Assignment 1

Electives Advisory System

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Sample Outputs

Asking basic introductory questions.

```
% c:/Users/atif7/Desktop/ai-ass1/prereq-atif-electives.pl compiled 0.00 sec, 162 clauses
?- main.
--------------------------------------------------------------------------------
                WELCOME TO ELECTIVES ADVISORY SYSTEM
--------------------------------------------------------------------------------

This electives advisory system will suggest you various courses based on your interests and aptitude
and also will suggest you possible and good future career choices.

End each of your answers with a dot (.)

Let us begin

Firstly, we will ask you some basic questions regarding your background.
Enter your name:-
|: atif.


Hello atif, once again welcome to THE ELECTIVES ADVISORY SYSTEM !!!!!


What is your current GPA? :-
|: 9.


Tell us a bit more about where interest lies in general.

Answer the following questions with a (y) or (n).

Are you doing competitive programming as hobby?
|: y.

Are you expert rated on Codeforces or a 5-star Coder on CodeChef?
|: y.

Are you good at data structures and algorithms, problem solving and mental ability?
|: y.


Are you good at number crunching, mathematical calculations and algorithms?
|: y.
```

Asking Machine Learning related courses

If the user said “y” to a particular field of study, the system would ask candidate, if they have done the prerequisite courses for the courses which they want to do.

```
Now we will ask you certain area of fields of study and you have to telll us whether you are
interested in exploring the field or not.

Answer the following questions with a (y) or (n).

Do you wish to explore the paradigm of Machine Learning, Artificial Intelligence and related fields ? :-
|: y.

Are you interested to know how computers and systems to derive meaningful information from digital images,
videos and other visual inputs:-
|: y.

Have you done MTH100 : LINEAR ALGEBRA and CSE101 : INTRODUCTION TO PROGRAMMING courses?
|: y.


Are you interested in studying the theoretical aspects of the design and analysis of machine learning
algorithms using tools of statistics and computer science:-
|: y.

Have you done MTH201 - PROBABILTY AND STATISTICS course?
|: y.


Are you interested to study the fundamental theories and algorithms of digital image acquisition,
color representation, sampling and quantization?
|: y.

Have you done MTH100 - LINEAR ALGEBRA and CSE101 and MTH201 - PROBABILTY AND STATISTICS courses?
|: y.


Are you interested to study various search techniques, knowledge representation, reasoning, and learning
in the field of Artificial Intelligence?
|: y.

Have you done CSE102 - DATA STRUCTURES AND ALGORITHMS course?
|: y.
```

Asking Biosciences related courses

Also if the user has replied “n”, to a particular field like suppose, the user doesn't want to do any courses in the field of Machine Learning, then the system would not ask Machine Learning related courses to the user.
Example is shown below.

NOTE:- User has replied “n” to the question,

“**'Do you wish to explore the paradigm of Machine Learning, Artificial Intelligence and related fields ?**”

Also Biosciences related courses are asked to the user.

Now we will ask you certain area of fields of study and you have to telll us whether you are interested in exploring the field or not.

Answer the following questions with a (y) or (n).

Do you wish to explore the paradigm of Machine Learning, Artificial Intelligence and related fields ? :-
|: n.

Do you wish to explore the paradigm of BioSciences and Computational Biology ? :-
|: y.

Are you interested in solving real life biological problems and study basics of algorithm designing techniques and their application in solving problems of molecular biology?
|: y.

Are you interested in studying machine learning techniques for developing prediction models and solving biomedical problems using machine learning techniques?
|: y.

Are you interested in analysis and visualization of culinary data using statistical analysis, text mining natural language processing, machine learning?
|: y.

Are you interested in studying physical, engineering and signal processing principles needed for medical imaging and image processing?
|: y.

Are you interested in studying implementation of data mining techniques in healthcare, to solve health-related problems?
|: y.

Are you interested in studying the behaviour of neuronal systems and their respective mathematical models and explore the field of neurosciences?
|: y.

Asking Mathematics related courses

Now we will ask you certain area of fields of study and you have to telll us whether you are interested in exploring the field or not.

Answer the following questions with a (y) or (n).

Do you wish to explore the paradigm of Machine Learning, Artificial Intelligence and related fields ? :-
|: n.

Do you wish to explore the paradigm of BioSciences and Computational Biology ? :-
|: n.

Do you wish to explore in the world of Mathematics ? :-
|: y.

Are you interested in studying concepts related to theory of graphs?
|: y.

Are you interested in studying combinatorics topics such as permutation groups, linear codes, Stirling and Bell numbers?
|: y.

Have you done MTH100 : LINEAR ALGEBRA course?
|: y.

Are you interested in studying topics such as number fields, rings of integers, factorization in Dedekind domains, class numbers and class groups, units in rings of integers , valuations and local fields in the field of algebra?
|: y.

