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Prolog Programming Assignment

1) How does the queries in kb.pl files is 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).
```

Query1 :-   ? - loves (x, mia)
Output :   X - vincent
                X = Marcellus.

Explanation :- Here as we know vincent
               loves Mia as well as marcellous
               loves Mia. Thus the kb assumes
               that X is either Vincent or Marcellous

Query 2 :-

?- jealous(x, y).

Output :-   X = y , Y = vincent
            X = vincent
            Y = marcellus
            X = marcellus
            Y = vincent
            X = Y ,   Y = marcellus
            X = Y ,   Y = pumpkin
            X = Y ,   Y = honey-bunny

Explanation :- As there is not constant variable
                in our query. The query will produce
output of every. The query with procedure
output of ~~quer~~ 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 bothe were associated to
vincent , i.e, self - association. It then follows
~~recflexive~~ reflexive property for the rest of
the prolog cod.

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

Query1 :-
?- sublist ([a, b, c, d, e], [c, d]

Output :- true.

Explaination :- Sublist is a check to ab availability between the two list.
A sublist procedure look for a match between the first element or sublist 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 outpute

would have been false

Query 2 :-

$$?- \text{suffix}([a,b,c], zs)$$

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

$zs = [b,c]$

$zs = [c]$

$zs = []$

False.

Explaination :- Suffix in genral eliminates 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.

3) Programing 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),
F is N * F1
```

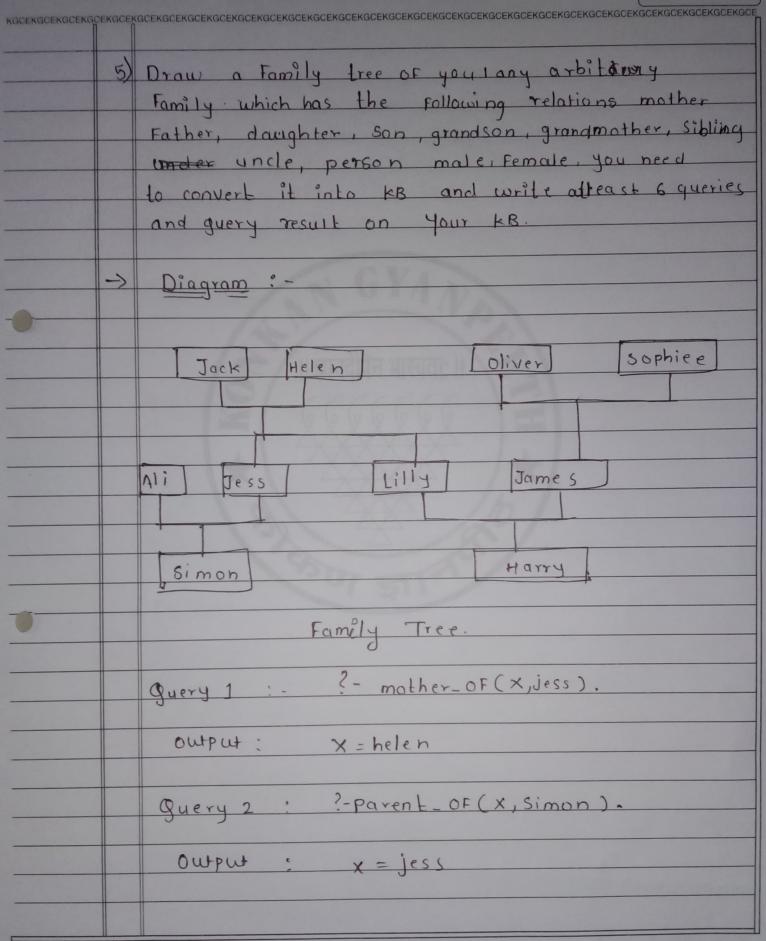Query :- ?- Factorial (6, W).

Ouput :-   W = 720

4) In example data set movies Pl write query string and result of query execution for any 5 Tasks :-

→ b) Find the movies released in the Year 2000

Query : ?- movie(M, 2000).

Output : M = down-from-the-moutain
M = 0-brother-where-art-thou
M = ghost-world

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

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

Output : Y = 1999

d) Find the movies released after 1990

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

Output : M = american-beauty
Y = 1999

M = barton-fink
Y = 1991

c) Find means released before 2000

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

Output :   M = american-beauty
               Y = 1999

               M = anna
               X = 1987

               M = barton-fink
               X = 1991

e) Find a director of movie in which scalett Johansson appered.

Query :   ?- actress (M; ScarleH -johansson)-),
          director (M,0).

Ouput :   D = peter-webber
              M = girl-with-a-pearl-earning

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5) Draw a family tree of you any arbitrary family which has the following relations mother Father, daughter, Son, grandson, grandmother, Sibling under 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   :   ?- grand father - of (x, harry).

Output :   x = jack.