**ASSIGNMENT-1**

**1ans)** Define AI and examples of AI applications.

Artificial intelligence refers to the development of computer systems that can perform tasks that typically require human intelligence. These tasks include understanding natural language, recognizing patterns, learning from experience, and making decisions. AI encompasses a wide range of techniques, including machine learning, neural networks, natural language processing, computer vision, and robotics.

Examples of AI applications:

1.Virtual Assistants assistants

2. Machine Learning in Healthcare

3. Autonomous Vehicles

4. Financial Trading

5. Recommendation Systems

6. Natural Language Processing (NLP).

7. Robotics

**2ans)** Difference b/w supervised and unsupervised learning in ml

1. Supervised Learning:

- In supervised learning, the algorithm learns from a labeled dataset, where each input data point is associated with a corresponding output label.

- The goal is to learn a mapping from input variables to output variables based on examples provided in the training data.

- Examples: Image classification (identifying objects in images), spam email detection, predicting house prices based on features.

2. Unsupervised Learning:

- In unsupervised learning, the algorithm learns patterns and structures from input data without explicit supervision or labeled outputs.

- The algorithm explores the structure of the data to find hidden patterns, groupings, or representations.

- There are no correct answers provided during training, and the algorithm must find its own structure in the data.

- Examples: Clustering customer segments based on purchasing behavior, anomaly detection in network traffic, topic modeling in text data.

**3ans)** What is python? Discuss its main features and advantages.

Python is a high-level, interpreted programming language known for its simplicity, readability, and versatility. It was created by Guido van Rossum and first released in 1991. Python has gained immense popularity due to its ease of learning, extensive libraries and frameworks, and wide range of applications. Here are some key features and advantages of Python:

Features:

1. Simple and Readable Syntax:

2. Interpreted and Interactive:

3. Dynamic Typing

4. Extensive Standard Library:

5. Cross-platform:

6. Object-Oriented:

Advantages:

1. Ease of Learning and Readability

2. Versatility

3. Large Ecosystem

**4ans)** Advantages of using python as a programming language for AI&ML

* A great library ecosystem
* A low entry barrier
* Flexibility
* Platform independence
* Readability.

**5Ans)** Importance of identation in python code.

The primary purpose of indentation in Python is to define the scope of statements, such as those within loops, conditionals, functions, and classes. Consistent and proper indentation is crucial for the interpreter to understand the logical structure of the code

**6ans)** Define variable in python provide example of valid variable names

A variable can have a short name (like x and y) or a more descriptive name (age, carname, total\_volume). Rules for Python variables:

* A variable name must start with a letter or the underscore character
* A variable name cannot start with a number
* A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and \_)
* Variable names are case-sensitive (age, Age and AGE are three different variables)
* A variable name cannot be any of the python variables.

**7Ans)** Difference between keyword and identifier in python.

In general, keywords are the predefined and specific reserved words, which hold special meaning. On the other hand, an identifier is a different term or name given to a variable, label of class in the program or function

**8ans)** List the basic data types available in python.

Python has several built-in data types, including numeric types (int, float, complex), string (str), boolean (bool), and collection types (list, tuple, dict, set). Each data type has its own set of properties, methods, and behaviors that allow programmers to manipulate and process data effectively in their programs.

**9Ans)** Syntax for an if statement in python.

Here, the condition after evaluation will be either true or false. if the statement accepts boolean values – if the value is true then it will execute the block of statements below it otherwise not.

# if syntax Python

If condition:

# Statements to execute if

# condition is true

**10Ans)** Purpose of Elif statement in python.

'Elif' stands for 'else if' and is used in Python programming to test multiple conditions. It is written following an if statement in Python to check an alternative condition if the first condition is false. The code block under the elif statement will be executed only if its condition is true.