

AI Assignment 1

Instructions to Run :

1. Install SWI-Prolog
2. Open advisory.pl in editing mode & replace the paths in guide_me → reconsult()
3. Consult the file advisory.pl in prolog
4. Write guide_me.
5. Then give your name as input, when asked
6. Then enter your preferences in the form of Prolog list, eg – [ai, hpc, ns]
7. Now it will ask for your mandatory prerequisites' grades. If you have not done them, enter 0 else the grade.
8. Then it will ask for field's desirable prerequisites. If you have not done them, enter 0 else the grade. [ALERT!!: You need to do atleast 50% of the mandatory pre-reqs, as desirable] If a field has 5 mandatory, so you should have done atleast 3 or more.
9. It will suggest you the electives based on the response. If mandatory criteria not met, it will show appropriate message Same for desirable.
10. If you want to continue to your next preferred specialization, then enter 1 when prompted, else 0.

NOTE: ALL INPUTS MUST BE FOLLOWED BY FULL STOP.

```
SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)
File Edit Settings Run Debug Help
?- guide_me

-----IIITD ELECTIVE ADVISORY SYSTEM-----

Welcome to the Best possible AI Elective Advisory System developed just overnight.
We understand the tremendous workload of IIITD students. Well seems like you got tricked into it over NSUT & DTU xD No doubt it is counted among the top Engineering Institutes in India, c
ompeting with many IITs & IITs, but one place where it has acquired the extreme top leadership spot is its workload. To excel in any field, you need to make some correct education choices
at the right time. So here we present to you the Elective Advisory System that will help you select your electives in a few questions, so that you don't have to go through the hassle of
searching each & everyone & then checking prerequisites

Now, well since you have already skipped over the above intro, why not provide us with your name:
|: 'Aamleen Ahmed'

Hi! Aamleen Ahmed . Thanks for providing your name. Let's go ahead and get started with the real work

These are the specialisations we offer here at IIITD:
High Performance Computing -- Code : hpc
Data Scientist -- Code : ds
Machine Learning -- Code : ml
Networking -- Code : ns
Artificial Intelligence -- Code : ai
Economics (Minor) -- Code : eco
Enter preference order using the code, in small letters: |: [ai, hpc, ns].

-----Current Specialisation: Artificial Intelligence-----

Checking Mandatory PreReqs. Enter 1 if done, else 0
Introduction To Programming |: 1
Data Structure & Algorithms |: 1

Checking Desirable PreReqs. Enter 1 if done, else 0
Machine Learning |: 0
MLP |: 1

You have completed both Mandatory & 50% Desirable PreRequisites

CONGRATSS!! You are eligible to pursue Artificial Intelligence specialisation
Find the below electives that you can take for AI:

-----Deep Learning-----
Course Code: CSE641
Credits: 4
Course Description: Recent advances in machine learning and specifically deep learning techniques have made it a popular and often a default option in many problem domains. The objective
of this course is to introduce students through some of the latest techniques in deep learning. The focus of the course will be hands on and the students should be able to design intellig
ent deep learning systems for solving the problems in the area of their interests.
http://techtree.iiitd.edu.in/viewDescription/filename?<CSE641

-----Computer Vision-----
Course Code: CSE344/544, EE344/544
Credits: 4
Course Description: This is an introductory course on Computer Vision offered to undergraduate and graduate students. The goal is to develop understanding of the fundamental concepts in
computer vision and enable students to understand and develop applications using existing tools. Students will be given theoretical and programming assignments targeted towards solving re
al-world computer vision problems. Groups of two or three will do a course project and show a demonstration at the end of the semester.
http://techtree.iiitd.edu.in/viewDescription/filename?<CSE344

-----Advanced Computer Vision-----
Course Code: CSE562
Credits: 4
```

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SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)
File Edit Settings Run Debug Help
-----Advanced Computer Vision-----
Course Code: CSE562
Credits: 4
Course Description: This course will cover advanced topic in computer vision. We will examine data sources, features, and learning algorithms useful for understanding and manipulating visual data. The emphasis will be on scalability issues as well as acquiring the knowhow to work on interdisciplinary problems. The goal of this course is to give students the background and skills necessary to perform research in computer vision and its application domains such as robotics, healthcare, and forensics. Students should understand the strengths and weaknesses of current approaches to research problems and identify interesting open questions and future research directions.
http://techtree.iiitd.edu.in/viewDescription/fileName?<CSE562

Thats All for now!! You can always come back for more till we find new additions to it.
Would you like to see the results for your next preferred specialisation?|1.
-----Current Specialisation: High Performance Computing-----
Checking Mandatory PreReqs. Enter 1 if done, else 0
Advanced Programming |: 1.
Checking Desirable PreReqs. Enter 1 if done, else 0
Analysis & Designing Algorithms |: 0.
Operating Systems |: 0.
Sorry! You have not done more than 50% desirable prerequisite. Kindly finish that to go ahead with this specialisation
Going to next priority Specialisation
-----Current Specialisation: Network & Security-----
Checking Mandatory PreReqs. Enter 1 if done, else 0
Network Administration |: 0.
Sorry! You have not done a mandatory prerequisite. Kindly finish that to go ahead with this specialisation
Going to next priority Specialisation
Seems like there are no more preferred specialisations.

