

Name :- Mital Ramesh Nalawade

Roll No :- 39

Class :- BE - IT

subject :- AI

D.O A

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prolog programming Assignment

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1) How does the queries in Kb.PI file are 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)

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 assumes that X is either vincent or marcellus.

Query 2 ? jealous (X, Y)

Output
X = Y, X = vincent
Y = marcellus
X = marcellus
X = Y, Y = marcellus
X = Y, Y = pumpkin
X = Y, Y = Honey-bunny

Explanation :- 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 (1) rule follows.
 $jealous(x,y) :- loves(x,z), loves(y,z)$
 initially x & y both were associated to vincent i.e., self association. it follows reflexive property for the rest of the prolog code.

Q. 2) How does the queries in lists P1 are executed?

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Code :- $Suffix(Xs, Ys) :-$
 $append(-, Ys, Xs).$

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

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

$nrev([], [])$

$nrev([H|T], L) :-$

$nrev(T, T)$

$append(T, [H], L)$

Query :-

Sublist ([a, b, c, d, e], [c, d])
Output :- true

Explanation :- A 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 :- Sublist

suffix ([a, b, c], zs)

Output :-
zs = [a, b, c]
zs = [b, c]
zs = [c]
zs = []
false.

Explanation :- Suffix in general elements the front element from a list. Here by using Suffix procedure, [a, b, c] elements are removed from a and continue until all 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 (0, 1).
Factorial (N, F) :-
 N > 0,
 N is N-1,
 Factorial (N, F1),
 F 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 :- movies (american-beauty, Y)

Output Y = 1999

b) Find the movies released in year 2000

Query θ movie (m, 2000)
 Output
 m = down-from-the-mountain
 m = o-brother-where-art-thou
 m = ghost-world

c) Find movies ~~to~~ released before 2000

~~Query~~ Query θ movie (m, y), $y < 2000$

Output :- m = American-beauty
 y = 1999

m = Anna
 y = 1987

m = Barton-Fink
 y = 1941

d) Find the movies released after 1990

Query θ - movie (m, y), $y > 1990$.

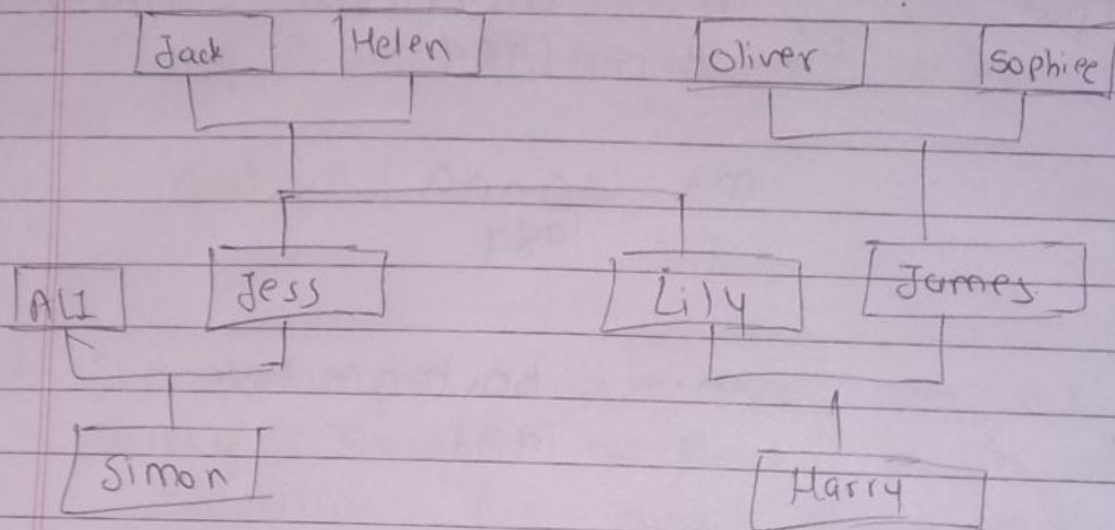
Output : m = American-beauty
 y = 1991

m = Barton-Fink
 y = 1941

e) Find a director of a movie in which ^{appeared} Scarlett Johnson
 Query θ - actress (m : Scarlett Johnson), director (m, D)
 Output :- D = Peter-Webber
 m = girl-with-a-pearl-earring

Q.5 Draw a Family tree of you / any arbitrary family which has the following relations mother, father, daughter, son, grandson, grand mother, sibling, uncle, person, male, female. you need to convert it into KB & write atleast 6 Queries & 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 : ? - grandfather - of (x, harry)

Output :- x = Jack.