Are you interested in studying Calculas in the nth dimension and topics such as Rham cohomology of manifolds, and to physics via modeling of Maxwells equations?
|: y.

Have you done MTH100 : LINEAR ALGEBRA, MTH203 : MULTIVARIATE CALCULUS, MTH204 : REAL ANALYSIS - I courses?
|: y.

Asking Electronics and Communications related courses

Do you wish to explore the world of Electronics and Communications ? :-
|: y.

Are you interested in knowing how your computer chip works, how ICs work and microelectronics?
Also do you want to build a project using state-of-the-art computer aided design (CAD) tools in VLSI?
|: y.

Are you interested in learning various embedded system concepts and hardware software co-design approach
and how to implement the embedded systems on heterogenos SoC and optimize their area and power performance?
|: y.

Are you interested in exploring the techniques that go into designing a modern microprocessor,
also learn architectural techniques such as multi-issue superscalar processors, out-of-order
processors, Very Long Instruction Word (VLIW) processors, advanced caching, and multiprocessor systems?
|: y.

Are you interested in studying Optical Wireless Communications where you will get to learn about the
technology for supporting high-data-rate 5G communication and its massive connectivity of IoT?
|: y.

Are you interested in studying the theory of digital signal processing where you will concentrating
on signal analysis using Fourier transforms, linear system analysis, Filter design and a few more advanced topics?
|: y.

Have you done ECE250 : SIGNALS AND SYSTEMS course?
|: y.

Are you interested in studying the Bayesian statistical modeling in the context of machine learning,
also interesting in setting up a machine learning problem as a Bayesian model and design exact or
approximate (sampling/optimization) solution methods for computationally scalable inference?
|: y.

Have you done MTH201 : PROBABILTY AND STATISTICS course?
|: y.

Asking Sociology related courses

Do you wish to explore the world of Social Sciences and Sociology ? :-
|: y.

Are you interested in studying the foundations, contemporary debates and relevant themes
of Sociology and Social Anthropology in India?
|: y.

Are you interested in studying the ethics of AI where you study the questions of fairness,
transparency, justice linked to AI and the ethics of its deployment in various
settings of healthcare, warfare, autonomous vehicles, education etc?
|: y.

Are you interested in studying sociology of science and technology also exploring more fundamental
ideas of technology and its relation to science and society, the tutorials and evaluation will be
based on case studies from Biotechnology?
|: y.

Are you interested in studying foundations for rational decision making in certain and uncertain environments.
also the theory of rational choice permeates every discipline that touches upon human behavior,
more formally Decision Theory?
|: y.

Are you interested in studying Game theoretic modeling and strategic analysis as a distinct
methodology has been a major intellectual achievement of the past century not only within
the Economics discipline but more broadly in the Social Sciences?
|: y.

Asking Computer Security related courses

Do you wish to explore the world of Computer Security and how its implemented ? :-
|: y.

Are you interested in studying the basics of blockchains and cryptocurrency and how cryptocurrency
such as Bitcoin and Ethereum work, blockchain and other decentralized consensus protocols, digital coin mining?
|: y.

Have you done CSE546 : APPLIED CRYPTOGRAPHY course?
|: y.

Are you interested in studying the principles of Modern Cryptography and learn
learn how modern cryptography works in real life?
|: y.

Final advice Generation

This final advice generated is solely based on the from the user on the pacific question asked from him.
The attached output is the output generated when all the questions asked from the user have been answered positively.
(*This is done to show as many functionalities we can show in a single output that the system provides. To explore more, run the code and get to know how the system operates.*)

Future Advice Generated

```
------------------------------------------------------------------
                FUTURE ADVICE FOR YOU
------------------------------------------------------------------

Fantastic!!!, you have maintained your academic performance well!!!

Great!!! You are good in aptitude.

Excellent!!! You have good problem solving skills and are good in data structures and algorithms. You have a go
od chance get selected for product based companies as an SDE Role as they want candidates to possess the skills
et which you exhibit.

Wow!!! You are good in number crunching and have good algorithmic skills. You might be a fit for High Frequency
 Trading companies and Financial Companies.
```

