Prolog Programming Assignment

Date:

1) How does the queries in Kb.pl file are Created?

→ 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 Marcellus loves Mia. Thus the kb assumes that X is either Vincent or Marcellus.

Query 2:- ? - jealous (X, Y)
Output X = Y, X = Vincent
X = Vincent
Y = Marcellus
X = Marcellus
X = Y, Y = Marcellus
X = Y, Y = Pumpkin
X = X, Y = Honey-bunny

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Explanation :- As there is no fixed parameters in our query. The query will produce output of query jealous(X,Y) pair on our prolog code. The jealous(), rule follows jealous (X,Y) :- loves(X,Z), loves(Y,Z) If then follows receive property for the rest of the prolog code.

2) How does queries in list.pl file are excuted

→ 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|T0],L):-
nrev(T0,T)
append(T,[H],L)

Query:- ?- Sublist([a,b,c,d,e],[c,d]).

Output :- True.

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Explanation :- A sublist procedure looks for a match between the first elements of the sub-list & the main-list u & 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 = [a, b]

zs = [c]

zs = []

false

Explaination :- Suffix in general eliminates the front element 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 are no more elements in the list, the output will be displayed as false.

Q.3) Programming Create a prolog code to find factorial of a number ?

→ Code :- factorial (a, 1).

factorial (N, F) :-

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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 any of 5 tasks?:

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

Query: ?- movie (americca_beauty, Y).

Output: Y = 1999

b) Find the movies released in year 2000

Query: ? - movie (M, 2000).

Output: M = dow-from-the-mountain
M = B-brother-where-art-thou
M = ghost-world,

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c) Find moves released before 2000

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

output : M = anerian - 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 = barton - fink
Y = 1991

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

Query :- ?- address(M; Scarler H-Johansson),
director (M, O)

output : O = Peter - webber.

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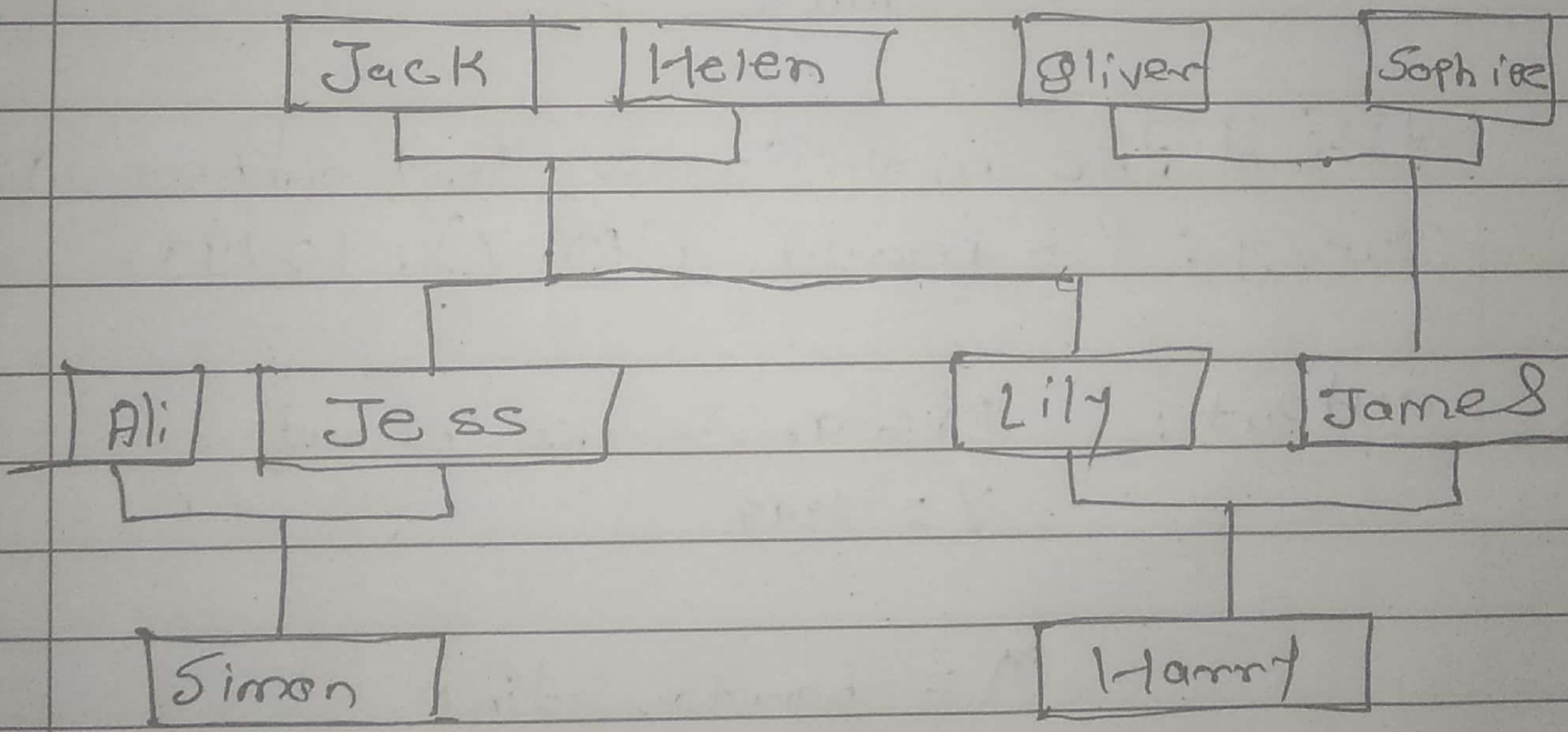
r_1 = girl - with - a - pearl - earing

Q 3) Draw a family tree of your any arbitrary family. which has the following relations, mother, father, daughter, son, grandson, grandmother, Sibling, uncle, Person, male, female. You need to Convert into KE and write atleast 5 queries & query result on your KE.

→ diagram :-



Family Tree

Query 1 : ? mother - of (X, Jess).

output : X = helen.

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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.

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