

In-class Lab #1: Unit Testing with JUnit

Objective

The purpose of this lab is to:

- Understand and implement unit testing using JUnit.
- Learn how to design testable Java classes.
- Explore the use of Nested classes for organizing test cases.

Instructions

Review the introductory lecture on Unit testing (Lecture 2). Video recording of this lecture has been provided in case you missed the lecture or need to refresh on the concepts. After reviewing the concepts, complete the following tasks:

1. Create a Realistic Java Class

Design and implement a Java class that:

- Has at least **two attributes** (e.g., variables to store state).
- Includes at least **two methods**, with different functionalities.
- Is realistic and related to a practical use case (e.g., a class representing a **BankAccount**, **Book**, **Student**, etc.).

2. Write a Test Class

Implement a test class using JUnit that:

- Tests both methods in your Java class.
- Includes appropriate assertions to verify correctness of the methods.

3. Use a Nested Class for Additional Testing

Within the test class, create a **Nested class** to:

- Test an additional behavior or property of your main Java class.
- Demonstrate proper organization of related test cases within the Nested class.

Submission Guidelines

- Submit your **Java files** (please do not include the entire Java project folder structure, simply submit your class and test class code - ie the files ending with .Java).
- A maximum of **5 minute video presentation** briefly explaining the code and clearly showing the test cases running. Video presentation should be made using a screen capture tool like Zoom or Teams. Do not use your phone to record the video. The video should show the code as you explain and run the tests (you do not need to show your face on the video).

Marking Scheme - 5% of Final Grade

Criteria	Marks
Design and implementation of the Java class	4
Test class with methods to test both functionalities	7
Nested class for additional testing	2
Code quality (readability, coding standards)	2
Video presentation (clear explanations)	5
Total	20