

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).

Query 1: ?- 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

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) It then follows receive property for the rest of the prolog code.

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

→ Code:-
 Subfix(Xs, Ys) :-
 append(-, Xs, Xs).

Prefix(Xs, Ys) :-
 append(Ys, -, Xs).

Sublist(Xs, Ys) :-
 Suffix(Xs, Zs),
 Prefix(Zs, Ys).

rev([], []).
 rev([_:/T], L) :-
 rev(T, T)
 append(T, [_], 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 & the main-list & Here $[c, d]$ is the sub-list of the mainlist $[a, b, c, d, e]$. As the main list contains the sub-list $[c, d]$, the output is true. Else the output would have been false.

Query 2:- ?-sublist($[a, b, c]$, zs)

output : $zs = [a, b, c]$

$zs = [a, b]$

$zs = [c]$

$zs = []$

false

Explanation:- Sublist in general eliminates the front element from a list, Here, by using sublist 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):-

$N > 0$,
 N_1 is $N-1$,
 factorial (N, F_1) ,
 N is $N * F_1$

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 (America, beauty, Y).

Output: $y = 1999$

b) Find the movies released in year 2000

Query: ? - movie (M, 2000).

Output: $M = \text{clow - from - the - mountain}$

$M = \text{B - brother - where - set - there}$

$M = \text{ghost - world}$

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c) Find movies released before 2000

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

Output : M = american-beauty
Y = 1999

M = anna
X = 1987

M = barton-fink
X = 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
Scarlett Johansson appeared.

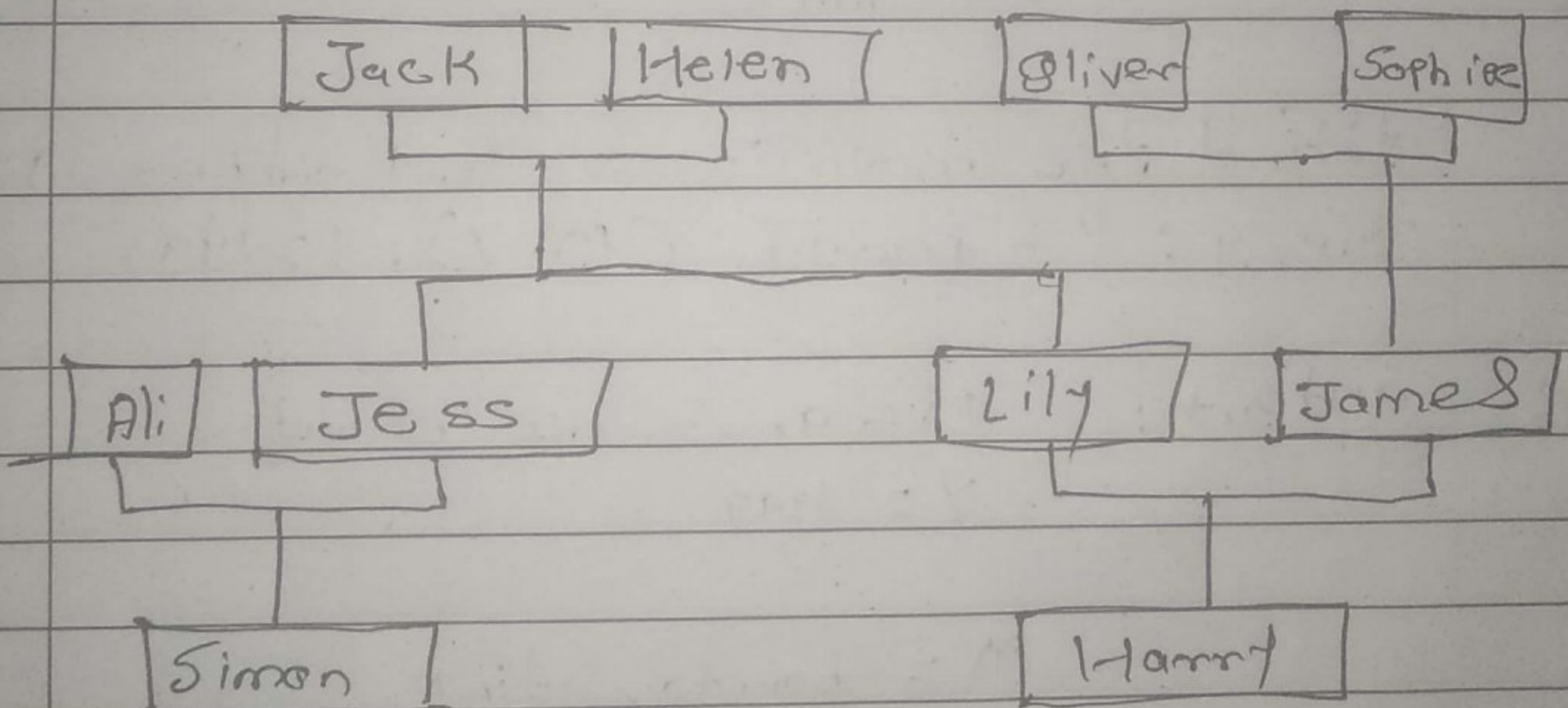
Query :- ? - address (M; Scarlett Johansson),
director (M, O)

output : O = Peter-webber.

17 = Girl - with - a - Pearl - earring

Q3) Draw a family tree of you any arbitrary family. which has the following relations, mother, father, daughter, son, grandson, grandmothers, 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

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.