Phase – 3 Practice Project: Assisted Practice

14. Write a program to demonstrate nested and repeated tests

- **Code**

✓ **pom.xml**

```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/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>UsingJUnit</groupId>
  <artifactId>UsingJUnit</artifactId>
  <version>0.0.1-SNAPSHOT</version>

  <dependencies>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter-engine</artifactId>
            <version>5.4.2</version>
        </dependency>

         <dependency>
        <groupId>org.junit.platform</groupId>
        <artifactId>junit-platform-launcher</artifactId>
        <version>1.2.0</version>
    </dependency>

  </dependencies>

</project>
```

✓ **Calculator.java**

```java
package com.ecommerce.tests;

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

✓ **NestedCases.java**

```java
package com.ecommerce.tests;

import org.junit.jupiter.api.*;
import org.junit.jupiter.api.AfterAll;
import org.junit.jupiter.api.BeforeAll;
import org.junit.jupiter.api.Test;
import org.junit.platform.runner.~~JUnitPlatform~~;
import org.junit.runner.RunWith;
```

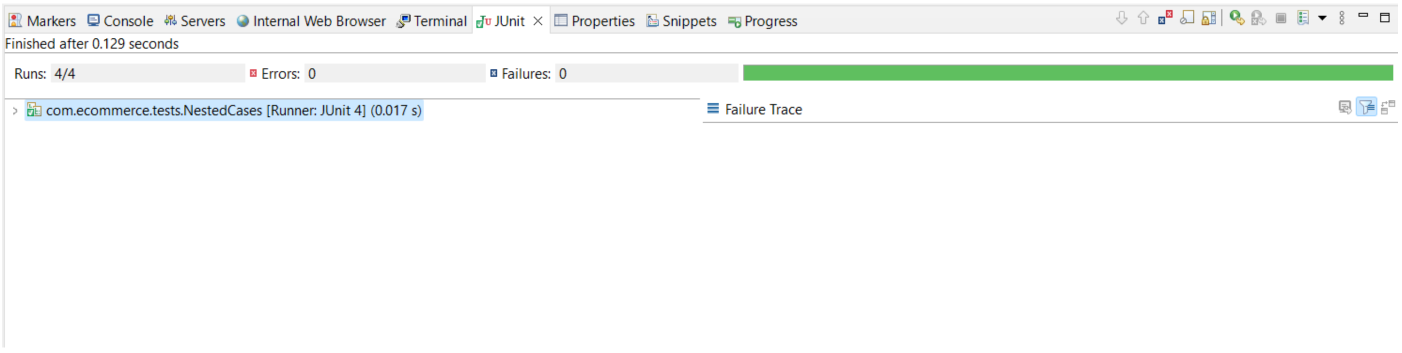
```
@DisplayName("JUnit 5 Nested Example")
@RunWith(~~JUnitPlatform~~.class)
public class NestedCases {

    @BeforeAll
    static void beforeAll() {
        System.out.println("Before all test methods");
    }

    @BeforeEach
    void beforeEach() {
        System.out.println("Before each test method");
    }

    @AfterEach
    void afterEach() {
        System.out.println("After each test method");
    }

    @AfterAll
    static void afterAll() {
        System.out.println("After all test methods");
    }

    @Nested
    @DisplayName("Tests for the method A")
    class A {

        @BeforeEach
        void beforeEach() {
            System.out.println("Before each test method of the A
class");
        }

        @AfterEach
        void afterEach() {
            System.out.println("After each test method of the A class");
        }

        @Test
        @DisplayName("Example test for method A")
        void sampleTestForMethodA() {
            System.out.println("Example test for method A");
        }

        @Nested
        @DisplayName("When X is true")
        class WhenX {

            @BeforeEach
            void beforeEach() {
                System.out.println("Before each test method of the WhenX
class");
            }

            @AfterEach
            void afterEach() {
                System.out.println("After each test method of the WhenX
class");
            }

