**Exercise 1: Setting Up Junit:**

**Solution:**

CALCULATOR TEST CLASS:

**import** org.junit.Test;

**import** **static** org.junit.Assert.assertEquals;

**public** **class** CalculatorTest {

@Test

**public** **void** testAddition() {

**int** a = 2;

**int** b = 3;

**int** expected = 5;

**int** result = a + b;

assertEquals(expected, result);

}

}

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 https://maven.apache.org/xcd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<groupId>com.example</groupId>

<artifactId>junit-demo</artifactId>

<version>0.0.1-SNAPSHOT</version>

<name>junit-demo</name>

<dependencies>

<dependency>

<groupId>junit</groupId>

<artifactId>junit</artifactId>

<version>4.13.2</version>

<scope>test</scope>

</dependency>

</dependencies>

</project>

**Exercise 3: Assertions in Junit**

**Solution:**

AssertionsTest Class:

**package** com.example.junitdemo;

**import** org.junit.Test;

**import** **static** org.junit.Assert.\*;

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

@Test

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

// Assert equals

*assertEquals*(5, 2 + 3);

// Assert true

*assertTrue*(5 > 3);

// Assert false

*assertFalse*(5 < 3);

// Assert null

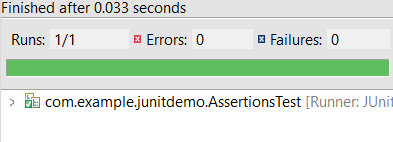
*assertNull*(**null**);

// Assert not null

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

}

}

**Output:**

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

**Solution:**

Test Class and its implementation:

**package** com.example.junitdemo;

**public** **class** Calculator {

**public** **int** add(**int** a, **int** b) {

**return** a + b;

}

**public** **int** subtract(**int** a,**int** b) {

**return** a - b;

}

}

**package** com.example.junitdemo;

**import** org.junit.After;

**import** org.junit.Before;

**import** org.junit.Test;

**import** **static** org.junit.Assert.\*;

**public** **class** CalculatorTest {

**private** Calculator calculator;

@Before

**public** **void** setUp() {

calculator = **new** Calculator();

System.***out***.println("Setup: Calculator initialized.");

}

@After

**public** **void** tearDown() {

calculator = **null**;

System.***out***.println("Teardown: Calculator cleaned up.");

}

@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 = 10;

**int** b = 4;

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

*assertEquals*(6, result);

}

}

OUTPUT:

