Prolog Programming Assignment

1. How does the query in kbpl file are executed?

→ code : % knowledge bases

lovers (vincent, mia)
lovers (marcellus, mia)
lover (pumpkin, honey-bunny)
lover (honey bunny, pumpkin).

jealous (x, y) ⁑
lovers (X, Z),
lovers (Y, Z).

Query ! lovers (X, mia)
:   X = vincent
    X = marcellus

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

Query 2 ! ? - jealous (x, y)
         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 parameter in our query. The query will produce output of every jealous (x, y) pair on our prolog code. The jealous () rule follows:

jelous (x, y): lover (x, z), lover (y, z).

Initially, X, & 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 lrst. Pt file are executed?

->

Code : suffix (xs, ys)
    append (-, ys, xs)

Prefix (xs, ys):-
    append (-, ys, xs)

Sublist (xs, ys):-
    Suffix (xs, zs)
    preffix (&zs, ys)

nrev ([], [])
nrev ([H/To], L):
    nrev (To, T).
    append (T, [H], L].

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

Explanation: A sublist procedure looks for a match between the first elements of the sublist & the 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,c], zs)

Output: zs [a,b,c]
         zs = [b,c]
         zs = [c]
         zs = []

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

Programming create a prolog code to find factorial of a number.

Code : factorial (0, 1)
     factorial (N, F):
      N > 0,
      N₁ is N-1
      Factorial (N, F₁)
      N is N*F,

Query! ?. factorial (3, W)

Output : W = 6

In example data set movies. Pl write query strings & results of query execution for any of 5 tasks:
In which year was the movie american Beauty released?
Query: ?- movie (American, beauty, y)
Output: y = 1999
Find the movies released in year 2000

Query: ?- movie (M, 2000)
Output: M = down-from-the-maintain
        M = 0-brother_where-art_thou
        M = ghost - world

Find movies released before 2000
Query: ?- movie (M, Y), Y₂ < 2000

Output : M = american - beauty
Y = 1999

M = anna
Y = 1987

M = barton. fink
Y = 1991

d) Find the movies released after 1990
Query: ? - movies (M, Y) Y > 1990

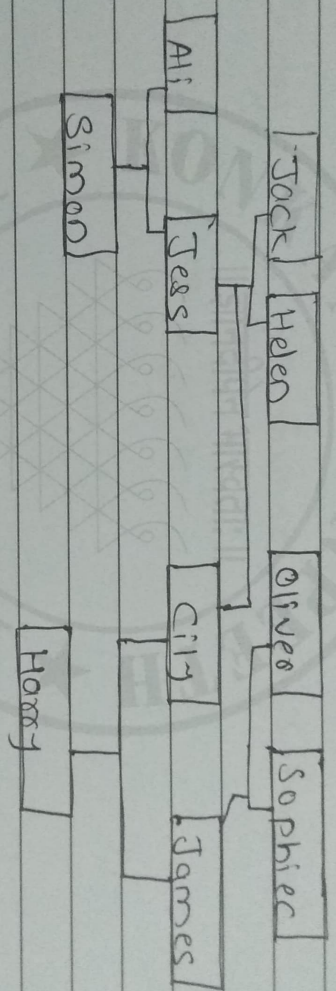Output : M = american_ beauty
Y = 1999

M = barton. fink
Y = 1991

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

Query: ? - actress (M : scarlett _ Johansson).)
director (M, 0)

Output : 0 = peter_ webber
M = girl _ with _ a _ pearl _ earring.

Q.5] Draw a family tree of you (any arbitrary family, which has the following relations mother, father, daughter, son, grandson, grandmother, sibling, uncle, person, male, female you need to convert it into k & write atleast Queries & Query result on your KB.

→ Diagram :

| Jock | Helen | | Oliver | Sophie |

| Ali | Jess | | City | James |

| Simon |

| Harry |

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