

Artificial Intelligence (CSE643)

ASSIGNMENT-1

Submitted by:

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B.Tech, 3rd year

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Working Flow of Elective Advisory System:

First user have to type start. To start the program.

Then welcome message will appear. User name will be asked.

Now, user have to choose career interest accordingly subjects list will appear.

Then questions will be asked on prerequisite, GPA, projects and aptitude.

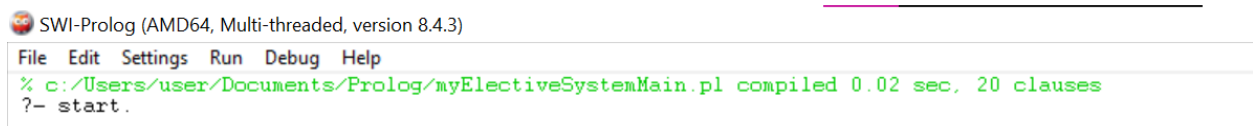
Based on the user input the program will generate an advise along with list of electives and their course code otherwise it will ask to choose any other appropriate career path.

Complexities used in the program:

- List and functions
- Recursion
- Dictionary
- Backtracking
- Cut
- Fail
- Retract
- Inputs/Outputs
- If conditions etc.

Snapshots of program:

When appropriate electives are available for chosen career-



```
SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)
File Edit Settings Run Debug Help
% c:/Users/user/Documents/Prolog/myElectiveSystemMain.pl compiled 0.02 sec, 20 clauses
?- start.
```

```

-----Welcome-----
ELECTIVES Advisory SYSTEM
-----
Enter your name :-
|: vardhana.
Hello, vardhana. Get your electives here.
What is your career interest ?

0: Data Science.
1: Software Development.
2: Network Security.
|: 0.
Choose subject according to your interest ?

0: DSA
1: CSE Core Subjects
2: Network
3: Maths
|: 3.
Have you done any prerequisite for this ?

0: yes
1: no
|: 0.
What is your GPA ?

0: 9 or above
1: 8 or above.
2: 7 or above.
3: 6 or above.
|: 1.
Have you done any related projects ?

0: yes
1: no
|: 1.

Are you good at aptitude?

0: yes
1: no
|: 0.
You can choose to go in data science field.

Appropriate electives to sharpen your career intreste :-

Elective m1 Of Course code: cse543,
Elective ai Of Course code: cse623,
Elective dl Of Course code: cse641,
Elective dm Of Course code: cse506,
Elective cv Of Course code: cse544,

true.

?--

```

When appropriate electives are not available for chosen career-

-----Welcome-----

ELECTIVES Advisory SYSTEM

Enter your name :-

|: vardhana.
Hello, vardhana. Get your electives here.
What is your career interest ?

0: Data Science.
1: Software Development.
2: Network Security.
|: 1.
Choose subject according to your interest ?

0: DSA
1: CSE Core Subjects
2: Network
3: Maths
|: 1.
Have you done any prerequisite for this ?

0: yes
1: no
|: 1.
What is your GPA ?

0: 9 or above
1: 8 or above.
2: 7 or above.
3: 6 or above.
|: 3.
Have you done any related projects ?

0: yes
1: no
|: 1.
Are you good at aptitude?

0: yes
1: no
|: 1.

Based on the Input provided by you.

You are not suitable for this elective.

Please provide a valid inputs or continue with different career path.

Type Start. to continue.

true.

