**Week 2**

**JUnit Testing**

**Exercise 1: Setting Up JUnit:**

**Calculator.java:**

public class Calculator {

public int add(int a, int b) {

return a + b;

}

}

**CalculatorTest.java:**

import org.junit.Test;

import static org.junit.Assert.assertEquals;

public class CalculatorTest {

@Test

public void testAdd() {

Calculator calculator = new Calculator();

int result = calculator.add(5,4);

assertEquals(9, result);

}

}

**Output:**

A screenshot of a computer program

AI-generated content may be incorrect.

**Exercise 2: Writing Basic JUnit Tests:**

**MathUtils.java:**

public class MathUtils {

public int add(int a, int b) {

return a + b;

}

public int multiply(int a, int b) {

return a \* b;

}

public boolean isEven(int number) {

return number % 2 == 0;

}

}

**MathUtilsTest.java:**

import org.junit.Test;

import static org.junit.Assert.\*;

public class MathUtilsTest {

@Test

public void testAdd() {

MathUtils mathUtils = new MathUtils();

int result = mathUtils.add(5, 4);

assertEquals(9, result);

}

@Test

public void testMultiply() {

MathUtils mathUtils = new MathUtils();

int result = mathUtils.multiply(2, 8);

assertEquals(16, result);

}

@Test

public void testIsEven() {

MathUtils mathUtils = new MathUtils();

assertTrue(mathUtils.isEven(20));

assertFalse(mathUtils.isEven(31));

}

}

**Output:**

A screenshot of a computer program

AI-generated content may be incorrect.

**Exercise 3: Assertions in JUnit:**

**AssertionsTest.java:**

import org.junit.Test;

import static org.junit.Assert.\*;

public class AssertionsTest {

@Test

public void testAssertions() {

assertEquals(3, 1 + 2);

assertTrue(7 > 1);

assertFalse(7 < 1);

Object obj1 = null;

assertNull(obj1);

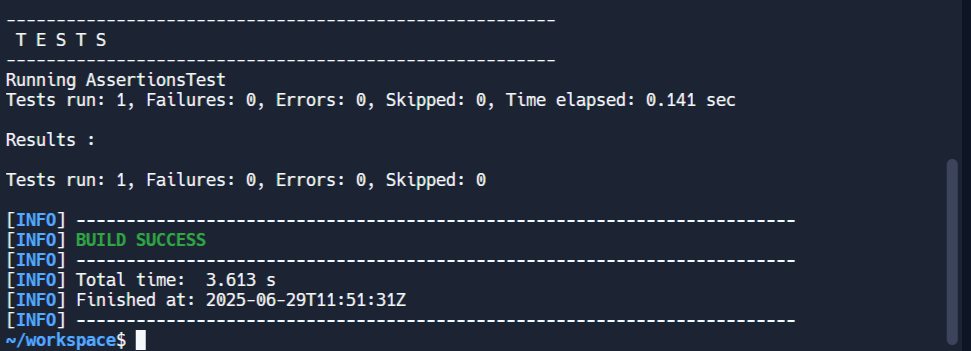
Object obj2 = new Object();

assertNotNull(obj2);

}

}

**Output:**

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

**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;

}

}

**CalculatorTest.java:**

import org.junit.Before;

import org.junit.After;

import org.junit.Test;

import static org.junit.Assert.\*;

public class Calculatortest {

private Calculator calculator;

@Before

public void setUp() {

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

calculator = new Calculator();

}

@After

public void tearDown() {

System.out.println("Tearing down...");

calculator = null;

}

@Test

public void testAdd() {

int a = 5;

int b = 3;

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

assertEquals(8, result);

}

@Test

public void testSubtract() {

int a = 10;

int b = 4;

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

assertEquals(6, result);

}

}

**Output:**

A screenshot of a computer error

AI-generated content may be incorrect.