AI Assignment 1

Code :

```
career_advisory :-
        reset_facts_learned,
        dash,
        writeln("Welcome to Career Advisory System for IIIT-D B.Tech students!"),
        writeln("This system helps you to choose most optimal career."),
        writeln("Please give valid and accurate answers for the system to be most effective."),
        dash,
        career(_).


% so that current execution will not conflict with previous execution of the code.
reset_facts_learned :-
        retractall(answered(_, _)).

dash :-

writeln("----------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------").



option(research) :-
        writeln("A Reseacher").

option(job) :-
        writeln("A Job").

option(others) :-
        writeln("You want Non-tech").

option(yes) :-
        writeln("Yes").

option(no) :-
        writeln("No").

option(cse) :-
        writeln("CSE").

option(csam) :-
        writeln("CSAM").

option(csss) :-
        writeln("CSSS").

option(csd) :-
        writeln("CSD").

option(csai) :-
        writeln("CSAI").

option(ece) :-
        writeln("ECE").
```

```
query(cgpa) :-
        writeln("Please enter you CGPA").

query(career_interest) :-
        writeln("In what type of career you are interested in?").

query(btp_done) :-
        writeln("Have you done some kind of BTP during the B.Tech or has some kind of research work?").

query(branch) :-
        writeln("Choose branch :- ").

query(enterpreneur) :-
        writeln("Have you done Minor in Entrepreneurship?").

query(aptitude) :-
        writeln("Do you have good aptitude skills?").

query(social_sciences) :-
        writeln("Do you like social sciences?").

query(gk) :-
        writeln("Are you good in General knowledge and current affairs?").

query(artist) :-
        writeln("Do you like drawings, sketches or colors?").

query(Course, _ , Answer) :-
        answered(Course, Answer), !.
query(Course, Name, Answer) :-
        \+ answered(Course, _),
        write("Have you done the course "),
        write(Name),writeln("?"),
        generate_options([yes, no], 1),
        read(Index),
        find_option(Index, [yes, no], Selection),
        asserta(answered(Course, Selection)),
        Selection = Answer.




print_career(software_engineer) :-
        dash,
        writeln("You have pretty good coding skills with interest in dev. and codes, so you may opt for
Software Engineering "),
        dash.

print_career(data_scientist) :-
        dash,
        writeln("You have a decent CGPA with interest in coding, Data Mining and likes to visualize , so you
may go for Data Scientist."),
        dash.
```

```
print_career(research) :-
        dash,
        writeln("You have a awesome CGPA and also have good experience in research.\nSo, you may go for Research/Higher Studies."),
        dash.

print_career(cryptographer) :-
        dash,
        writeln("You like to play with numbers and have already some taste of decoding codes, so you may opt for Cryptographer."),
        dash.

print_career(statistician) :-
        dash,
        writeln("You like to play with numbers and have shown some interest in data analytics, so you may opt for Statistician."),
        dash.

print_career(ml_ai) :-
        dash,
        writeln("You have very good experience in AI and ML and decent coding skills, so you may opt for ML/AI engineer."),
        dash.

print_career(robotic_engineer) :-
        dash,
        writeln("You have decent coding skills and have some hands on experience in robos and ml, so you may opt for Robotics"),
        dash.

print_career(hardware_design) :-
        dash,
        writeln("You have good knowledge in signals and hardware and have played with it, so you may go for Hardware Design/Engineer"),
        dash.

print_career(philosopher) :-
        dash,
        writeln("You have good knowledge about philosophy and done relevant courses, so you may go for Philosopher"),
        dash.

print_career(economist) :-
        dash,
        writeln("You have pretty good knowledge about economics and done relevant courses and have decent grades ,so you may opt for Economist"),
        dash.

print_career(economics) :-
        dash,
        writeln("You have great interest in visuals and photography and done relevant courses, so you may opt for Photographer"),
        dash.

print_career(enterpreneurship) :-
        dash,
```

```
	writeln("You have done Minor in Entrepreneur which shows your interest in Entrepreneurship, so enjoy this new career and achieve great heights."),
	dash.

print_career(civil_services) :-
	dash,
	writeln("You have good aptitude skills and great interest in social sciences and are upto date with current world, so you may go for Civil services"),
	dash.

print_career(artist) :-
	dash,
	writeln("You like to play with sketches, colors and shades so go for Artist"),
	dash.


% Career options are :- Research, Job, Non-tech like civil_services, enterpreneurship.
career(research) :-
	cgpa(CGPA),
	CGPA > 9,
	career_interest(research),
	ask(btp_done, Answer, [yes, no]),
	(
		(
			Answer = no,
			dash,
			writeln("Research career is not suitable for you.\nBut since you have good CGPA, so we would be exploring job career too."),
			dash,
			retract(answered(career_interest, research)),
			asserta(answered(career_interest, job)),
			career(job)
		);
		(
			Answer = yes,
			print_career(research)
		)
	).



career(job) :-
	cgpa(CGPA),
	(
		(
		CGPA > 6,
		career_interest(job),
		branch(_),
		field(_)
		);
		(
			retractall(answered(career_interest, job)),
			asserta(answered(career_interest, others)),
			career(others)
		)
	).
```

```
career(others) :-
	career_interest(others),
	(
		(
			enterpreneur(yes),
			print_career(enterpreneurship)
		);
		(
			cgpa(CGPA),
			CGPA >= 8, aptitude(yes),
			social_sciences(yes),
			gk(yes),
			print_career(civil_services)
		);
		(
			artist(yes),
			print_career(artist)
		);
		(
			writeln("Sorry, unable to find suitable career for you.")
		)
	).


% field means career relevant to your branch. If no suitable career is found by current branch then we explore other carrer options like enterpreneurship, civil_services.
field(cse) :-
	branch(cse),
	(
		(
			query(dmg, "Data Mining", yes),
			query(dbms, "DBMS", yes),
			query(dsa, "Data Structures and Algorithms", yes),
			print_career(data_scientist)
		);
		(
			query(ada, "Analysis and Design of Algorithms", yes),
			query(ap, "Advanced Programming", yes),
			query(se, "Software Engineering", yes),
			print_career(software_engineer)
		);
		(
			options_in_other_branches
		);
		(
			retractall(answered(career_interest, job)),
			asserta(answered(career_interest, others)),
			career(others)
		)
	).

field(csam) :-
	branch(csam),
	(
		(
```

```
                query(nt, "Number Theory", yes),
                query(ac, "Applied Cryptography", yes),
                print_career(cryptographer)
        );
