ASSIGNMENT -1

1.Define AI and provide examples of its applications ?

A:: Artificial Intelligence (AI) technology allows computer and machines to simulate human intelligence and problem solving tasks.

AI is al about creating smart computer systems that can perform tasks that typically require human intelligence.

Some examples of AI applications include virtual assistants like Siri (or) Alexa, self-driving cars, recommendation system.

AI has wide range of applications:

- In health care, AI can help with medical diagnosis and personalized treatment plans.
- In finance, AI is used for fraud detection and algorithmic trading.
- In entertainment, AI powers recommendations for movies , music and books.
- AI is used for agriculture for crop manufacturing and optimization.

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

A::

Supervised learning	**Unsupervised learning**
Supervised learning algorithms are trained using labeled data.	Unsupervised learning algorithms are trained using unlabeled data.
Supervised learning model takes direct feedback to check if it is predicting correct output or not.	Unsupervised learning model does not take any feedback.

Supervised learning model predicts the output. The output is accurate.	Unsupervised learning model finds the hidden patterns in data. The output is less accurate.
Supervised learning can be categorized in Classification and Regression problems.	Unsupervised Learning can be classified in Clustering and Associations problems.
Supervised learning is not close to true Artificial intelligence as in this, we first train the model for each data, and then only it can predict the correct output.	Unsupervised learning is more close to the true Artificial Intelligence as it learns similarly as a child learns daily routine things by his experiences.
It Includes various algorithms such as Linear Regression, Logistic Regression, Support Vector Machine, Multi-class Classification, Decision tree,	It includes various algorithms such as Clustering, KNN, and Apriori algorithm.

Bayesian Logic, etc.	

3.what is python? Discuss it's features and advantages?

A:: Python is an interpreted language, high level and dynamic language. It is easy and simple to learn.

Python is a more popular language and that's known for its simplicity and versatility.

Features:

- Free and open source language, easy to code and read, easy to debug.
- Python is an interpreted language, portable , high-level language, dynamically typed language.
- Python has a large community support, GUI support, large standard libraries.

Advantages:

- It is used to avoid harm of software bugs.
- It reduces maintenance cost and easy memory management.
- It is used for wide applicability and integration with other languages.

4.What are the advantages of using python as programming language for AI and ML?

A:: Python is widely used in the fields of Artificial Intelligence (AI) and Machine Learning (ML) due to several advantages it offers:

- Extensive Libraries: Python provides a rich ecosystem of libraries and frameworks specifically designed for AI and ML.
- Easy to Learn and Use: Python's simple and readable syntax makes it beginner-friendly and accessible to developers of all skill levels.
- Large Community and Support: Python has a large and active community of developers, researchers, and enthusiasts who contribute to its growth.
- Integration Capabilities: Python can seamlessly integrate with other languages like C, C++, and Java. This flexibility allows developers to leverage existing libraries and codebases, making it easier to incorporate AI and ML functionalities into existing systems.
- Data Manipulation and Analysis: Python offers powerful libraries like NumPy and Pandas, which provide efficient data manipulation and analysis capabilities.
- Scalability and Performance: Python's versatility allows developers to scale their AI and ML applications as needed. Additionally, Python's performance can be

enhanced by utilizing libraries like NumPy, which provide optimized numerical operations.

- Deployment and Production: Python provides frameworks like Flask and Django that simplify the deployment of AI and ML models into production environments.

5.Discuss the importance of indentation in python code?

A:: Indentation in python refers to the spacing at beginning line of code.

The primary purpose of indentation in python is to define the scope of statements , such as those within loops, conditions, functions, and classes. Consistent and proper indentation is crucial for the interpreter to understand the logical structure of the code . Indentation is not just a matter of style or convention in python.

6.Define a variable in python. Provide examples of variable names?

A:: Python variable is a containers that store values. It is not statistically typed. A variable can be created the moment we first assign a value to it. Python variable is name given to memory location. It is a basic unit of storage program.

Examples:

var= 'Vaagdevi Engineering College'

a=2+3i

7.Explain difference between keyword and identifier in python.

A::

Keyword	**Identifier**
Keywords are predefined word that gets reserved for working program that have special meaning and cannot get used anywhere else.	Identifiers are the values used to define different programming items such as variables, integers, structures, unions and others and mostly have an alphabetic character.

Specify the type/kind of entity. It always starts with a lowercase letter.	Identify the name of a particular entity. First character can be a uppercase, lowercase letter or underscore.,
A keyword contains only alphabetical characters.	An identifier can consist of alphabetical characters, digits and underscores.
No special symbol, punctuation is used.	No punctuation or special symbol except 'underscore' is used.
Examples of keywords are: int, char, if, while, do, class etc.	Examples of identifiers are: Test, count1, high_speed, etc.

8.List the basic data types available in python.

A:: In Python, some of the basic data types include:

- Integer (int): Represents whole numbers, such as 1, 2, 3, etc.
- Float: Represents decimal numbers, such as 3.14, 2.5, etc.
- String (str): Represents a sequence of characters, such as "hello", "world", etc.
- Boolean (bool): Represents either True or False.
- List: Represents an ordered collection of items, enclosed in square brackets [ ].
- Tuple: Represents an ordered, immutable collection of items, enclosed in parentheses ( ).
- Dictionary: Represents a collection of key-value pairs, enclosed in curly braces { }.

- Set: Represents an unordered collection of unique items, enclosed in curly braces { }.

9.Describe the syntax for an if statement in python.

A:: Syntax for an if statement:

If condition:

#statement of if

10.Explain the purpose of elif statement in python.

A:: The “elif” statement in Python is short for “else if.” It is used to add additional conditions to an “if” statement. When you have multiple conditions to check, you can use “elif” to specify alternative conditions that will be evaluated if the previous conditions are not met. It allows you to create a chain of conditions and execute different blocks of code based on the first condition that evaluates to True. The “elif” statement helps to provide more flexibility and control in your code’s decision-making process.