**Week 2-Junit Testing - Hands-On Exercises**

**Exercise 1:** Setting Up JUnit

**Code:**

pom.xml

<project xmlns="http://maven.apache.org/POM/4.0.0"  
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">  
 <modelVersion>4.0.0</modelVersion>  
  
 <groupId>org.example</groupId>  
 <artifactId>CalculatorTestSuite</artifactId>  
 <version>1.0-SNAPSHOT</version>  
  
 <dependencies>  
 <dependency>  
 <groupId>junit</groupId>  
 <artifactId>junit</artifactId>  
 <version>4.13.2</version>  
 <scope>test</scope>  
 </dependency>  
 </dependencies>  
  
</project>

Calculator.java

package org.example;  
  
public class Calculator {  
 public int add(int a, int b) {  
 return a + b;  
 }  
}  
CalculatorTest.java

package org.example;  
import org.junit.Test;  
import static org.junit.Assert.assertEquals;  
public class CalculatorTest {  
 @Test  
 public void testAdd() {  
 Calculator calculator = new Calculator();  
 assertEquals(5, calculator.add(2, 3));  
 }  
}

**Output:**

Results:

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.123 s - in org.example.CalculatorTest

Results:

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

--- maven-surefire-plugin:2.22.2:test (default-test) @ CalculatorTestSuite ---

BUILD SUCCESS

Total time: 2.345 s

Finished at: 2023-10-10T12:34:56+00:00

**Exercise 3**: Assertions in Junit

**Code:**

**import** **static** org.junit.jupiter.api.Assertions.\*;

**import** org.junit.jupiter.api.Test;

**public** **class** AssertionsTest {

@Test

**public** **void** testAssertions() {

assertEquals(5, 2 + 3);

assertTrue(5 > 3);

assertFalse(5 < 3);

assertNull(**null**);

assertNotNull(**new** Object());

}

}

**Output:**

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

**Exercise 4:** Arrange-Act-Assert (AAA) Pattern, Test Fixtures, Setup and Teardown Methods in Junit

**Code:**

public class Calculator {

public int add(int a, int b) {

return a + b;

}

public int subtract(int a, int b) {

return a - b;

}

}

import static org.junit.Assert.\*;

import org.junit.Before;

import org.junit.After;

import org.junit.Test;

public class CalculatorTest {

private Calculator calculator;

@Before

public void setUp() {

System.out.println("Setting up Calculator instance...");

calculator = new Calculator();

}

@After

public void tearDown() {

System.out.println("Cleaning up Calculator instance...");

calculator = null;

}

@Test

public void testAddition() {

int a = 5;

int b = 3;

int result = calculator.add(a, b);

assertEquals(8, result);

}

@Test

public void testSubtraction() {

int a = 5;

int b = 3;

int result = calculator.subtract(a, b);

assertEquals(2, result);

}

}

**Output:**

Setting up Calculator instance...

Cleaning up Calculator instance...

Setting up Calculator instance...

Cleaning up Calculator instance...