

How does 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)
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

Query2: ? - jealous (X, Y)

output: X = Y, X = vincent
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 (') rule follows:
jealous (X,Y) :- loves (X,Z) , loves (Y,Z).

Initially, X and Y both were associated to vincent i.e. self-association. It then follows reflexive property for the rest of the prolog code.

2] How does the queries in lists.pl file 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] to [], L) :-
 nrev (to, T)
 append (T, [H], 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 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 elements from a list, here, by using suffix procedure, $[a, b, c]$ elements are removed from a and continues until all the elements are removed. As there are no more elements in the list, the output will be displayed as false.

3) programming create a prolog code to find factorial of a number?

Code : factorial(0,1).

factorial(N,F):-

$N > 0,$

N_1 is $N-1,$

factorial(N_1, F_1),

N is $N * F_1.$

Query: ?- factorial (3, w)

output : $w = 6$

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 : $m = \text{down-from-the-mountain}$

$M = \text{brother-where-are-those}$

$M = \text{ghost-world}$.

c) Find movies released before 2000

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

output : $m = \text{american-beauty}$

$Y = 1999$

$m = \text{anna}$

$X = 1987$

M = boston-link

Y = 1991

- d) Find the movies released after 1990

Query: ?- movie (m, y) y > 1990

Output: M = american beauty
Y = 1999

M = boston-link

Y = 1991

- e) Find a director of a movie in which Sela H. Johansson appeared.

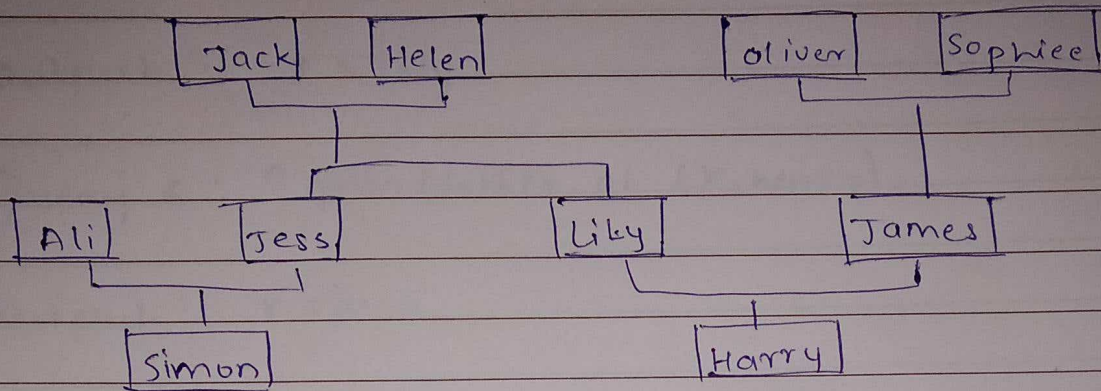
Query: ?- address (M; sela H. johansson) -> director (M, D)

Output: D = peter webber

M = girl-with-a-pearl-earring.

- 5) Draw a family tree of you/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.

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, henry).

Output : x = jack.