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Prolog Programming Assignment

Page No. :
Date :

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17 How does the queries in kb.pl file are executed ?

Code : loves (vincent , mia)
loves (marcellus , mia)
loves (pumpkin , honey - bunny)
loves (honey - bunny , pumpkin)

jealous (X, Y) :-
loves (X, Z)
lover (Y, Z)

Query 1 : ? lovers (X , mia)
Output : X = vincent
X = marcellus

Explanation : Here as we know vincent loves Mia as well as Marcellus lovers mia. Thus the kb asumes that x is either vincept or marcellus.

Query 2 : ? jealous (X, Y)
output : X = Y , X = vincent
X = vincent
Y = Marcellux
X = marcellux
X = Y , Y = Marcellus
X = Y , Y = pumpkin
X = Y , Y = Honey - bunny

Explaination : As there is no fixed parameter 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) : lovers (x,z), lovers (y,z)
initially : x and y both were associated to Vincent, ie, self-association. It then follows relaxive property for the rest of the prolog code.

Q2. How does the queries in lists.pl 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|T0], L) :=
nrev (T0, T)
append (T, [H], L)

Page No. :
Date :

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 contain 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] element are removed from a and continues until all the element are removed. As there are no more elements in the list, the output will be display 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 any of 5 tasks.

a) In which year was the 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

Page No. :
Date :

M = brothers = where art thou
M = ghost = world.

a) Find means released before 2000.

Query : 9 = movie (M, Y) ; Y < 2000

output : M = american = beauty
Y = 1999

M = anna
X = 1987

M = barton - fink
Y = 1991

a) Find the movies released after 1990

Query : 9 movie (M, Y), Y > 1990

output : M = american - beauty
Y = 1999

M1 = barton - finks
Y = 1991

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

Query : ?. actress (M, scarlett - johnsson)
director (M, O)

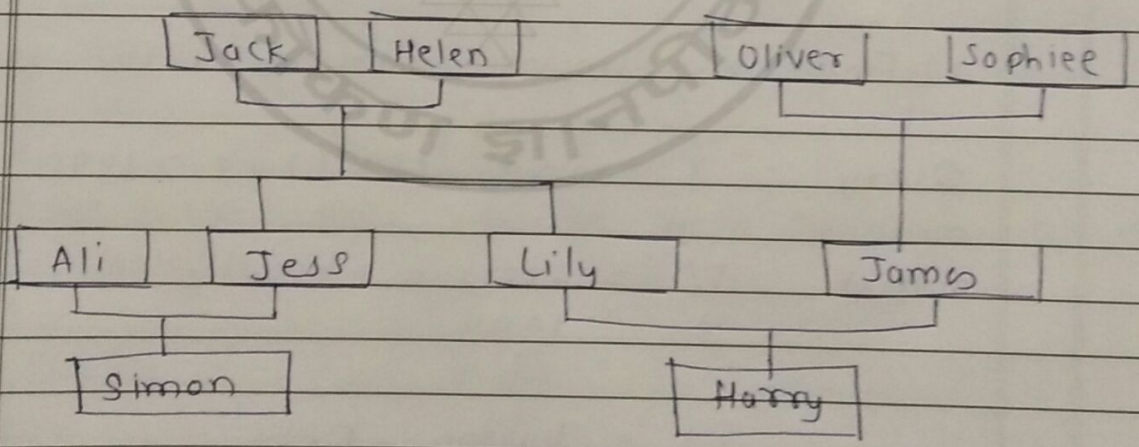
output : O = peter - webber
M = girl - with - a, pearl - earring

~~Q5.~~

Q5. Draw a family tree of your any arbitrary family ~~with~~ which has the following relation mother, father, daughter, son, grandson, grandmothers, sibling, Uncle, person, male, female you need to convert it into KB and write atleast 5 queries ~~on~~ out query result on your KB.

→

Diagram :



Family Tree.

Page No.

Date :

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