

CS331 – Programming language laboratory

Assignment – 03

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Q1.

```
1 list_member(X,[X|_]) :- !.  
2 list_member(X,[_|TAIL]) :- list_member(X,TAIL).  
3 list_append(A,T,T) :- list_member(A,T),!.  
4 list_append(A,T,[A|T]).
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

○ **tapan@Matrix:**~/Tutorial/cs331\$ swipl Quest_01.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.2)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit <https://www.swi-prolog.org>
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- trace.
true.

[trace] ?- list_append(a,[a,b,c,d,e], L).
Call: (10) list_append(a, [a, b, c, d, e], _16170) ? creep
Call: (11) list_member(a, [a, b, c, d, e]) ? creep
Exit: (11) list_member(a, [a, b, c, d, e]) ? creep
Exit: (10) list_append(a, [a, b, c, d, e], [a, b, c, d, e]) ? creep
L = [a, b, c, d, e].

[trace] ?- list_append(k,[a,b,c,d,e], L).
Call: (10) list_append(k, [a, b, c, d, e], _21956) ? creep
Call: (11) list_member(k, [a, b, c, d, e]) ? creep
Call: (12) list_member(k, [b, c, d, e]) ? creep
Call: (13) list_member(k, [c, d, e]) ? creep
Call: (14) list_member(k, [d, e]) ? creep
Call: (15) list_member(k, [e]) ? creep
Call: (16) list_member(k, []) ? creep
Fail: (16) list_member(k, []) ? creep
Fail: (15) list_member(k, [e]) ? creep
Fail: (14) list_member(k, [d, e]) ? creep
Fail: (13) list_member(k, [c, d, e]) ? creep
Fail: (12) list_member(k, [b, c, d, e]) ? creep
Fail: (11) list_member(k, [a, b, c, d, e]) ? creep
Redo: (10) list_append(k, [a, b, c, d, e], _21956) ? creep
Exit: (10) list_append(k, [a, b, c, d, e], [k, a, b, c, d, e]) ? creep
L = [k, a, b, c, d, e].

Q2.

The English meanings are written in comments along with each line

```
1 likes(mary,food). % mary likes food
2 likes(mary,wine). % mary likes wine
3 likes(john,wine). % john likes wine
4 likes(john,mary). % john likes mary
5
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
○ tapan@Matrix:~/Tutorial/cs331$ swipl Quest_02.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.2)
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For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- likes(mary,food).
true.

?- likes(john,wine).
true.

?- likes(john,food).
false.
```

Q3.

```
1 eats(lion,goat).
2 eats(lion,deer).
3 eats(tiger,lamb).
4 eats(tiger,deer).
5 common(X,Y,Z):-eats(X,Z),eats(Y,Z).
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
○ tapan@Matrix:~/Tutorial/cs331$ swipl Quest_03.pl
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For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- common(lion,tiger,F).
F = deer.
```

Q4.

```
1  male(homer).
2  male(bart).
3  male(abe).
4  male(luke).
5  female(marge).
6  female(lisa).
7  female(maggie).
8  female(mona).
9  female(jane).
10 parent(homer, bart).
11 parent(homer, lisa).
12 parent(homer, maggie).
13 parent(marge, bart).
14 parent(marge, lisa).
15 parent(marge, maggie).
16 parent(abe, homer).
17 parent(mona, homer).
18 parent(luke, mona).
19 parent(jane, abe).
20 mother(X, Y) :- parent(X, Y), female(X).
21 father(X, Y) :- parent(X, Y), male(X).
22 son(X, Y) :- parent(Y, X), male(X).
23 daughter(X, Y) :- parent(Y, X), female(X).
24 grandparent(X, Y) :- parent(X, Z), parent(Z, Y).
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

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For built-in help, use `?- help(Topic).` or `?- apropos(Word).`

`?- mother(X,maggie).`
`X = marge.`

`?- son(X,mona).`
`X = homer.`

`?- grandparent(luke,Y).`
`Y = homer.`

`?- grandparent(jane, Y).`
`Y = homer.`

[THANK YOU](#)