**Module – 7**

1. **Accessing List**

* **Accessing List Theory:**

**Q1]. Understanding how to create and access elements in a list.**

**🔹 What is a List?**

**A list in Python is a built-in collection data type used to store multiple items in a single variable.**

* **It is ordered, mutable (changeable), and allows duplicate elements.**
* **Lists can contain elements of different data types: integers, strings, floats, booleans, or even other lists.**

**🔹 Creating a List**

**You can create a list using square brackets []:**

**# Example: List with mixed data types**

**my\_list = [10, "hello", 3.14, True]**

**🔹 Accessing Elements in a List**

* **You can access list elements using index numbers (starting from 0 for the first element).**

**print(my\_list[0]) # Output: 10**

**print(my\_list[1]) # Output: "hello"**

**Q2]. Indexing in lists (positive and negative indexing).**

**✅ Indexing in Lists (Positive and Negative Indexing)**

**🔹 Positive Indexing**

* **Indexing starts from 0 and moves forward from left to right.**
* **The first element is at index 0, the second at index 1, and so on.**

**Example:**

**fruits = ["apple", "banana", "cherry"]**

**print(fruits[0]) # Output: apple**

**print(fruits[2]) # Output: cherry**

**🔹 Negative Indexing**

* **Negative indexing starts from the end of the list.**
* **The last element is at index -1, the second-last at -2, and so on.**

**Example:**

**print(fruits[-1]) # Output: cherry**

**print(fruits[-2]) # Output: banana**

**Q3]. Slicing a list: accessing a range of elements.**

**✅ Slicing a List: Accessing a Range of Elements**

**🔹 What is Slicing?**

**Slicing is used to access a subset (range) of elements from a list using a start:stop:step syntax.**

**list[start : stop : step]**

* **start: index to begin (inclusive)**
* **stop: index to stop (exclusive)**
* **step: interval (default is 1)**

**Examples:**

**my\_list = [0, 1, 2, 3, 4, 5, 6]**

**print(my\_list[1:5]) # [1, 2, 3, 4]**

**print(my\_list[:4]) # [0, 1, 2, 3]**

**print(my\_list[3:]) # [3, 4, 5, 6]**

**print(my\_list[::2]) # [0, 2, 4, 6] (every second element)**

**print(my\_list[::-1]) # [6, 5, 4, 3, 2, 1, 0] (reverse the list)**