Faculty of Engineering, University of Jaffna,

Department of Computer Engineering.

EC5080: Software Construction

Lab 02

Duration: 3 Hours **Lecturer: Ms. Sujanthika M.**

Introduction to Classes, Objects, References, and Aliasing

Objectives:

- Understand how to define and use classes as user-defined types.
- Create and manipulate object instances.
- Explore reference variables and aliasing effects
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In this lab, you will implement a simplified Library Management System using Java classes and objects.

Part 1:

1. Create a class Book with attributes: `id`, `title`, `author`, and `is Available`.
2. Implement a constructor to initialize book details.
3. Implement a method `displayBookDetails()` that prints book information.
4. Create a main method that initializes multiple Book objects and displays their details.

Part 2:

1. Create two Book references pointing to the same object and observe aliasing.
2. Modify the book's title through one reference and print the details from both references.
3. Explain the aliasing effect through comments in the code.

Part 3:

1. Create a `Library` class that contains a list of Book objects.
2. Implement methods in `Library` to:
    a. Add a book
    b. Remove a book
    c. Display all books
3. Demonstrate object composition by creating a `Library` object containing multiple Book objects.

Part 4:

1. Execute all implemented methods in the main program.
2. Observe and document the output behavior of object references, aliasing, and composition.
3. Discuss findings in code comments.

Submission Guidelines:

- Submit a well-structured Java source file with comments
- Provide screenshots for the outputs.
- Provide correct names for your code files and outputs
- Any plagiarized work will be given zero marks
- Late submissions are not allowed

Section	Marking Criteria	Allocated Marks
Part 1	Correct class definition	5
	Constructor implementation	5
	Method for displaying book details	5
	Creating and using multiple objects correctly	5
	Proper code structure and comments	5
Part 2	Correct reference and aliasing implementation	10
	Modification of object properties via references	10
	Explanation of aliasing through comments	5
Part 3	Correct `Library` class implementation	5
	Methods for adding/removing books	10
	Displaying books correctly	5
	Demonstrating object composition properly	5
Part 4	Correct execution of all methods	10
	Documentation of outputs and observations	10
	Well-structured and commented code	5