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

**Scenario:**

You need to organize your tests using the Arrange-Act-Assert (AAA) pattern and use setup

and teardown methods.

**Steps:**

1. Write tests using the AAA pattern.

2. Use @Before and @After annotations for setup and teardown methods.

**Code:**

**Calculator.java**

package com.example;

public class Calculator {

public int add(int a, int b) {

return a + b;

}

public int multiply(int a, int b) {

return a \* b;

}

public void clearMemory() {

// Simulated teardown (just a placeholder)

}

}

**CalculatorTest.java**

package com.example;

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 completed.");

}

@After

public void tearDown() {

calculator.clearMemory();

System.out.println("Teardown completed.");

}

@Test

public void testAddition() {

int a = 3;

int b = 7;

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

assertEquals(10, result);

}

@Test

public void testMultiplication() {

int x = 4;

int y = 5;

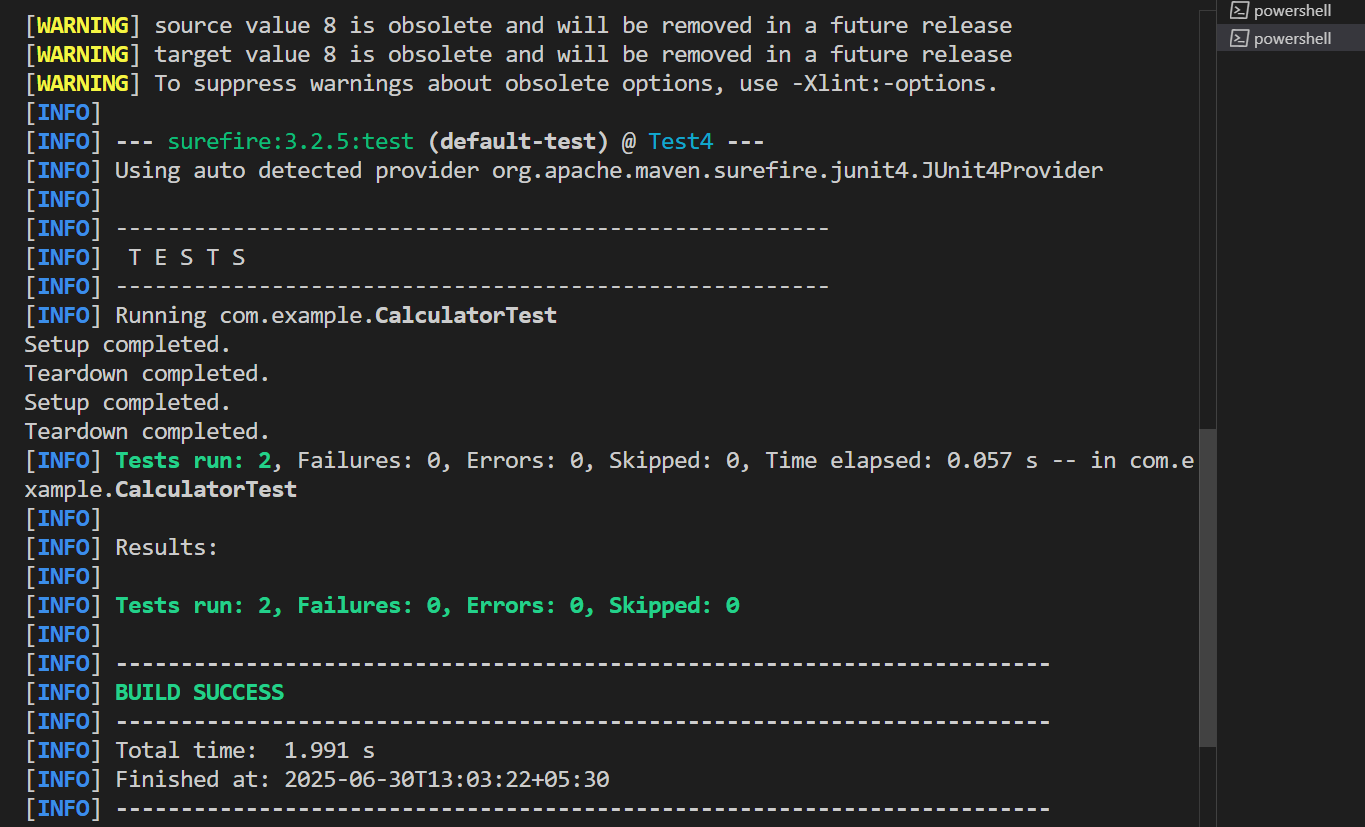
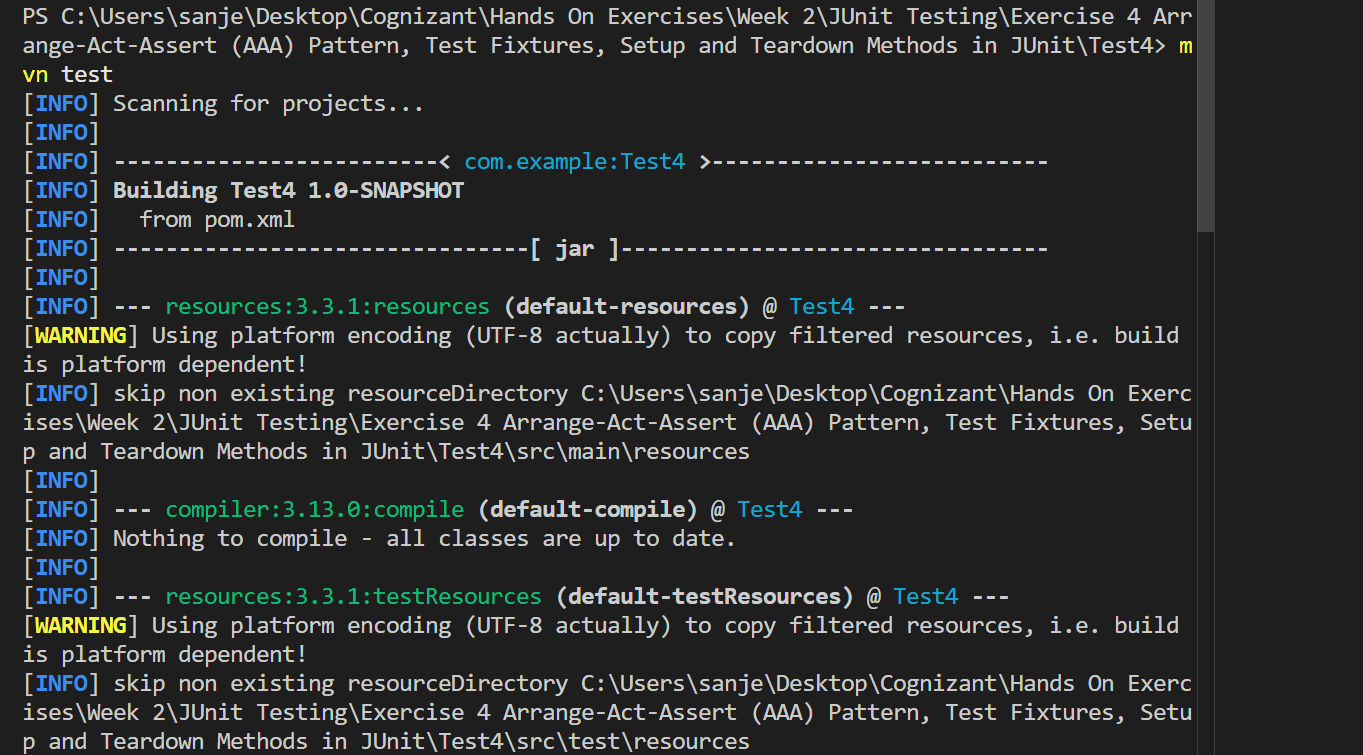
int result = calculator.multiply(x, y);

assertEquals(20, result);

}

}

**Output:**

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