Prolog programming Assignment

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prolog programming Assignment

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, 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 assume that X is either vincent or marcellus.

query 2 : ?- jealous (X, Z)
X = Z, X = vincent
X = vincent
Z = marcellus
X = marcellus
X = Z, Z = marcellus
X = Z, Z = pumpkin
X = Z, Z = Honey_bunny.

Explanation:- As there is no fixed parameters in our query, 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)
Intially, x, and y both were assiciated to vincent. i.e self association. It then follows reflexive property for the rest of the prolog code.

2] How does the queries in list.pl are executed?

→ code: suffix (xs, ys) :-
append (_, ys, xs)

prefix (xs, ys) :-
append (ys, _, xs) :-

sublist (xs, zs) :-
suffix (xs, zs),
prefix (zs, ys),

rev ([], []).
rev ([H|T], L) :-
rev (T, T)
append (T, [H], L)

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

Explanation :- sublist procedure looks for a match between the first elements of the 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 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 eliminates the front element from a list. Here by using suffix procedure [a,b,c] elements are removed from a and continously until all the elements are removed. As there are no more elements in the list, the output will be displayed as 'false'.

Q3] 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)
F is N * F1

query : ?- factorial (5,W)

output :- W = 6

Q4] 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, Z)
output : Z = 1999.

b] find the movies released in year 2000
query :- ?- movie (M, 2000)
output : M = down-from-the-mountain
M = 0.brother.where.art.thou
M = ghost.world.

c] find movies relased before 2000

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

output :- M = american_beauty
Y = 1999
M = anna
Y = 1987
M = barton fink
Y = 1991

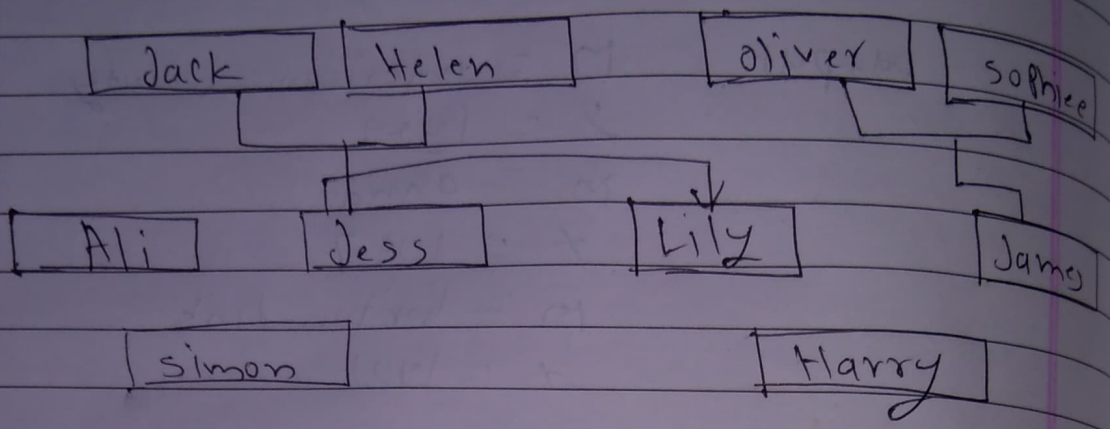
d] find the movies released after 1990.
query :- ?- movie (M, Y), Y > 1990

output :- M = american_beauty
Y = 1999
M = bartam_fink
Y = 1991

e] find a director of a movie in which scalet Johansson appeared
query :- ?- (M, scarlett_Johansson), diretor (M, D)
output :- D = Peter_weller
M = girl with a pearl earing.

f] Draw a family tree of your own or 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 KB and write atleast 6 queries and query results on your KB

→ Diagram :-



family tree

query1 : ? - mother_of (x, less)

output : x = helen

query 2 : ? parent_of (x, simon)

output : x = Jess

query 3 : ? - sister_of (x, lily)

output : f = Jess

query 4 : ? - parent_of (x, harry)

output : x = Jack