            @Test
            @DisplayName("Example test for method A when X is true")
            void sampleTestForMethodAWhenX() {
                System.out.println("Example test for method A when X is
true");
            }
        }
    }
}
```

✓ **RepeatedTests.java**

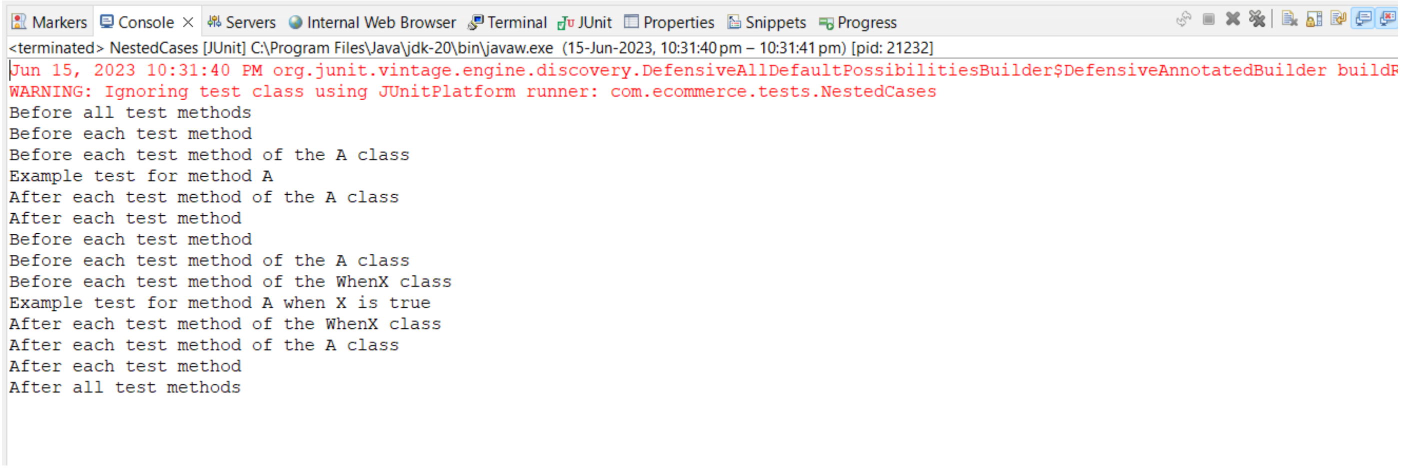
```
package com.ecommerce.tests;

import org.junit.jupiter.api.*;
import org.junit.jupiter.api.AfterAll;
import org.junit.jupiter.api.BeforeAll;
import org.junit.jupiter.api.Test;
import org.junit.platform.runner.~~JUnitPlatform~~;
import org.junit.runner.RunWith;
import static org.junit.jupiter.api.Assertions.assertEquals;

@DisplayName("JUnit 5 Repeated Tests Example")
@RunWith(~~JUnitPlatform~~.class)
public class RepeatedTests {
         @BeforeAll
            public static void init(){
                System.out.println("Before All init() method called");
            }

            @BeforeEach
            public void initEach(){
                System.out.println("Before Each initEach() method
called");
            }

            @Test
            @DisplayName("Add operation test")
            @RepeatedTest(5)
            void addNumber(TestInfo testInfo) {
                Calculator calculator = new Calculator();
                Assertions.assertEquals(2, calculator.add(1, 1), "1 + 1
should equal 2");
                System.out.println("===addNumber testcase executed===");
            }

            @AfterEach
            public void cleanUpEach(){
                System.out.println("After Each cleanUpEach() method
called");
```

