ASSIGNMENT-1

MCQs:

1) **Which of the following is not a valid Python variable name?**
   a) data_1
   b) _value
   c) 1value
   d) value1

2) **What will be the output of the following Python code?**
   x = [1, 2, 3, 4, 5]
   print(x[-3:])

   a) [3, 4, 5]
   b) [1, 2, 3]
   c) [2, 3, 4]
   d) Error

5 M:

3) **Briefly explain about Jupyter Notebook.**
- Jupyter Notebook is an **interactive development environment** widely used in Data Science and Machine Learning.
- It allows combining **code, visualizations, equations, and narrative text** in a single document.
- Supported on **Windows, Linux, and macOS**.
- Provides **cell-based execution**, so code can be run and tested in smaller chunks.
- Useful for **exploratory data analysis, visualization, and documentation**.
- Supports **multiple languages** via kernels, but most commonly used with Python.
- Integration with libraries like **NumPy, Pandas, and Matplotlib** makes it powerful for data analysis.

4) Explain Slicing with respect to Sequence data operations.

- Slicing means extracting a **subsequence** from a sequence type such as a **list, string, or tuple**.
- It uses the syntax: `object[start : stop : step]`.
- The **start index** is inclusive, and the **stop index** is exclusive.
- If **start** or **stop** is omitted, Python automatically considers the beginning or end of the sequence.
- The **step** specifies the interval between elements (default is 1).
- Negative indices can be used to slice from the **end of the sequence**.

7 M:

5) Explain Data Types in Python.

- Python supports a variety of built-in data types that define the kind of values a variable can hold.
- Data types help in classification and operations that can be performed.
- Common Python data types are:

  Numeric types: `int`, `float`, `complex`

  Sequence types: `str`, `list`, `tuple`, `range`

  Set types: `set`, `frozenset`

  Mapping type: `dict`

  Boolean type: `bool` (True/False values)

  Python is dynamically typed, meaning type is assigned at runtime.

  Type of an object can be checked using `type()` function.

6) Briefly explain Operators in Python.

- Operators are symbols that perform operations on variables and values.
- Python supports several categories of operators:
- Arithmetic Operators: `+`, `-`, `*`, `/`, `%`, `//`, `**`
- Relational/Comparison Operators: `==`, `!=`, `>`, `<`, `>=`, `<=`
- Logical Operators: `and`, `or`, `not`
- Assignment Operators: `=`, `+=`, `-=`, `*=`, `/=`, etc.
- Membership Operators: `in`, `not in`
- Identity Operators: `is`, `is not`
- Operators can be used with different data types (e.g., numbers, strings, lists).

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