Assignment

1.Define Artificial Intelligence (AI) and provide examples of its applications:

AI refers to creating intelligent machines capable of tasks typically associated with human intelligence. It involves learning from data, adapting to new situations, and making decisions.

1. AI Application in E-Commerce

Personalized Shopping

Artificial Intelligence technology is used to create recommendation engines through which you can engage better with your customers. These recommendations are made in accordance with their browsing history, preference, and interests. It helps in improving your relationship with your customers and their loyalty towards your brand.

2. Applications Of Artificial Intelligence in Education

Although the education sector is the one most influenced by humans, Artificial Intelligence has slowly begun to seep its roots into the education sector as well. Even in the education sector, this slow transition of Artificial Intelligence has helped increase productivity among faculties and helped them concentrate more on students than office or administration work.

2.Differentiate between supervised and unsupervised learning techniques in ML:

- **Supervised Learning**:

When an algorithm is trained on a labelled dataset— that is, when the input data used for training is paired with corresponding output labels— it is

referred to as supervised learning. Supervised learning aims to find a mapping or relationship between the input variables and the desired output, which enables the algorithm to produce precise predictions or classifications when faced with fresh, unobserved data.

- **Unsupervised Learning**:
- Unsupervised learning is a type of machine learning where the algorithm is given input data without explicit instructions on what to do with it. In unsupervised learning, the algorithm tries to find patterns, structures, or relationships in the data without the guidance of labelled output.
- The main goal of unsupervised learning is often to explore the inherent structure within a set of data points. This can involve identifying clusters of similar data points, detecting outliers, reducing the dimensionality of the data, or discovering patterns and associations.

3.What is Python? Discuss its main features and advantages:

- **Definition**: Python is a dynamic, high-level, free open-source, and interpreted programming language.
- **Features**:
  - o **Easy to Learn**: Simple syntax and developer-friendly. o **Object-Oriented**: Supports classes, objects, and encapsulation.
  - o **GUI Programming Support**: Modules like PyQt5 for graphical apps.
  - o **Large Community Support**: Active StackOverflow community.
  - **Portable and Integrated**: Runs on various platforms and integrates with other languages.

Advantages of Python

- Easy to Learn and Use. For Beginners, Python is simple to understand and use. ...
- Free and Open-Source. ...
- Rapid Development. ...
- Interpreted Language. ...
- Wide Range of Libraries and Frameworks. ...

- Dynamically Typed. ...
- Portability. ...
- Strong Community Suppor

o **4.What are the advantages of using Python as a programming language for AI and ML?:**

- **Readability:**

  Python has a simple and intuitive syntax that makes it easy to read and write code. This is especially beneficial for beginners who are just starting out with programming.

- **Large community:**

  Python has a large and active community of developers who contribute to its growth and development. This means that there are many resources available to help you learn Python and solve problems.

- **Extensive library support:**

  Python has a vast library of modules and packages that can be used for a variety of tasks, including data science, machine learning, and artificial intelligence. This makes it easy to find the tools you need to get started with your project.

- **Versatility:**

  Python is a versatile language that can be used for a variety of tasks, including web development, data science, machine learning, and artificial intelligence. This makes it a good choice for developers who want to work on a variety of projects.

- **Platform independence**:
  Python is a platform-independent language, which means that your code can run on any operating system. This makes it easy to share your code with others and deploy your applications on different platforms.

5.Discuss the importance of indentation in Python code:

- **Definition**: Python uses indentation to define code blocks.

- **Why?**: o Proper indentation ensures code readability. o Indentation errors lead to IndentationError.
    - o It enforces a clean coding style and highlights code blocks.
- Example: **Python**

```
if site == 'gfg':
    print('Logging on to geeksforgeeks...')
else:     print('retype the URL.')
print('All set!')
```

6.Define a variable in Python. Provide examples of valid variable names:

- A variable stores data. Example: age = 25.
- Explain the difference between a keyword and an identifier in Python:
- **Keyword**: Reserved words (e.g., if, else, while) with predefined meanings.
- **Identifier**: User-defined names (e.g., variable names) following rules (start with a letter/underscore, no spaces).
- List the basic data types available in Python:
- **Integers**: Whole numbers (e.g., 42).
- **Floats**: Decimal numbers (e.g., 3.14).
- **Strings**: Text (e.g., "Hello, World!").
- **Booleans**: True or False.
- Describe the syntax for an if statement in Python:
    - Syntax: **Python**

```
if condition:
    # Code block executed if condition is True
```

7.Explain the purpose of the elif statement in Python:

- Used for multiple conditional checks after an initial if.
- Executes a different block of code if the first condition is False.
- Example: **Python** if x > 0:

print('Positive') elif
x < 0:
print('Negative') else:
print('Zero')

8.List the basic data types available in Python:

1. Numeric Data Types in Python

The numeric data type in Python represents the data that has a numeric value. A numeric value can be an integer, a floating number, or even a complex number. These values are defined as int, float and complex.

2. Sequence Data Types in Python

The sequence Data Type in Python is the ordered collection of similar or different Python data types. Sequences allow storing of multiple values in an organized and efficient fashion. There are several sequence data types of Python:

9.Describe the syntax for an if statement in Python:

- Syntax: **Python**

  if condition:
- # Code block executed if condition is True

10.Explain the purpose of the elif statement in Python: o Used for multiple conditional checks after an initial if. o Executes a different block of code if the first condition is False.

- Example: **Python**

  if x > 0:
- print('Positive') o elif x < 0: o print('Negative') o else: o print('Zero')