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Exercise 1: Setting Up Junit

Pom.xml

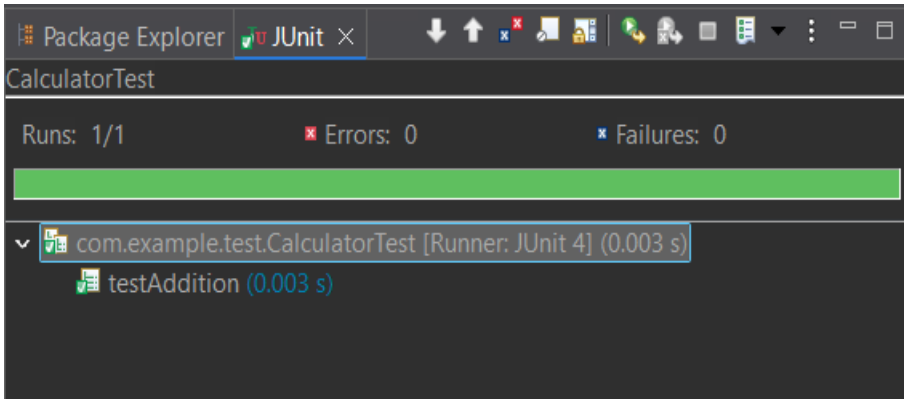
```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 https://maven.apache.org/xsd/maven-4.0.0.xsd">
 <modelVersion>4.0.0</modelVersion>
 <groupId>com.example</groupId>
 <artifactId>JUnitSetup</artifactId>
 <version>0.0.1-SNAPSHOT</version>
 <name>JUnitSetup</name>
 <dependencies>
  <dependency>
   <groupId>junit</groupId>
   <artifactId>junit</artifactId>
   <version>4.13.2</version>
   <scope>test</scope>
  </dependency>
 </dependencies>
 <build>
  <plugins>
   <plugin>
    <groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-compiler-plugin</artifactId>
    <version>3.11.0</version>
    <configuration>
     <source>11</source>
     <target>11</target>
```

```
      </configuration>
    </plugin>
  </plugins>
 </build>
</project>
```

CalculatorTest.java

```
package com.example.test;
import org.junit.Test;
import static org.junit.Assert.*;
public class CalculatorTest {
   @Test
   public void testAddition() {
      int result = 2 + 3;
      assertEquals(5, result);
   }
}
```

Output :

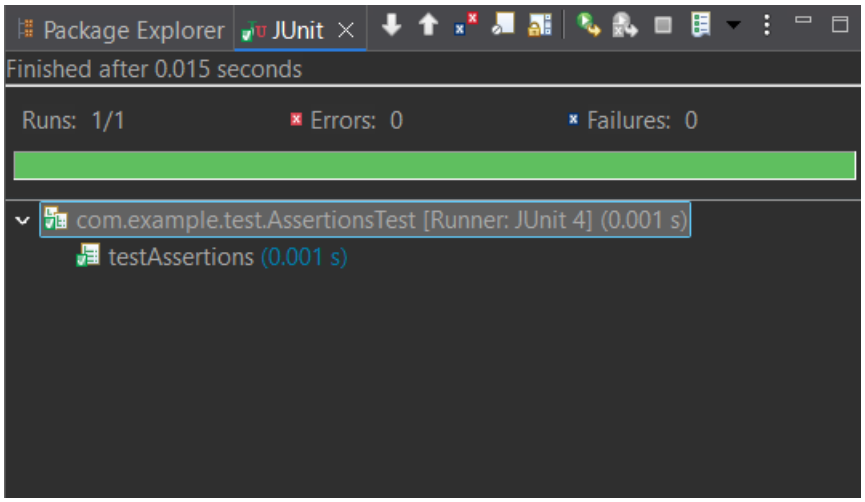


Exercise 3: Assertions in Junit

AssertionsTest.java

```
package com.example.test;
import static org.junit.Assert.*;
import org.junit.Test;
public class AssertionsTest
{
   @Test
   public void testAssertions() {
      assertEquals(5, 2 + 3);
      assertTrue(5 > 3);
      assertFalse(5 < 3);
      assertNull(null);
      assertNotNull(new Object());
   }
}
```

Output :



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

Calculator.java

```
package com.example;
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

```
package com.example.test;
import com.example.Calculator;
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 created.");
    }
    @After
    public void tearDown()
    {
        calculator = null;
        System.out.println("Teardown: Calculator cleaned up.");
    }
    @Test
    public void testAdd()
    {
        int result = calculator.add(2, 3);
        assertEquals(5, result);
    }
    @Test
    public void testSubtract()
    {
        int result = calculator.subtract(10, 4);
        assertEquals(6, result);
    }
}
```

Output :