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Prolog Programming Ass.

1) How dues the queries in kbip1 file are executed?

→ Code ::

```
loves(vincent, mia).
loves(marcellus: mila)
loves(Pumpkin, honey-bunny)
loves(honey-bunny, pumkin).

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)
X = Y, Y : vincent
X = vincent
Y = Marcellow
x = Marcellous
X = Y, Y = Marcellus
X = Y, Y = pumpkin
Y = Y, Y : Honey-bunny
```

Explanation As there is no fixed parameters in our query

The query will produce output of every jealous(x, y) on our prolog code. The jealous() rule follows
jealous (X,Y) :- loves (X,Y), love's (X, Z)
Initially, X & Y both were associated to uncont i.e. self association. It then follows reflexive property for the rest of prology code

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

→ code:

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

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 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 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 elimination 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 list. the output will be displayed as false.

Q.3. 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 (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 four of 5 tasks :

a) In which year was the ~~re~~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 = down_from_the_mountain

M = o_brother_where_art_thou

M = ghost_world

a) Find movies released before 2000

query : ?- movie (M, Y), y < 2000

output : M = american - beauty
Y = 1999

M = anno
Y . 1987

M = barton - fink
Y = 1991

b) Find the movies released after 1990

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

output : M = american . beauty
Y . 1999

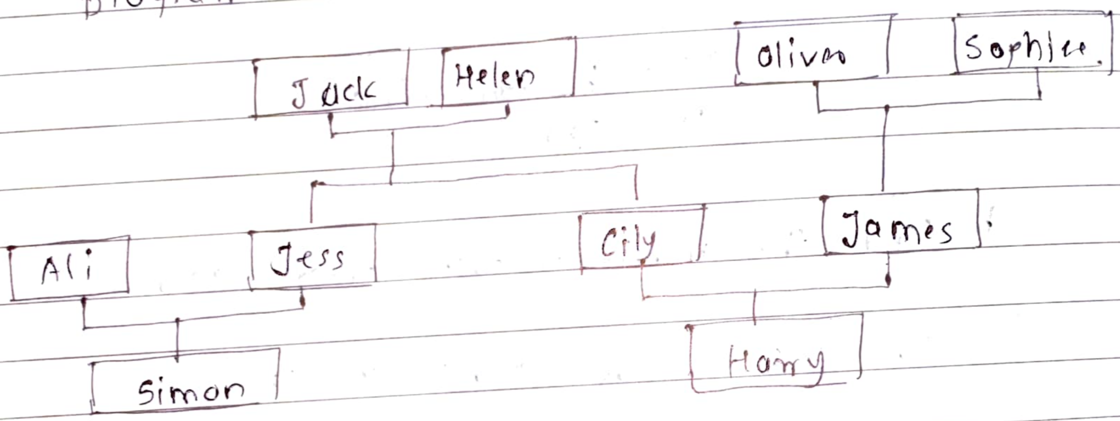
M . barton . fink
Y = 1991

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

query : ? address (M i scarlett . Johnsson) . director (M, D)
output :- D = peter - webber
M = girl - with - a pearl - earring

Q5. Draw a family tree of you lany arbitory: family which has the following relations mother, Rather, daughter, son, grandson, grondmother, 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 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.