        (
                query(spa, "Stochastic Processes and Applications", yes),
                query(da, "Data Analystics", yes),
                query(ps, "Probablity and Statistics", yes),
                print_career(statistician)
        );
        (
                query(dmg, "Data Mining", yes),
                query(dbms, "DBMS", yes),
                query(dsa, "Data Structures and Algorithms", yes),
                print_career(data_scientist)
        );
        (
                options_in_other_branches
        );
        (
                retractall(answered(career_interest, job)),
                asserta(answered(career_interest, others)),
                career(others)
        )
    ).

field(csai) :-
    branch(csai),
    (
        (
                query(ml, "Machine Learning", yes),
                query(ai, "Artificial Intelligence", yes),
                query(ip, "Introduction to Programming", yes),
                print_career(ml_ai)
        );
        (
                query(ada, "Analysis and Design of Algorithms", yes),
                query(ap, "Advanced Programming", yes),
                query(se, "Software Engineering", yes),
                print_career(software_engineer)
        );
        (
                options_in_other_branches
        );
        (
                retractall(answered(career_interest, job)),
                asserta(answered(career_interest, others)),
                career(others)
        )
    ).

field(ece) :-
    branch(ece),
    (
        (
                query(cnt, "Nonlinear and Adaptive Control of Robotic Systems", yes),
                query(ip, "Introduction to Programming", yes),
```

```
                query(ml, "Machine Learning", yes),
                print_career(robotic_engineer)
        );
        (
                query(ss, "Signals & Systems", yes),
                query(dc, "Digital Circuits", yes),
                query(eld, "Embedded Logic Design", yes),
                print_career(hardware_design)
        );
        (
                options_in_other_branches
        );
        (
                retractall(answered(career_interest, job)),
                asserta(answered(career_interest, others)),
                career(others)
        )

    ).

field(csss) :-
    branch(csss),
    (
        (
                query(pt, "Philosophy of Technology", yes),
                query(i_p, "Introduction to Philosophy", yes),
                print_career(philosopher)
        );
        (
                query(gmt, "Game Theory", yes),
                query(em, "Econometrics", yes),
                query(me,"Macroeconomics", yes),
                print_career(economist)
        );
        (
                options_in_other_branches
        );
        (
                retractall(answered(career_interest, job)),
                asserta(answered(career_interest, others)),
                career(others)
        )
    ).

field(csd) :-
    branch(csd),
    (
        (
                query(ag, "Animation & Graphics", yes),
                query(py, "Photography", yes),
                query(vn,"Visualization", yes),
                print_career(photographer)
        );
        (
                query(gmt, "Game Theory", yes),
                query(em, "Econometrics", yes),
                query(me,"Macroeconomics", yes),
```

```
                print_career(economist)
        );
        (
                options_in_other_branches
        );
        (
                retractall(answered(career_interest, job)),
                asserta(answered(career_interest, others)),
                career(others)
        )

    ).


options_in_other_branches :-
        \+ answered(other_branches, _),
        asserta(answered(other_branches, yes)),
        answered(branch, B),
        select(B, [cse, csam, csss, csd, csai, ece ], Rest_branches),
        retractall(answered(branch, _)),
        dash,
        writeln("Sadly, there are no career options in your branch, You may try choosing another branch
which you may like and has interest"),
        ask(branch, BRANCH, Rest_branches),
        field(BRANCH).



ask(Question, Answer, Options) :-
        query(Question),
        generate_options(Options, 1),
        read(Index),
        find_option(Index, Options, Selection),
        asserta(answered(Question, Selection)),
        Selection = Answer.


find_option(1, [Head|_] , Head).
find_option(Index, [_|Tail], Result) :-
        Nextindex is Index - 1,
        find_option(Nextindex, Tail, Result).


generate_options([],_).
generate_options([Head|Tail], Index) :-
        write(Index), write(' '),
        option(Head),
        Nextindex is Index + 1,
        generate_options(Tail, Nextindex).




enterpreneur(Answer) :-
        answered(enterpreneur, Answer), !.
enterpreneur(Answer) :-
        \+ answered(enterpreneur, _),
```

```
	ask(enterpreneur, ANSWER, [yes, no]),
	Answer = ANSWER.



aptitude(Answer) :-
	answered(aptitude, Answer), !.
aptitude(Answer) :-
	\+ answered(aptitude, _),
	ask(aptitude, ANSWER, [yes, no]),
	Answer = ANSWER.



social_sciences(Answer) :-
	answered(social_sciences, Answer), !.
social_sciences(Answer) :-
	\+ answered(social_sciences, _),
	ask(social_sciences, ANSWER, [yes, no]),
	Answer = ANSWER.



gk(Answer) :-
	answered(gk, Answer), !.
gk(Answer) :-
	\+ answered(gk, _),
	ask(gk, ANSWER, [yes, no]),
	Answer = ANSWER.


artist(Answer) :-
	answered(artist, Answer), !.
artist(Answer) :-
	\+ answered(artist, _),
	ask(artist, ANSWER, [yes, no]),
	Answer = ANSWER.



branch(Branch) :-
	answered(branch, Branch), !.
branch(Branch) :-
	\+ answered(branch, _ ),
	ask(branch, BRANCH, [cse, csam, csss, csd, csai, ece]), Branch = BRANCH.



career_interest(CI) :-
	answered(career_interest, CI), !.
career_interest(CI) :-
	\+ answered(career_interest, _),
	(
		(
			cgpa(CGPA), CGPA > 9 , ask(career_interest, Ci, [research, job, others]), CI = Ci
		);
		(
```

```
                % CGPA is not suitable for Research career so taking job as interest
                CI = job,
                asserta(answered(career_interest, job))
        )
    ).



cgpa(CGPA) :-
    answered(cgpa, CGPA ), !.
cgpa(CGPA) :-
    \+ answered(cgpa, _),
    query(cgpa),
    read(Cgpa),
    (
        (
            (Cgpa > 10 ; Cgpa < 0), writeln("Invalid CGPA!\nTry again!"), cgpa(CGPA)
        );
        (
            CGPA is Cgpa,
            asserta(answered(cgpa, CGPA))
        )
    ).


/*
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Assignment-1
References
https://iiitd.ac.in/sites/default/files/docs/education/2020/2020-June-B.Tech(CSSS)-Regulations.pdf
https://iiitd.ac.in/sites/default/files/docs/education/2019/2019-August-B.Tech(CSD)-Regulations.pdf
https://www.collegedekho.com/careers/sociologist
https://github.com/shivamgupta1/Career-Counsellor-expert-system
https://www.collegedekho.com/careers/sociologist
*/
```

