

Prolog Programming Assignment

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DOA

DOP

Remark

Sign.

Q1) How does the queries in kb.pl file are executed?

lives(vincent, mia).

lives(marcellus, mia).

lives(pumpkin, honey-bunny).

lives(honey-bunny, pumpkin).

jealous(x, y) :-

lives(x, z),

lives(y, z).

Query 1 -

?- loves(x, mia).

Output -

x = vincent

x = marcellus

Explanation :

lives(vincent, mia) line in knowledge base

represents that Vincent loves Mia.

When we run the query the compiler will parse through the knowledge base and give the output as x = vincent and x = Marcellus.

Query 2 -

?- jealous(x, y).

Output : $x = y, y = \text{Vincent}$

$x = \text{Vincent}$

$y = \text{marcellus}$

$x = \text{marcellus}$

$y = \text{Vincent}$

$x = y, y = \text{marcellus}$

$x = y, y = \text{pumpkin}$

$x = y, y = \text{honey-bunny}$

Explanation:

Knowledgebase contains facts about the love relation. This query states ~~it~~

It says than x will be jealous of y if x and y love the same individual.

The query will produce output of every jealous (x, y) pair on the prolog code.

Initially x and y both were associated to Vincent i.e. self-association then it's like Vincent is jealous of himself.

2 How does the queries in lists.pl file are executed?

suffix (x_s, y_s): -

append (-, y_s, x_s).

prefix (x_s, y_s): -

append ($y_s, -, x_s$).

sublist (x_s, y_s): -

suffix (x_s, z_s),

prefix (z_s, y_s).

nrev ([T], [T]).

nrev ([$H | T_0$], L). मुख्य संस्कृति II

nrev (T_0, T),

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

Query 1: :-

?- sublist ([a, b, c, d, e], [c, d]).

Output: true

Explanation: If elements c and d are present in the list [a, b, c, d, e] then it returns true if ~~not~~ not then it returns false.

Query 2:

?- suffix ([a, b, c], z_s)

Output: $z_s = [a, b, c]$

$z_s = [b, c]$

$z_s = [c]$

$z_s = []$

~~z_s = []~~

Explanation: Suffix in general eliminates the first element from the list until the list is empty.

3 Create a prolog code to find factorial of a number.

→ factorial(0, 1).

factorial(N, F) :-

$N > 0$,

$N_1 \text{ is } N - 1$

factorial(N_1 , F_1),

$F \text{ is } N * F_1$.

Query: ?- factorial(3, W).

Output: $W = 6$

4 In examplex 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 movies released in year 2000.

Query: ?- movie(M, 2000).

Output: M = alon-from-the-mountain

M = o-brother-where-art-thou

M = ghost-world.

c. Find movies released before 2000.

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

Output: M = american-beauty,

Y = 1999

M = anna,

Y = 1987

M = barton-fink,

Y = 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...

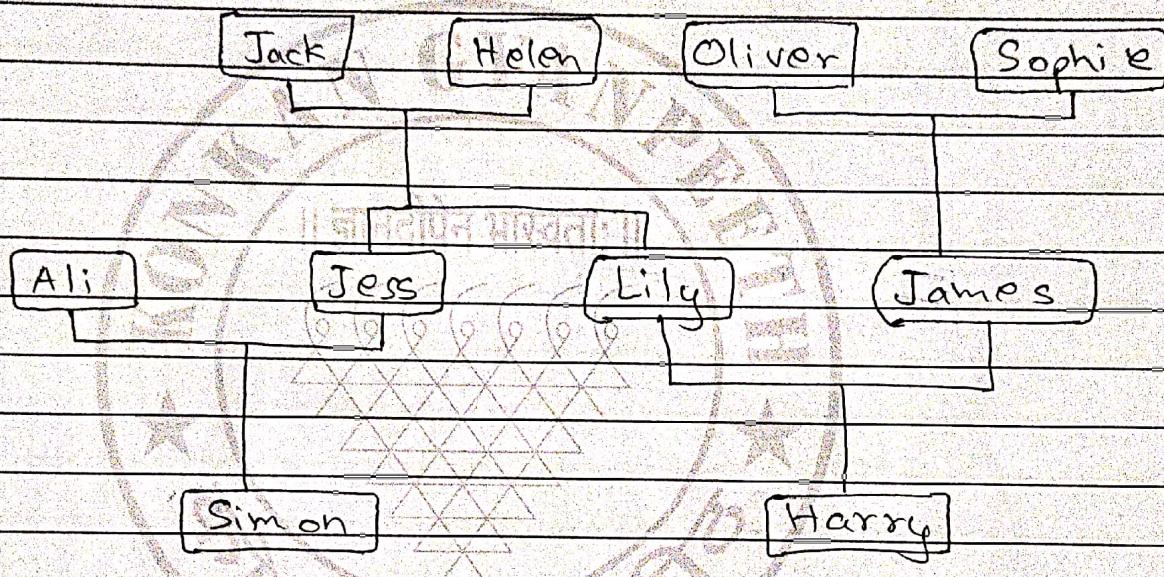
e. Find a director of a movie in which
Scarlett Johansson appeared.

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

Output: D = peter-webber,

M = girl-with-a-pearl-earring

B Draw a family tree of you/any arbitrary family which has following relations mother, father, son, grandson, grandmother, sibling, uncle, person, male, female. You need to convert it into KB and write at least 6 queries and queries results on your KB.



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: lily 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.