Assignment - 01

1. Define Artificial Intelligence (AI) & provide example of its applications.

⇒ Artificial Intelligence is the field of computer science that focuses on creating intelligent machines

These machines are designed to perform tasks that would typically require human intelligence such as problem solving learning and decision making

AI technology has applications in various areas like voice assistants, self-driving cars and even social media algorithms

Examples of its Applications :-

i) Virtual Assistants :- AI powers voice activated assistants like Siri, alexa, & google assistant help us with tasks, answer questions and provide information.

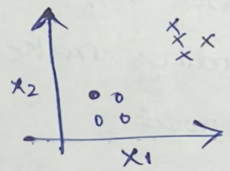
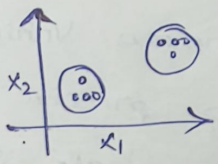
ii) Autonomous Vehicles :- AI enables self-driving cars to preceive their surroundings make decisions and navigate safely on the road.

iii) Health care :- AI is used in medical imaging to assist in the diagnosis of diseases, drug discovery & personalised medicine

iv) Gaming :- AI is used to create intelligent virtual opponents in games & to improve game graphics & physics simulations.

v) Smart Home devices :- AI powers devices like Smart speakers, thermostats & security systems making our home more efficient & responsive.

2. Differentiate b/w Supervised & Unsupervised

Supervised	Unsupervised.
1. Input data is labelled	1. Input data is Unlabelled
2. Use Training dataset	2. Uses just input data set.
3. data is classified based on training dataset	3. Uses properties of given data to classify it.
4. Used for prediction	4. Used for Analysis
5. Divided into 2 types regression & classification	5. Divided into 2 types clustering & Association
6. Known number of classes 	6. unknown number of classes 
7. Use offline Analysis of data	7. Use real time analysis of data.

3. What is Python? Discuss its main features & Advantages?

Python is a programming language that's super popular for its simplicity & versatility. It's used for web development

data Analysis all and more.

(1) Easy to Read & Write:

Python has a clean & simple syntax making it easy to understand and write code, making it easy to understand and

(2) Versatile & Powerfull:

Python can be used for various propose like web development, data analysis, scientific computing, machine learning and more.

(3) Large Standard "Library:

Python comes with a vast standard library that provide ready to use modules for different tasks saving you time and efforts.

(4) Cross-platform compatability:

Python programs can run on different OS like window, linux, macos without any modifications

(5) Integration Capabilities:

Python can easily integrate with other languages like C, C++ & Java, allowing you to leverage existing code and libraries

4. What are the advantages of using Python as a programming language to AI & ML?

Python is widely a such ecosystem of libraries such as Tensorflow, Pytorch & Scikit learn which provide powerful tool & Pre built functions

⇒ Python clean & readable syntax allows developers to express AI & ML concepts in a straight forward manner. this makes it easier to prototype experiment and collaborate on project

⇒ Python has a vibrant community of developers this means you can find sample resources, tutorials & forums to seek help & story updated with the latest advancements.

⇒ Python seamlessly integrals with other languages like C & C++, allowing you to combine the efficiency of low level languages with the simplicity & flexibility of python.

⇒ Python provides excellent libraries like pandas and matplotlib for data manipulation analysis & visualization. these tools enable efficient data preprocessing & exploration.

5. Discuss the Importance of Indentation in Python.

Indentation plays a crucial role in python code in python indentation is used to define the structure and hierarchy of code blocks, such as loops, conditionals & functions

```
x=10
if x==10:
print('x is equal to 10')
```

1) Readability :

Indentation enhance the readability of python code by visually representation the code structure, indentation makes it easier for developers to understand flow & logic of the Program.

2) Code blocks :

In Python, code blocks are defined their indentation determines which lines of code belong to a specific block.

3) Consistency :

Python enforces consistent Indentation as part of its syntax by requiring a consistent indentation style Python promotes codes uniformity & readability across different projects & teams

4) debugging :

Indentation errors can lead to syntax errors to logical bugs in python code by playing attention to proper indentation.

You can catch & resolve these errors early, making the debugging process smoother.

5) Define Variable In Python Provide Example of valid variable names?

Variable :-

⇒ Variable used to store data values.

⇒ we should not use keywords

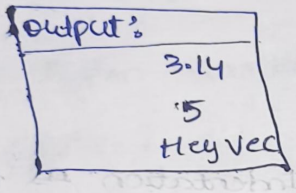
⇒ we should not use special characters while

declaring a variable.

City_name = "Warangal";

Variable assigning :-

```
x = 5
y = "Hey Vec"
z = 3.14
print (z)
print (x)
print (y)
```



7) Explain the difference b/w a keyword & Identifier in Python?

Keyword	Identifier.
1. Keywords are reserved words with special meaning	1. Identifiers is a unique name given to the class function arrays & so on.
2. Keywords do not have symbols	2. Identifier can have symbol
3. Specify the type/ kind of entity	3. Identify the name of a particular entity
4. Keywords are not further classified	4. Identifiers are classified into external name & internal name.

8) List the Basic datatypes available in Python

Data types:

1. Integer (int): Represents the whole numbers, both +ve & -ve

eg: 5, -10.0

2. Float (float): Represent decimal numbers

eg: 3.14, -2, -5.0

3. String (str): Represents a sequence of characters enclosed in a ' ' (or) " "

eg: "Hello world", 'Navya', "Smart Bridge"

4. Boolean (bool): Represents either true (or) false of data.

This data type is useful for logical operation and conditional statements.

5. List:

Represents an ordered collection of elements enclosed in square brackets ([])

eg: [1, 2, 3]

9) Describe the syntax for an "if statement" in Python?

Executes one block of code if a condition is true & another block if its false

If condition:

1. The keyword "if" is followed by a condition which is an expression that evaluates to either 1 (or) 0

2. After the condition, there is a colon (:) to indicate the start of the code block that will be executed if the condition is 1

3. The code block is indented & contains one (or) more statements that will be executed if condition is 1.

eg:
```
x = 22
if x>50:
    print("x is greater than 50")
else:
    print("x is smaller than 50")
```

O/p: x is smaller than 50

10) Explain the purpose of Else if statement in Python?

The "elif" statement in python stands for "Else if".

It is used when you want to check multiple conditions in a sequence.

Syntax:

```
if condition 1:
    # Code block to be executed if condition
      1 is true

    Statement 1
    Statement 2
    . . . .
    . . . .
    . . . .

    elif condition 2:
    # code block to be executed if condition
    is false & condition 2 is true

        Statement 3
        Statement 4

    else
    # code block to be executed if all conditions
    are false.

        Statement 5
        statement 6
. . . . . .
```

⇒ The "elif" statement allows you to check additional conditions after the initial if statement

⇒ If the first condition is false, it moves on to the next elif statement & checks its condition

⇒ If that condition is true, the corresponding code block is executed.

⇒ This process continues until either a conditions are true the code block within the 'else'

=> Using elif allows you to handle multiple scenario & perform different actions based on the specific condition that evaluates to true