ScreenShots :

Run 1:

Run 2:

```
?- consult('Assn1.pl').
true.

?- career_advisory.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------
Welcome to Career Advisory System for IIIT-D B.Tech students!
This system helps you to choose most optimal career.
Please give valid and accurate answers for the system to be most effective.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------
Please enter you CGPA
|: 8.
Choose branch :-
1 CSE
2 CSAM
3 CSSS
4 CSD
5 CSAI
6 ECE
|: 1.
Have you done the course Data Mining?
1 Yes
2 No
|: 1.
Have you done the course DBMS?
1 Yes
2 No
|: 1.
Have you done the course Data Structures and Algorithms?
1 Yes
2 No
|: 1.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------
You have a decent CGPA with interest in coding, Data Mining and likes to visualize , so you may go for Data Scientist.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------
true .

?-
```

Run 3:


?- consult('Assn1.pl').
true.
?- career_advisory.
Welcome to Career Advisory System for IIIT-D B.Tech students!
This system helps you to choose most optimal career.
Please give valid and accurate answers for the system to be most effective.
Please enter you CGPA
|: 6.
Have you done Minor in Entrepreneurship?
1 Yes
2 No
|: 2.
Do you like drawings, sketches or colors?
1 Yes
2 No
|: 2.
Sorry, unable to find suitable career for you.
true .
?-