**Lab Assignment 2**

**Instructions:**

1. For theoretical answer, type the text in MS-Word.
2. For code, create a class of your name and enrolment number, write the code in that function.
3. Copy the entire code (no screenshot) in MS-Word file.
4. Take screenshot of the output and attach it to the MS-Word File.
5. Rename you MS-Word file with only your enrolment number (e.g., SP23-BCS-44).
6. Upload it in the assignment section on your portal.

**Question 1 (CLO-4) [Marks: 10]**

Design and submit a project proposal that demonstrates your understanding and application of all major Object-Oriented Programming (OOP) concepts. Your proposal should describe a real-world problem and how you would solve it using OOP principles. The project must include and clearly explain the use of the following:

1. Classes and Objects
2. Constructors and Destructors
3. Encapsulation
4. Inheritance (single/multilevel/hierarchical)
5. Polymorphism (compile-time and run-time)
6. Abstraction
7. Access Specifiers (public, private, protected)
8. Method Overloading and Overriding
9. Interfaces or Abstract Classes (if applicable)
10. Any additional concepts like static members, final classes, exception handling, etc.
11. GUI
12. Database connectivity

Your proposal should include:

* Project Title
* Overview
* List of Classes (with attributes and methods)
* UML Class Diagram (optional but recommended)
* Flowchart of how each OOP concept is applied
* Expected Outcomes