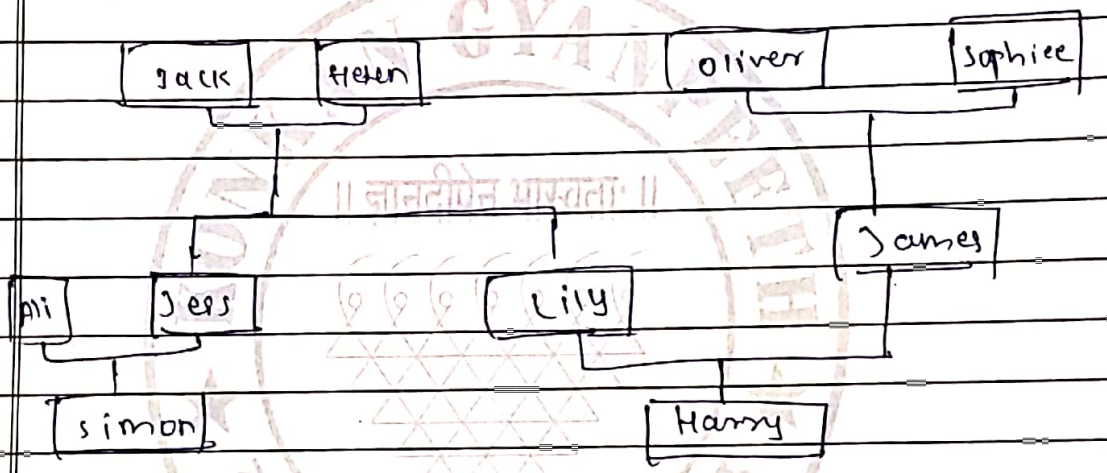
y = 1999

m = bottom fink

y = 1991

Q5) Draw a family tree of you any arbitary family which has the following relations mother, father, daughter, son, grandson, grandmother, sibling, uncle, person, male, female You need to convert it into KB and write atleast 6 queries and query result 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 5 :- ? - parent - of (x, harry)
output :- x = lily
x = James