```
            }

            @AfterAll
            public static void cleanUp(){
                System.out.println("After All cleanUp() method called");
            }
}
```

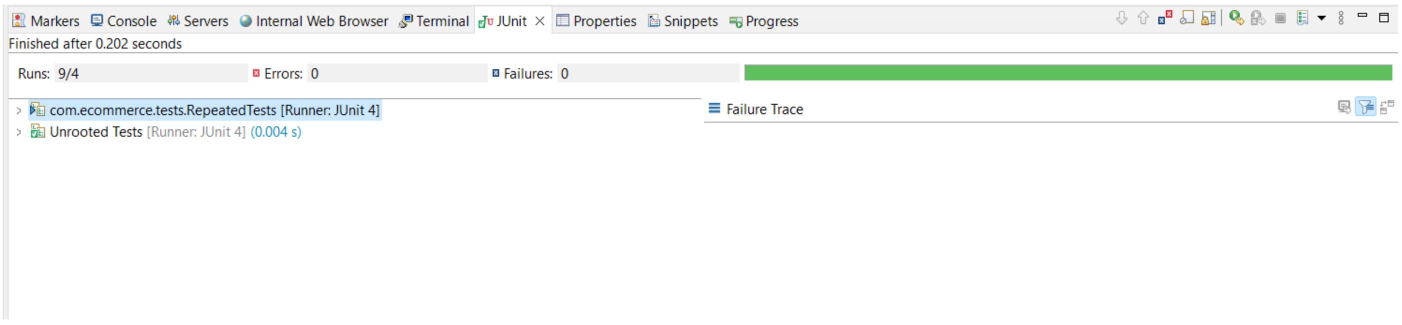
- **Output**



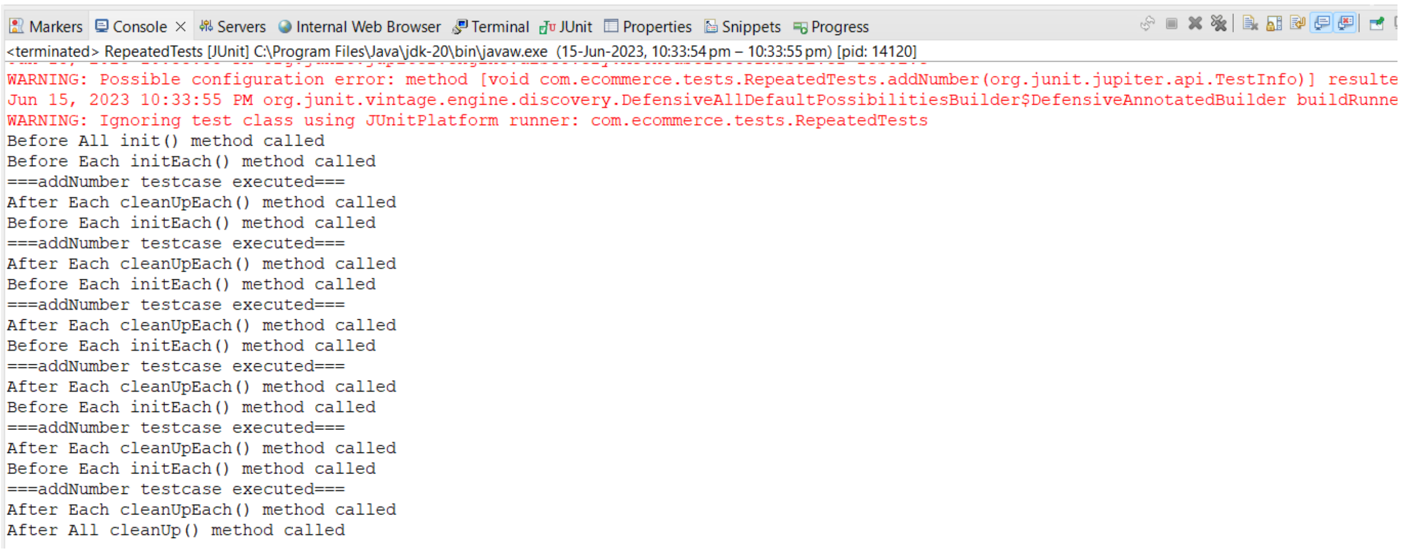
```
Finished after 0.129 seconds
Runs: 4/4    Errors: 0    Failures: 0
com.ecommerce.tests.NestedCases [Runner: JUnit 4] (0.017 s)
```



```
<terminated> NestedCases [JUnit] C:\Program Files\Java\jdk-20\bin\javaw.exe (15-Jun-2023, 10:31:40 pm – 10:31:41 pm) [pid: 21232]
Jun 15, 2023 10:31:40 PM org.junit.vintage.engine.discovery.DefensiveAllDefaultPossibilitiesBuilder$DefensiveAnnotatedBuilder buildR
WARNING: Ignoring test class using JUnitPlatform runner: com.ecommerce.tests.NestedCases
Before all test methods
Before each test method
Before each test method of the A class
Example test for method A
After each test method of the A class
After each test method
Before each test method
Before each test method of the A class
Before each test method of the WhenX class
Example test for method A when X is true
After each test method of the WhenX class
After each test method of the A class
After each test method
After all test methods
```



```
Finished after 0.202 seconds
Runs: 9/4    Errors: 0    Failures: 0
com.ecommerce.tests.RepeatedTests [Runner: JUnit 4]
Unrooted Tests [Runner: JUnit 4] (0.004 s)
```



```
<terminated> RepeatedTests [JUnit] C:\Program Files\Java\jdk-20\bin\javaw.exe (15-Jun-2023, 10:33:54 pm – 10:33:55 pm) [pid: 14120]
WARNING: Possible configuration error: method [void com.ecommerce.tests.RepeatedTests.addNumber(org.junit.jupiter.api.TestInfo)] resulte
Jun 15, 2023 10:33:55 PM org.junit.vintage.engine.discovery.DefensiveAllDefaultPossibilitiesBuilder$DefensiveAnnotatedBuilder buildRunne
WARNING: Ignoring test class using JUnitPlatform runner: com.ecommerce.tests.RepeatedTests
Before All init() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
Before Each initEach() method called
===addNumber testcase executed===
After Each cleanUpEach() method called
After All cleanUp() method called
```