We hope you have found your electives (workload xD) for this sem. In case you make it to next sem, do visit us. All the best !!
Free Advice: NO PLAGIARISM!!

% Execution Aborted
?-
```

Code Snippet:

```
advisory.pl
File Edit Browse Compile Prolog Pce Help
advisory.pl

guide_me:-
    retractall('C:/Users/aamle/OneDrive/Desktop/IIITD Semesters/5th Sem/AI/Assignment_1/Prolog files/functions'),
    retractall('C:/Users/aamle/OneDrive/Desktop/IIITD Semesters/5th Sem/AI/Assignment_1/Prolog files/techtree'),
    retractall(val_pre_done),
    retractall(val_des_count),
    intro.

%starting welcome note
intro:-
    write('-----IIITD ELECTIVE ADVISORY SYSTEM-----'),nl,
    writeln(''),
    write('Welcome to the Best possible AI Elective Advisory System developed just overnight'),
    write('We understand the tremendous workload of IIITD students. Well seems like you got tricked into it over NSUT & DTU xD.'),
    write('No doubt it is counted among the top Engineering Institutes in India, competing with many IITs & NITs, but one place where it has acquired the extreme top leadership spot is its workload. To excel in any field, you need to make some correct education choices at the right time. So here we present to you the Elective Advisory System that will help you select your electives in a few questions, so that you don't have to go through the hassle of searching each & everyone & then checking prerequisites'),writeln(''),
    write('Now, well since you have already skipped over the above intro, why not provide us with your name:'),
    read(Name),nl,
    format('Hi! ~w. Thanks for providing your name. Let's go ahead and get started with the real work',Name),nl,writeln(''),
    Specializations_list=['High Performance Computing','Data Scientist','Machine Learning','Artificial Intelligence','Economics (Minor)'],
    Specialisation_Code = ['hpc','ds','ml','ns','ai','eco'],
    writeln('These are the specialisations we offer here at IIITD:'),
    print_records(Specializations_list,Specialisation_Code),
    write('Enter preference order using the code, in small letters: '),
    read(Priority),nl,
    next_priority(Priority).

conclude:-
    writeln(''),
    write('Seems like there are no more preferred specialisations.'),
    format('-----'),nl,
    write('We hope you have found your electives (workload xD) for this sem. In case you make it to next sem, do visit us. All the best !!'),nl,
    write('Free Advice: NO PLAGIARISM!!'),nl,
    format('-----')
```

```
advisory.pl
File Edit Browse Compile Prolog Pce Help
advisory.pl

next_priority(T).

check_mandatory_prerequisites([]).
check_mandatory_prerequisites([M_H|M_T]):-
    format('~w :',M_H),
    read(Pre_done),
    ( Pre_done == 1 -> asserta(val_pre_done(1)),check_mandatory_prerequisites(M_T);
      Pre_done == 0 -> !,asserta(val_pre_done(0))).

check_desirable_prerequisites([]).
check_desirable_prerequisites([D_H|D_T]):-
    format('~w :',D_H),
    val_des_count(Count),
    read(Pre_done),
    ( Pre_done == 1 -> asserta(val_pre_done(1)),check_desirable_prerequisites(D_T);
      Pre_done == 0 -> X is Count-1,asserta(val_des_count(X)),
        ( Count ==<0 -> !,asserta(val_pre_done(0));
          Count >0 -> check_desirable_prerequisites(D_T)
        )
    ).

check_prereqs(Mandatory_prereqs,Desirable_prereqs,Spe):-
    writeln(''),
    write('Checking Mandatory PreReqs. Enter 1 if done, else 0'),nl,
    check_mandatory_prerequisites(Mandatory_prereqs),
    val_pre_done(Prereq_res),
    ( Prereq_res == 0 ->
      write('Sorry! You have not done a mandatory prerequisite. Kindly finish that to go ahead with this specialisation'),nl,
      write('Going to next priority Specialisation'),nl,
      next_priority(Spe);
      Prereq_res == 1 ->
        writeln(''),
        write('Checking Desirable PreReqs. Enter 1 if done, else 0')
    ),
    length(Desirable_prereqs,N),
    Coun is ceiling(N/2),
```

Ingenuities used:

1. Cuts, backtracking
2. Lists (lots of lists)
3. Looping in Prolog
4. If-else
5. Nested if-else
6. Implementing counters, calculations, evaluations,
7. Appropriate custom message for the given shortcomings.