Software Verification and Validation Lab Final Prep: JUnit + Selenium

# Overview

This guide is designed for students preparing for their lab final exam on Software Verification and Validation, focusing on JUnit and Selenium. It includes setup instructions, sample codes, and key concepts.

# 1. JUnit: Setup and Practice

## Setup Steps (in IntelliJ):

1. Open IntelliJ and create a new Java project.  
2. Right-click on src > New > Java Class > Name it Calculator.  
3. Add a class with basic methods (e.g., add, subtract).

## Calculator.java:

public class Calculator {  
 public int add(int a, int b) {  
 return a + b;  
 }  
 public int subtract(int a, int b) {  
 return a - b;  
 }  
}

## Test Class: CalculatorTest.java

import org.junit.Test;  
import static org.junit.Assert.\*;  
  
public class CalculatorTest {  
 @Test  
 public void testAdd() {  
 Calculator calc = new Calculator();  
 assertEquals(5, calc.add(2, 3));  
 }  
  
 @Test  
 public void testSubtract() {  
 Calculator calc = new Calculator();  
 assertEquals(1, calc.subtract(3, 2));  
 }  
}

# 2. Selenium: Setup and Practice

## Setup Steps:

1. Download Selenium Java from https://www.selenium.dev/downloads/  
2. Extract and add all JARs to IntelliJ (Project Structure > Modules > Dependencies).  
3. Download ChromeDriver from https://sites.google.com/chromium.org/driver/ and set its path in your project.

## Sample Selenium Test: GoogleSearchTest.java

import org.openqa.selenium.By;  
import org.openqa.selenium.WebDriver;  
import org.openqa.selenium.WebElement;  
import org.openqa.selenium.chrome.ChromeDriver;  
  
public class GoogleSearchTest {  
 public static void main(String[] args) {  
 System.setProperty("webdriver.chrome.driver", "C:\\path\\to\\chromedriver.exe");  
 WebDriver driver = new ChromeDriver();  
 driver.get("https://www.google.com");  
 WebElement searchBox = driver.findElement(By.name("q"));  
 searchBox.sendKeys("JUnit");  
 searchBox.submit();  
 System.out.println("Title: " + driver.getTitle());  
 driver.quit();  
 }  
}

# 3. Final Cheat Sheet

## JUnit:

@Test  
public void testMethodName() {  
 assertEquals(expected, actual);  
 assertTrue(condition);  
 assertFalse(condition);  
}

## Selenium:

WebDriver driver = new ChromeDriver();  
driver.get("URL");  
driver.findElement(By.id("id")).sendKeys("text");  
driver.findElement(By.name("name")).click();  
driver.quit();