?-

Snapshots of program:

```
myelectivesystemmain.pl
File Edit Browse Compile Prolog Pce Help
myelectivesystemmain.pl myElectiveSystemQusAssignment.pl myElectiveSystemKnowledge.pl

start:-
    reconsult('C:/Users/user/documents/prolog/myElectiveSystemKnowledge.pl'),nl,
    reconsult('C:/Users/user/documents/prolog/myElectiveSystemQusAssignment.pl'),nl,
    mainprogram.

mainprogram:-
    nl,write("-----Welcome-----"),nl,
    nl,write("ELECTIVES Advisory SYSTEM"),nl,
    nl,write("-----"),nl,
    write("Enter your name :- "),nl,nl,read(Name),format('Hello, ~w. Get your electives here.',[Name]),nl,clean, output(_).

output(Elective) :- elective(Elective), !, results(Elective).

systemquery(A, B, C) :- query(A), option(C, 0), read(I), list_recurssion(I, C, Z), asserta(add(A, Z)), Z = B.

clean :- retract(add(_, _)), fail.
clean.

results(data_science):-
    write("You can choose to go in data science field."), nl, nl, write("Appropriate electives to sharpen your career intres
te :- "), nl, nl,dic(X).
results(sd):-
    write("You can choose to go in software development field."), nl, nl, write("Appropriate electives to sharpen your caree
r intreste:- "), nl, nl,dic1(Y).
results(network_security):-
    write("You can choose to go in network security field."), nl, nl, write("Appropriate electives to sharpen your career in
treste:- "), nl, nl,dic2(Z).

dic(X):-
    X =point(ml:cse543,ai:cse623, dl:cse641, dmng:cse506, cv:cse544),
    forall(get_dict(Key,X,Value),format('Elective ~w Of Course code: ~w, ~n~n', [Key,Value])).

dic1(Y):-
    Y =point(ga:cse525,compiler:cse601, mda:cse519, ca:cse511, pa:cse503),
    forall(get_dict(Key,Y,Value),format('Elective ~w Of Credits: ~w, ~n~n', [Key,Value])).

user: start/0: (loaded) static, 1 clause, number_of_rules(1), last_modified_generation(17357), defined, size(384) Line: 1
```

```
myelectivesystemmain.pl
File Edit Browse Compile Prolog Pce Help
myelectivesystemmain.pl myElectiveSystemQusAssignment.pl myElectiveSystemKnowledge.pl

clean :- retract(add(_, _)), fail.
clean.

results(data_science):-
    write("You can choose to go in data science field."), nl, nl, write("Appropriate electives to sharpen your career intres
te :- "), nl, nl,dic(X).
results(sd):-
    write("You can choose to go in software development field."), nl, nl, write("Appropriate electives to sharpen your caree
r intreste:- "), nl, nl,dic1(Y).
results(network_security):-
    write("You can choose to go in network security field."), nl, nl, write("Appropriate electives to sharpen your career in
treste:- "), nl, nl,dic2(Z).

dic(X):-
    X =point(ml:cse543,ai:cse623, dl:cse641, dmng:cse506, cv:cse544),
    forall(get_dict(Key,X,Value),format('Elective ~w Of Course code: ~w, ~n~n', [Key,Value])).

dic1(Y):-
    Y =point(ga:cse525,compiler:cse601, mda:cse519, ca:cse511, pa:cse503),
    forall(get_dict(Key,Y,Value),format('Elective ~w Of Credits: ~w, ~n~n', [Key,Value])).
dic2(Z):-
    Z =point(tmc:cse524,dss:cse530, se:cse552, fcs:cse545, mcns:cse647),
    forall(get_dict(Key,Z,Value),format('Elective ~w Of Credits: ~w, ~n~n', [Key,Value])).

list_recurssion(0, [H|_], H).
list_recurssion(I, [_|T], X) :- I > 0, K is I - 1, list_recurssion(K, T, Z).

listing([], _).
listing([H|T], I) :- J is I+1, write(J), write(" "), write(H), nl, K is I + 1, listing(T, K).

option([], _).
option([H|T], I) :- write(I), write(" "), input(H), nl, K is I + 1, option(T, K).

Line: 39
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```
myElicativeSystemQusAssignment.pl
File Edit Browse Compile Prolog Pce Help
myElicativeSystemmain.pl myElicativeSystemQusAssignment.pl myElicativeSystemKnowledge.pl
%Saving user inputs

:- dynamic(add/2).

chooseen_career(Res) :- add(chooseen_career , Res).
gpa(Res) :- add(gpa, Res).
chooseen_subject(Res) :- add(chooseen_subject, Res).
prereq_done(Res) :- add(prereq_done, Res).
projects_done(Res) :- add(projects_done, Res).
aptitude(Res) :- add(aptitude, Res).
chooseen_career(Res) :- not(add(chooseen_career , _)), systemquery(chooseen_career , Res, [data_scientist,sde,security_engineer])
.
chooseen_subject(Res) :- not(add(chooseen_subject, _)), systemquery(chooseen_subject, Res, [dsa, core, network, maths]).
gpa(Res) :- not(add(gpa, _)), systemquery(gpa, Res,[above_9, above_8, above_7, above_6]).
prereq_done(Res) :- not(add(prereq_done, _)), systemquery(prereq_done, Res, [yes, no]).
projects_done(Res) :- not(add(projects_done, _)), systemquery(projects_done, Res, [yes, no]).
aptitude(Res) :- not(add(aptitude, _)), systemquery(aptitude, Res, [yes,no]).
```

```
myElicativeSystemKnowledge.pl
File Edit Browse Compile Prolog Pce Help
myElicativeSystemmain.pl myElicativeSystemQusAssignment.pl myElicativeSystemKnowledge.pl
% Knowledge base

query(chooseen_career) :- write("What is your career interest ?"), nl, nl.
query(chooseen_subject) :- write("Choose subject according to your interest ?"), nl, nl.
query(gpa) :- write("What is your GPA ?"), nl, nl.
query(projects_done) :- write("Have you done any related projects ?"), nl, nl.
query(prereq_done) :- write("Have you done any prerequisite for this ?"), nl, nl.
query(aptitude) :- write("Are you good at aptitude?"), nl, nl.

elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(maths), prereq_done(yes), gpa(above_7) , projects_done(no), aptitude(yes).
elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(dsa), prereq_done(yes), gpa(above_8) , projects_done(no), aptitude(yes).
elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(core), prereq_done(no), gpa(above_9) , projects_done(no), aptitude(yes).
elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(core), prereq_done(yes), gpa(above_7) , projects_done(yes), aptitude(yes).
elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(dsa), prereq_done(yes), gpa(above_8) , projects_done(yes), aptitude(yes).
elective(data_science) :- chooseen_career(data_scientist) , chooseen_subject(maths), prereq_done(no), gpa(above_9) , projects_done(no), aptitude(yes).
elective(sd) :- chooseen_career(sde) , chooseen_subject(dsa), prereq_done(yes), gpa(above_7) , projects_done(no), aptitude(yes).
elective(sd) :- chooseen_career(sde) , chooseen_subject(maths), prereq_done(yes), gpa(above_9) , projects_done(yes), aptitude(no).
elective(sd) :- chooseen_career(sde) , chooseen_subject(core), prereq_done(no), gpa(above_8) , projects_done(yes), aptitude(yes).
elective(sd) :- chooseen_career(sde) , chooseen_subject(dsa), prereq_done(yes), gpa(above_7) , projects_done(yes), aptitude(yes).
elective(sd) :- chooseen_career(sde) , chooseen_subject(maths), prereq_done(yes), gpa(above_9) , projects_done(no), aptitude(no).
elective(sd) :- chooseen_career(sde) , chooseen_subject(core), prereq_done(no), gpa(above_8) , projects_done(no), aptitude(yes).
elective(network_security) :- chooseen_career(security_engineer) , chooseen_subject(maths), prereq_done(yes), gpa(above_9) , p
```