Courses Recommended for the User

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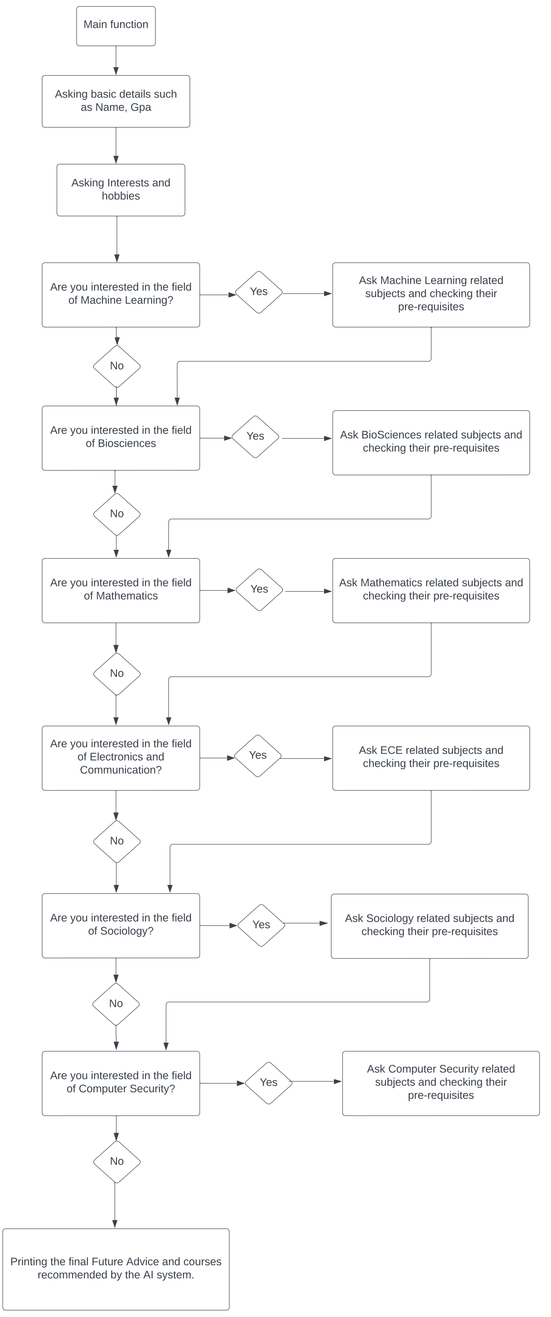
------------------------------------------------------------
            RECOMMENDED COURSES FOR YOU
------------------------------------------------------------

CSE 344/544, ECE 344/544 :- COMPUTER VISION
CSE342/CSE542/ECE356/ECE556 :- STATISTICAL MACHINE LEARNING
CSE340/CSE540/ECE340 :- DIGITAL IMAGE PROCESSING
CSE643 :- ARTIFICIAL INTELLIGENCE
CSE556 :- NATURAL LANGUAGE PROCESSING
BIO522 :- ALGORITHMS IN COMPUTATIONAL BIOLOGY
BIO542 :- MACHINE LEARNING IN BIOMEDICAL APPLICATIONS
BIO544 :- COMPUTATIONAL GASTRONOMY
BIO524 :- BIOMEDICAL IMAGE PROCESSING
BIO543 :- BIG DATA MINING IN HEALTHCARE
BIO522 :- ALGORITHMS IN COMPUTATIONAL BIOLOGY
MTH310 :- GRAPH THEORY
MTH311 :- COMBINATORICS AND ITS APPLICATIONS
MTH512 :- ALGEBRAIC NUMBER THEORY
MTH544 :- CALCULUS IN R(n)
ECE314/ECE514 :- DIGITAL VLSI DESIGN
ECE573 :- ADVANCED EMBEDDED LOGIC DESIGN
CSE511/ECE511 :- COMPUTER ARCHITECTURE
ECE546 :- OPTICAL AND WIRELESS CONVERGENCE FOR BEYOND 5G NETWORKS AND IOT DEVICES
ECE351 :- DIGITAL SIGNAL PROCESSING
CSE515/ECE551 :- BAYESIAN MACHINE LEARNING
SOC313/SOC503 :- SOCIOLOGY OF INDIA : THEMES AND PERSPECTIVES
SSH325/SSH525 :- ETHICS IN AI
SOC211 :- SCIENCE TECHNOLOGY AND SOCIETY
ECO503 :- DECISION THEORY
ECO311/ECO511 :- GAME THEORY
CSE345/CSE545 :- FOUNDATIONS OF COMPUTER SECURITY
CSE528 :- INTRODUCTION TO BLOCKCHAIN AND CRYPTOGRAPHY
CSE524 :- THEORY OF MODERN CRYPTOGRAPHY
true .
```

Code Flow is shown below


Main function
Asking basic details such as Name, Gpa
Asking Interests and hobbies
Are you interested in the field of Machine Learning?
Yes
Ask Machine Learning related subjects and checking their pre-requisites
No
Are you interested in the field of Biosciences
Yes
Ask BioSciences related subjects and checking their pre-requisites
No
Are you interested in the field of Mathematics
Yes
Ask Mathematics related subjects and checking their pre-requisites
No
Are you interested in the field of Electronics and Communication?
Yes
Ask ECE related subjects and checking their pre-requisites
No
Are you interested in the field of Sociology?
Yes
Ask Sociology related subjects and checking their pre-requisites
No
Are you interested in the field of Computer Security?
Yes
Ask Computer Security related subjects and checking their pre-requisites
No
Printing the final Future Advice and courses recommended by the AI system.