

# ARTIFICIAL INTELLIGENCE

## ASSIGNMENT-1

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AASTHA 2019224

### Electives Advisory System

#### Assumption

1. The data is taken from elective options students have for 3rd and 4th year courses at IIIT Delhi for Monsoon and Winter semester.

#### Prediction Is Based On-

##### 1) Semester

Two semester options are available at IIIT Delhi-Monsoon and Winter.

##### 2) Career Option

The prediction is further based on the career option the person is most interested in. The following career options are provided by the program with their codes listed in brackets.

1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Based on the career option the electives helpful in that field are suggested.

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### 3) Prerequisites Completed

Based on the semester and the career option chosen the system lists some prerequisites and the person needs to specify the prerequisites they have completed out of the list.

Based on the prerequisites completed further the electives are narrowed down.

### 4) CGPA

Based on the CGPA the person is suggested electives of easy-medium or hard level. If the CGPA of the person is greater than or equal to 8 both easy-medium and hard electives are suggested.

*If the CGPA is less than 8, then the recommendation depends on the the persons' interested in the field. The interest is determined by if the person has completed or has an ongoing BTP/Internship in the field.*

### 5) Btech Project(BTP)

If the person's CGPA is less than 8 but they have completed or has an ongoing BTP in their field of interest. they are suggested both easy-medium and hard level courses.

### 6) Internship

If the person's CGPA is less than 8 but they have completed or has an ongoing internship in their field of interest, they are suggested both easy-medium and hard level courses.

*If the person's CGPA is less than 8 and they are not pursuing a BTP or an internship in their field of interest they are suggested only easy-medium level electives.*

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## Prolog Features Used

Some of the prolog features used in the code are-

- 1) Knowledge base of courses with career, semester and prerequisites.
- 2) Facts - e.g.- `easyMedium(computer_networks)`.
- 3) Relations
- 4) Anonymous variables- underscore.
- 5) Operators
- 6) Lists and dictionaries
- 7) Recursion and backtracking
- 8) Inputs and Outputs
- 9) Predicates and built in predicates-flatten, sort, etc.
- 10) Binding and more.

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## Screenshots Of Program

1)

```
?- main.
-----Welcome to Electives Advisory System!-----

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)
|: monsoon.

Which one of the following Career options are you most interested in?
1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: cse.

Please enter the prerequisites you have completed out of the following-[ada,ip,os]. Enter 'endl.' when done.
Enter course|: ada.
Enter course|: ip.
Enter course|: os.
Enter course|: endl.
You have completed - [ada,ip,os]

Please enter your CGPA:
|: 9.04.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)
|: true.

-----Electives Advised-----

We recommend the following electives for you-

compilers
computer_graphics
computer_networks
foundations_of_computer_security
information_integration_and_applications
modern_algorithm_design
network_security

All the best for your upcoming semester!
true .
```

---

2)

```
?- main.
-----Welcome to Electives Advisory System!-----

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)
|: monsoon.

Which one of the following Career options are you most interested in?
1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: cse.

Please enter the prerequisites you have completed out of the following-[ada,ip,os]. Enter 'endl.' when done.
Enter course|: endl.
You have completed - []

Please enter your CGPA:
|: 7.9.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)
|: false.

-----Electives Advised-----

We recommend the following electives for you-

compilers
computer_graphics
foundations_of_computer_security
modern_algorithm_design
network_security

All the best for your upcoming semester!
true .
```

---

---

3)

```
?- main.
-----Welcome to Electives Advisory System!-----
```

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)  
|: winter.

Which one of the following Career options are you most interested in?

1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: cse.

Please enter the prerequisites you have completed out of the following-[ap,cn,dbms,dsa,ip,m3,os]. Enter 'endl.' when done.

```
Enter course|: ap.
Enter course|: cn.
Enter course|: dsa.
Enter course|: ip.
Enter course|: m3.
Enter course|: os.
Enter course|: endl.
```

You have completed - [ap,cn,dsa,ip,m3,os]

Please enter your CGPA:  
|: 9.04.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)  
|: true.

```
-----Electives Advised-----
```

We recommend the following electives for you-

```
concurrent_and_learned_datastructures
decision_procedures
foundations_of_parallel_programming
mobile_computing
network_and_system_security_2
theory_of_computation
wireless_network
```

All the best for your upcoming semester!  
true .

---

4)

```
?- main.
-----Welcome to Electives Advisory System!-----
```

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)  
|: monsoon.

Which one of the following Career options are you most interested in?

1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: csai.

Please enter the prerequisites you have completed out of the following-[ada,dbms,dsa,ip,m1,m2,m3,ml]. Enter 'endl.' when done.

```
Enter course|: ada.
Enter course|: dbms.
Enter course|: dsa.
Enter course|: ip.
Enter course|: m1.
Enter course|: m2.
Enter course|: m3.
Enter course|: endl.
You have completed - [ada,dbms,dsa,ip,m1,m2,m3]
```

Please enter your CGPA:  
|: 9.04.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)  
|: false.

```
-----Electives Advised-----
```

We recommend the following electives for you-

```
artificial_intelligence
data_mining
digital_image_processing
machine_learning
natural_language_processing
```

All the best for your upcoming semester!  
true .

---

5)

?- main.

-----Welcome to Electives Advisory System!-----

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)

|: monsoon.

Which one of the following Career options are you most interested in?

1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: design.

Please enter the prerequisites you have completed out of the following-[dis]. Enter 'endl.' when done.

Enter course|: dis.

Enter course|: endl.

You have completed - [dis]

Please enter your CGPA:

|: 7.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)

|: false.

-----Electives Advised-----

We recommend the following electives for you-

animation\_filmmaking\_3d

introduction\_to\_animation\_and\_graphics

All the best for your upcoming semester!

true .



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6)

```
?- main.
-----Welcome to Electives Advisory System!-----

We advise the most suitable electives for you. Please begin by answering some simple questions.

Please choose the semester- (monsoon/winter)
|: winter.

Which one of the following Career options are you most interested in?

1. Software Engineering(cse)
2. Machine Learning/Artificial Intelligence(csai)
3. Design(design)
4. Applied Mathematics(maths)
5. Not tech role(ssh)

Please enter the code for the career option- (cse/csai/design/maths/ssh)|: maths.

Please enter the prerequisites you have completed out of the following-[m1,m2]. Enter 'endl.' when done.
Enter course|: m1.
Enter course|: m2.
Enter course|: endl.
You have completed - [m1,m2]

Please enter your CGPA:
|: 9.04.

Have you completed or have an ongoing BTP/Internship in the Career option chosen above? (true/false)
|: false.

-----Electives Advised-----

We recommend the following electives for you-

advanced_linear_algebra
graph_theory
introduction_to_mathematical_logic
linear_optimization
statistical_inference

All the best for your upcoming semester!
true .
```