

Subject: ISLAB

DoF	Doc	Remark	Sign

1) 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),

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, y = 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~~ jealous (x, y) 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 list.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 ($[H|T], L$) :-
nrev (T, 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 elements are removed. As there are no more elements in the list, the output will be displayed as 'false'.

5) 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 ($N, F1$)
 N is $N * F1$

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 = down-from-the-mountain

M = O - brother where art thou

M = ghost-world

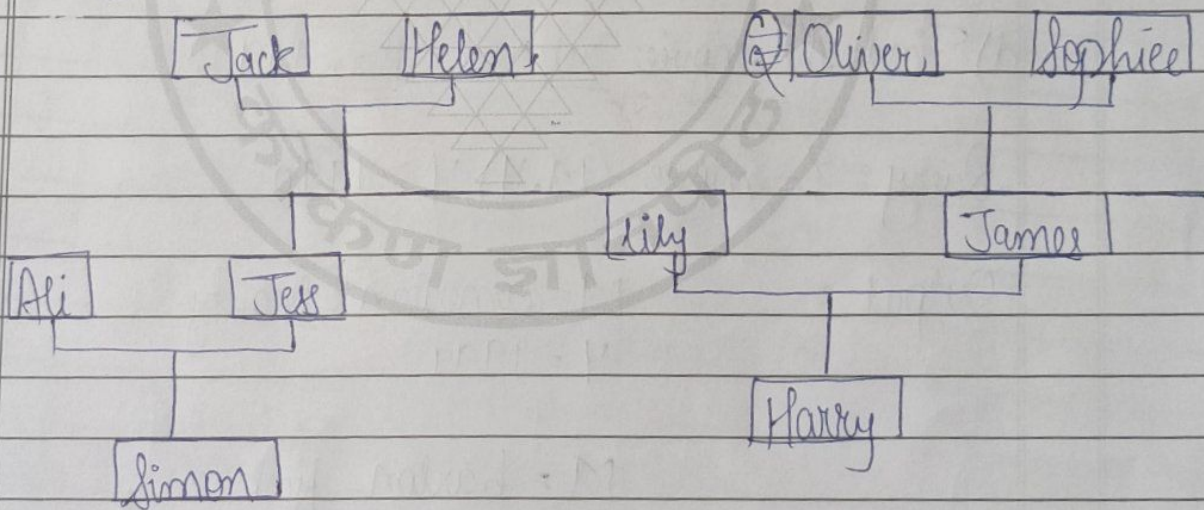
Query: ? - actress (M, scarlett-johansson.) - director (M, D)

Output : D = peter - webber.

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

5. Draw a family tree of you / any / arbitrary family. Which has 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



Query 1: ? mother - of (x, jess)

Output : x = helen.

Query 2: ? Parent-of (x, Simon)

Output: $x = \text{jess}$

Query 3: ? - ~~is~~ sister - of (x, Lily)

Output: $x = \text{jess}$

Query4: ?-parent-of (x, harry)

Output: $x = \text{lily}$
 $x = \text{james}$

Query 5: ?- aunt-of (x, simon)

Output: $x = \text{liby}$

Query 6: ? grandfather-of (x, harry)

Output: $x = \text{jack}$.