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# AI
# Homework2
# (Use SWI Prolog)

1) Consider the following prolog program.

```
in(p0, kitchen).
in(c1, diningroom).
in(c2, kitchen).
in(c3, kitchen).
in(c4, kitchen).
plate(p0).
cup(c1).
cup(c2).
cup(c3).
cup(c4).
clean(p0).
dirty(c1).
clean(c2).
dirty(c3).
clean(c4).
toWash(X):-
        in(X, kitchen), write('In:'), write(X),nl,
        cup(X), write('Cup:'), write(X),nl,
        dirty(X) , write('Dirty:'), write(X),nl,
        fail.
```

a) What is the output of the following query?

?- toWash(X).

In: p0
In: c2
Cup: c2
In: c3
Cup: c3
Dirty: c3
In: c4
Cup: c4

==========

b) Suppose we add a cut toWash as follows:

```
toWash(X):-
        in(X, kitchen),   write('In:'), write(X),nl,
        cup(X),  write('Cup:'), write(X), nl, !,
        dirty(X),  write('Dirty:'), write(X), nl,
        fail.
```

What is the output of the following query?

?- toWash(X).

In: p0
In: c2
Cup: c2
no

==========

2) Write Prolog program that reads the students grades in AI class and keep reading until stop is read. Find the number of students whose grades are:
Between 90 - 100
Between 75 and less than 90
Between 60 and less than 75

So the output should look like:
Number of student with grades between 90 to 100 is ###
Number of student with grades between 75 to less than 90 is ###
Number of student with grades between 60 to less than 75 is ###

```
%% Author: Jamal Al-Mahlawi
%% Date: 16-Jul-20

:-dynamic stat/1.
:-dynamic stat/2.
:-dynamic stat/3.
stat(0).
stat(0,0).
stat(0,0,0).
do:-
write('Enter the grade[stop to stop]:'),
read(G),
process(G).
process(G):-
G='stop',
retract(stat(Xa)),
Xa1 is Xa,
write('The studants number of grades detween 90 and 100 is:'),
write(Xa1),n1,
retract(stat(Xk,0)),
Xb1 is Xk,
write('The studants number of grades detween 75 and 90 is:'),
write(Xb1),n1,
retract(stat(Xc,0,0)),
Xd1 is Xc,
write('The studants number of grades detween 60 and 75 is:'),
write(Xd1),n1,!.
process(G):-
G =< 100,
```

```
30 G >= 90,
31 retract(stat(Xa)),
32 Xa1 is Xa+1,
33 assert(stat(Xa1)),
34 n1,
35 do.
36 process(G):-
37 G=<89,
38 G>=75,
39 retract(stat(Xk,0)),
40 Xb1 is Xk+1,
41 assert(stat(Xb1,0)),
42 n1,
43 do.
44 process(G):-
45 G =< 74,
46 G >= 60,
47 retract(stat(Xc,0,0)),
48 Xd1 is Xc+1,
49 assert(stat(Xd1,0,0)),
50 n1,
51 do.
```



```
% HW2 compiled 0.00 sec, 2,772 bytes

Yes
3 ?- do.
Enter the grade[stop to stop]:
```

*End of Homework*