

LAB19_ANP-C6339_JUNIT_TESTCASES

Due date: Wednesday, 20 December 2023, 5:30 AM

Maximum number of files: 1

Type of work: Individual work

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Assignment-1.

Create test methods for a MathOperations class that provides basic arithmetic operations. Write tests to cover addition, subtraction, multiplication, and division. Use parameterized tests to test different input values.

Solution:-

Testcase1-->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/xsd/maven-
4.0.0.xsd">
```

```
    <modelVersion>4.0.0</modelVersion>
```

```
    <groupId>com.mypack</groupId>
```

```
    <artifactId>Testcase1</artifactId>
```

```
    <version>0.0.1-SNAPSHOT</version>
```

```
    <dependencies>
```

```
        <dependency>
```

```
            <groupId>org.junit.jupiter</groupId>
```

```
            <artifactId>junit-jupiter-engine</artifactId>
```

```
            <version>5.9.1</version>
```

```
            <scope>test</scope>
```

```
        </dependency>
```

```
    </dependencies>
```

```
</project>
```

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Testcase1-->src/main/java-->com.mathOperations-->MathOperations.java

```
package com.MathOperations;
```

```
public class MathOperations {
```

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

```
        return a + b;
```

```
    }
```

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

```
        return a - b;
```

```
    }
```

```
    public int multiply(int a, int b) {
```

```
        return a * b;
```

```
    }
```

```
    public double divide(int a, int b) {
```

```
        if (b == 0) {
```

```
            throw new ArithmeticException("Cannot divide by zero");
```

```
        }
```

```
        return (double) a / b;
```

```
    }
```

```
}
```

```
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```

```
Testcase1-->src/test/java-->com.mathOperationsTest-->MathOperationsTest.java
```

```
package com.MathOperationsTest;
```

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

```
import org.junit.jupiter.params.ParameterizedTest;
```

```
import org.junit.jupiter.params.provider.CsvSource;
```

```
import static org.junit.jupiter.api.Assertions.assertEquals;
```

```
import static org.junit.jupiter.api.Assertions.assertThrows;
```

```
import com.MathOperations.*;
```

```
public class MathOperationsTest {
```

```
    @Test
```

```
    public void testAddition() {
```

```
        MathOperations math = new MathOperations();
```

```
        assertEquals(5, math.add(2, 3));
```

```
        assertEquals(-1, math.add(2, -3));
```

```
        assertEquals(0, math.add(0, 0));
```

```
    }
```

```
    @Test
```

```
    public void testSubtraction() {
```

```
        MathOperations math = new MathOperations();
```

```
        assertEquals(1, math.subtract(4, 3));
```

```
        assertEquals(5, math.subtract(2, -3));
```

```
    assertEquals(0, math.subtract(0, 0));  
}
```

@Test

```
public void testMultiplication() {  
    MathOperations math = new MathOperations();  
    assertEquals(6, math.multiply(2, 3));  
    assertEquals(-6, math.multiply(2, -3));  
    assertEquals(0, math.multiply(0, 0));  
}
```

@Test

```
public void testDivision() {  
    MathOperations math = new MathOperations();  
    assertEquals(2, math.divide(6, 3));  
    assertEquals(-2, math.divide(6, -3));  
    // Test division by zero  
    //assertEquals(Double.POSITIVE_INFINITY, math.divide(5, 0));  
    assertThrows(ArithmeticException.class, () -> {  
        math.divide(5, 0);  
    });  
}
```

@ParameterizedTest

```
@CsvSource({"2, 3, 5", "2, -3, -1", "0, 0, 0"})
```

```
public void testAdditionParameterized(int a, int b, int expected) {  
  
    MathOperations math = new MathOperations();  
  
    assertEquals(expected, math.add(a, b));  
  
}
```

```
@ParameterizedTest
```

```
@CsvSource({"4, 3, 1", "2, -3, 5", "0, 0, 0"})
```

```
public void testSubtractionParameterized(int a, int b, int expected) {  
  
    MathOperations math = new MathOperations();  
  
    assertEquals(expected, math.subtract(a, b));  
  
}
```

```
@ParameterizedTest
```

```
@CsvSource({"2, 3, 6", "-2, -3, 6", "0, 0, 0"})
```

```
public void testMultiplicationParameterized(int a, int b, int expected) {  
  
    MathOperations math = new MathOperations();  
  
    assertEquals(expected, math.multiply(a, b));  
  
}
```

```
@ParameterizedTest
```

```
@CsvSource({"6, 3, 2", "6, -3, -2", "0, 5, 0"})
```

```
public void testDivisionParameterized(int a, int b, double expected) {  
  
    MathOperations math = new MathOperations();  
  
    assertEquals(expected, math.divide(a, b));  
  
}
```

```
}
```

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Output:

Testcase1-->src/test/java-->com.mathOperationsTest-->MathOperationsTest.java

right click on MathOperationsTest.java-->new-->run as-->1 JUnit Test

Finished after 0.234seconds

Runs:4/4 Errors:0 Failures:0

MathOperationsTest[Runner:JUnit 5](0.000s)

testMultiplication()(0.000s)

testAddition()(0.000s)

testDivision()(0.000s)

testSubtraction()(0.000s)















