Assignment - 1

1.Define artificial intelligence and provide examples of it's applications?

Ans. Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.Artificial Intelligence is the practice of transforming digital computers into working robots (physical & non-physical) activities. They are designed in such a way that they can perform any dedicated tasks and also take decisions based on the provided inputs.

Examples:

1. **AI in Education Purpose**
2. **Artificial Intelligence in E-Commerce**
3. **GPS and Navigations**
4. **Healthcare**

Machine learning, cybersecurity, customer relationship management, internet searches, and personal assistants are some of the most common applications of AI. Voice assistants, picture recognition for face unlocking in cellphones, and ML-based financial fraud detection are all examples of AI software that is now in use.

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

Ans. Supervised learning needs supervision to train the model, which is similar to as a student learns things in the presence of a teacher. Supervised learning can be used for two types of problems: Classification and Regression .

Supervised learning uses labeled training data, and unsupervised learning does not.

supervised learning models have a baseline understanding of what the correct output values should be.

Unsupervised learning is another machine learning method in which patterns inferred from the unlabeled input data. The goal of unsupervised learning is to find the structure and patterns from the input data. Unsupervised learning does not need any supervision. Instead, it finds patterns from the data by its own

unsupervised machine learning models are given unlabeled data and allowed to discover patterns and insights without any explicit guidance or instruction.

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

Ans. Python is a general-purpose language, used to create a range of applications, including data science, software and web development, automation, and improving the ease of everyday tasks. **P**ython is a set of instructions that we give in the form of a Programme to our computer to perform any specific task. It is a Programming language having properties like it is interpreted, object-oriented and it is high-level too. Due to its beginner-friendly syntax, it became a clear choice for beginners to start their programming journey.

Features:

- **Frontend and backend development**
- **Easy to code Easy to Read**
- **Free and Open Source**

Applications:

- **Easy to learn, read, and understand**
- **Versatile and open-source**
- **Improves productivity**
- **Supports libraries**
- **Huge library**
- **Strong community**
- **Interpreted language**

4.what are the advantages of using python as a programming language for Al and Ml?

Ans. Python is the major code language for AI and ML. It surpasses Java in popularity and has many advantages, such as a great library ecosystem, Good visualization options, A low entry barrier, Community support, Flexibility, Readability, and Platform independence. There are many reasons why Python is the preferred language in artificial intelligence and machine learning

- Huge number of libraries and frameworks
- Easy syntax and resembles the English language
- No need to recompile source code
- Platform-independent
- Great community support
- Readability
- **Java**
- **JavaScript**

5.Discuss the importance of indentation in python code?

Ans. Indentation plays a crucial role in Python programming. It is a unique feature of the language that sets it apart from other programming languages. In Python, indentation is used to define the structure and hierarchy of the code. It helps in visually organizing the code and making it more readable.

indentation refers to adding white space before a statement to a particular block of code. In another word, all the statements with the same space to the right, belong to the same code block. Indentation is a very important concept of Python because without properly indenting the Python code, you will end up seeing IndentationError and the code will not get compiled.

6.Define a variable in python provide examples of valid variable names?

Ans. Python Variable is containers that store values. Python is not “statically typed”. We do not need to declare variables before using them or declare their type. A variable is created the moment we first

assign a value to it. A Python variable is a name given to a memory location. It is the basic unit of storage in a program.

Myvar = “green”

My_var = “blue”

_my_var = “orange”

myVar = “red”

MYVAR = “black”

Myvar2 = “white”

Rules for Variable Names:

You may use uppercase letters for variable names but it is always perfectly fine to begin variable names with a lowercase letter. If your Variable name is long, then you can use underscore character (_) in the name. For example, top_five_members, var_1 etc. all are valid example

Technically, the variable acts as an address for where the data is stored in memory. A Python variable may be assigned a value of one type and then later re-assigned a value of a different type. For example, x = "apples" can later be x = 5

7.Explain the difference between a key word and an identifier in python?

Ans. Python Keywords are some predefined and reserved words in Python that have special meanings. Keywords are used to define the syntax of the coding. The keyword cannot be used as an identifier, function, or variable name. All the keywords in Python are written in lowercase except True and False. There are 35 keywords in Python.In Python, there is an inbuilt keyword module that provides an iskeyword() function that can be used to check whether a given string is a valid keyword or not.

Identifier is a user-defined name given to a variable, function, class, module, etc. The identifier is a combination of character digits and an underscore. They are case-sensitive i.e., ‘num’ and ‘Num’ and ‘NUM’ are three different identifiers in python. It is a good programming practice to give meaningful names to identifiers to make the code understandable.We can also use the Python string isidentifier() method to check whether a string is a valid identifier or not.

Python Identifier is the name we give to identify a variable, function, class, module or other object. That means whenever we want to give an entity a name, that's called identifier. A python identifier is a name given to various entities like variables, functions, and classes.

8.List the basic data types available in Python?

Ans. Python Data Types are used to define the type of a variable. In this article, we’ll list out all the data types and discussion the functionality of each. If you are starting out in Python, don’t forget to first visit the Python tutorial for beginners. Python Data types are the classification or categorization of data items. It represents the kind of value that tells what operations can be performed on a particular

data. Since everything is an object in Python programming, Python data types are classes and variables are instances (objects) of these classes. The following are the standard or built-in data types in Python.

Some built-in Python data types are:

Numeric data types: int, float, complex.

String data types: str.

Sequence types: list, tuple, range.

Binary types: bytes, bytearray, memoryview.

Mapping data type: dict.

Boolean type: bool.

Set data types: set, frozenset

- Numeric
- Sequence Type
- Boolean
- Set
- Dictionary
- Binary Types

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

Ans. The if statement is the most simple decision-making statement. It is used to decide whether a certain statement or block of statements will be executed or not.

Syntax of If Statement in Python:

#if syntax Python

If condition:

  # Statements to execute if

  # condition is true

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.

As we know, Python uses indentation to identify a block. So the block under the Python if statements will be identified as shown in the below example:

How to Create an if Statement in Python - A Syntax Breakdown

You start the if statement using the if keyword.

You leave a space and then add a Boolean value. ...

You then add a colon, : .

On a new line, add one level of indentation. ...

Lastly, write any lines of code statements.

If condition:

  Statement1

Statement2

Here if the condition is true, if block

will consider only statement1 to be inside

its block.

10. Explain the purpose of the elif statement in Python?

Ans. 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.

elif condition is used to include multiple conditional expressions after the if condition or between the if and else conditions.

If [boolean expression]:

  [statements]

Elif [boolean expresion]:

  [statements]

Elif [boolean expresion]:

  [statements]

Else:

  [statements]

The elif block is executed if the specified condition evaluates to True