Assignment 1

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BRANCH: CSE –A

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

   Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Applications are across various sectors, including E-commerce, Education, Robotics, Healthcare, and Social Media.

   Example:

   - Artificial Intelligence in E-Commerce
   - AI in Education
   - GPS and Navigations

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

supervised	unsupervised
Uses Known and Labeled Data as input	Uses Unknown Data as input
Supervised learning is also called classification.	Unsupervised learning is also called clustering.
We can test our model.	We can not test our model.
Accurate and Reliable Results	Moderate Accurate and Reliable Results

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

   Python:

Python is a dynamic, high-level, free open source, and interpreted programming language. It supports object-oriented programming as well as procedural-oriented programming

Main features & Advantages:

- Free and Open Source
- Easy to code
- Object-Oriented Language
- GUI Programming Support
- Large Community Support
- Portable language.

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

Advantages of using Python for AI and ML are as follows:

- Easy to learn and read
- Extensive libraries and frameworks
- Large and active community
- Cross-platform compatibility
- Open-source and free to use

5. Discuss the importance of indentation in Python code.

- Indentation in Python code is crucial for two main reasons, it defines code blocks and enhances readability.
- Unlike many other programming languages that use curly braces { } to define code blocks (like if statements, loops), Python relies solely on indentation.

- Proper indentation visually groups related statements, making the code much easier to understand. By using consistent indentation levels, you create a clear hierarchy that shows the nesting of code blocks.

  Example:

  # Incorrect indentation (code won't run)

   if x > 0:

  print("x is positive")   # This line should be indented

  # Correct indentation

  if x > 0:

  print("x is positive")

6. Define a variable in Python. Provide examples of valid variable names.

   In Python, you define a variable simply by assigning a value to it using the equal sign (=)

   Python follows these rules for creating valid variable names:

- Start with a letter (a-z, A-Z) or an underscore (_).
- Contain only letters, numbers, and underscores.
- Are case-sensitive (e.g., 'age' and 'Age' are different variables).

  Example:

- _name
- my_age
- total_sales

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

keyword	identifier

A keyword begins with lowercase.	In the identifier, the first character — —may begin with uppercase, lowercase or underscores.
It defines the type of entity.	It classifies the name of the entity.
It can only have alphabetical characters.	It can have numbers, alphabetical characters, and underscores.
It should be lowercase.	It can be both upper and lowercase.

8. List the basic data types available in Python.

   Python offers several fundamental data types to represent different kinds of information in your programs.

   - Integers (int)
   - Floating-point numbers (float)
   - Complex numbers (complex)
   - Strings (str)
   - Booleans (bool)
   - Lists (list)

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

   The if statement in Python is a fundamental control flow structure used for conditional execution.

   Example:

   condition:

      # indented block of code to be executed if the condition is True if

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

The elif statement (short for "else if") in Python is used to create multi-way conditional branching within your code. It allows you to check for additional conditions after an initial if statement has been evaluated.

- It provides a way to handle multiple conditions sequentially after an initial if check.
- Only one elif block will be executed in a chain, depending on which condition is True.
- You can have multiple elif statements after a single if.