Assignment 1

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

   Artificial intelligence is the ability of a computer or computer-controlled robot to perform tasks that are commonly associated with the intellectual processes characteristic of humans, such as the ability to reason.

   Examples :

   AI applications in domains such as healthcare, education, finance, and others

   Face Detection and Recognition Technology

   Text Editor

   Social Media

   Chatbots

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

   A supervised machine learning model is told how it is suppose to work based on the labels or tags.

   An unsupervised machine learning model is told just to figure out how each piece of data is distinct or similar to one another. The need to use one or the other is largely based on whether or not our data has labels or tags.

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

   Python is a high-level, general-purpose, object-oriented programming language renowned for its simplicity, readability, and versatility. Guido van Rossum, a Dutch programmer, created Python in the late 1980s with the vision of developing a language that prioritized ease of use and emphasized code clarity.

   Main features

   One of the key features of Python is Object-Oriented programming. Python supports object-oriented language and concepts of classes, object encapsulation, etc. 5. GUI Programming Support Graphical User interfaces can be made using a module such as PyQt5, PyQt4, wxPython, or Tk in Python.

   Advantages

   Easy to read, learn and code

Dynamic Typing

Free, Open Source

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

There are many reasons why Python is the preferred language in artificial intelligence and machine learning as underlined below: Building AI/ML applications is complex and time-consuming. However, there are many libraries that are compatible with Python. This is the primary reason developers prefer it over other languages.

The popularity of Python in AI/ML

* 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
*. Philosophy of Python

5. **Discuss the importance of indentation in Python code.**

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. Python indentation refers to adding white space before a statement to a particular block of code.

6. **Explain the difference between a keyword and an identifier in Python.**

Keywords are the reserved words in Python. We cannot use a keyword as a variable name, function name or any other identifier. An identifier is a name given to entities like class, functions, variables, etc. in Python

7. **List the basic data types available in Python.**

Basic data types in Python include integers, floating-point numbers, strings, booleans, lists, tuples, dictionaries, and sets.

8. **Describe the syntax for an if statement in Python.**

The syntax for an if statement in Python is:

```
    if condition:
  # code block to execute if condition is true
```

if: This keyword starts the if statement.
condition: This is an expression that evaluates to either True or False. If the condition is True, the code block following the if statement is executed.
A colon (:) marks the end of the if statement's condition and the beginning of the indented code block.
Indented code block: This block contains the code that is executed if the condition is true. It can consist of one or more statements. The indentation level determines which statements are part of this block.

9. **Explain the purpose of the elif statement in Python.**

   The elseif statement in Python is used to check additional conditions after the initial if statement. It allows for the evaluation of multiple conditions sequentially. If the condition in the if statement is false, Python evaluates the condition in the elseif statement.