Line: 39

```
myElectiveSystemKnowledge.pl
File Edit Browse Compile Prolog Pce Help
myelectivesystemmain.pl myElectiveSystemQusAssignment.pl myElectiveSystemKnowledge.pl
one(yes), aptitude(yes).
elective(data_scientist) :- chosen_career(data_scientist), chosen_subject(maths), prereq_done(no), gpa(above_9), projects_
done(no), aptitude(yes).
elective(sd) :- chosen_career(sde), chosen_subject(dsa), prereq_done(yes), gpa(above_7), projects_done(no), aptitude(yes
).
elective(sd) :- chosen_career(sde), chosen_subject(maths), prereq_done(yes), gpa(above_9), projects_done(yes), aptitude(
no).
elective(sd) :- chosen_career(sde), chosen_subject(core), prereq_done(no), gpa(above_8), projects_done(yes), aptitude(ye
s).
elective(sd) :- chosen_career(sde), chosen_subject(dsa), prereq_done(yes), gpa(above_7), projects_done(yes), aptitude(ye
s).
elective(sd) :- chosen_career(sde), chosen_subject(maths), prereq_done(yes), gpa(above_9), projects_done(no), aptitude(n
o).
elective(sd) :- chosen_career(sde), chosen_subject(core), prereq_done(no), gpa(above_8), projects_done(no), aptitude(yes
).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(maths), prereq_done(yes), gpa(above_9), p
rojects_done(yes), aptitude(no).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(core), prereq_done(no), gpa(above_8), pr
ojects_done(yes), aptitude(yes).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(network), prereq_done(yes), gpa(above_7),
projects_done(yes), aptitude(yes).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(maths), prereq_done(yes), gpa(above_9), p
rojects_done(no), aptitude(no).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(core), prereq_done(no), gpa(above_8), pr
ojects_done(no), aptitude(no).
elective(network_security) :- chosen_career(security_engineer), chosen_subject(network), prereq_done(yes), gpa(above_7),
projects_done(yes), aptitude(yes).

input(data_scientist) :- write("Data Science.").
input(sde) :- write("Software Development.").
input(security_engineer) :- write("Network Security.").
input(maths) :- write("Maths").
input(core) :- write("CSE Core Subjects").
input(network) :- write("Network").

user:input/1: (loaded) static, 15 clauses, number_of_rules(15), last_modified_generation(6992), hashed on arguments single(1), defined, size(3416)
Line: 29
```