WEEK-2

(Implemented in Eclipse)

1)Junit Testing

Exercise 1:Setting up JUnit:

1. Created a new Java project in Eclipse IDE

2. Added JUnit dependency to your project.

pom.xml

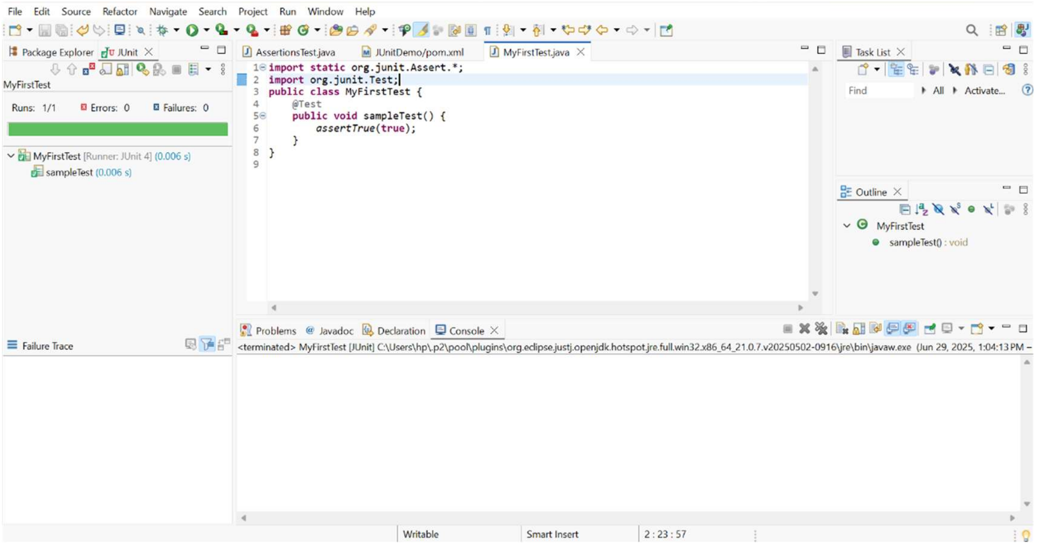
```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.example</groupId>
  <artifactId>JUnitDemo</artifactId>
  <version>0.0.1-SNAPSHOT</version>
  <dependencies>
    <dependency>
        <groupId>junit</groupId>
        <artifactId>junit</artifactId>
        <version>4.13.2</version>
        <scope>test</scope>
    </dependency>
</dependencies>
</project>
```

3. Created a new test class in your project.

MyFirstTest.java

```
import static org.junit.Assert.*;
import org.junit.Test;
public class MyFirstTest {
	@Test
    public void sampleTest() {
        assertTrue(true);
	}
}
```

Output:



Runs: 1/1 Errors: 0 Failures: 0

MyFirstTest [Runner: JUnit 4] (0.006 s)
sampleTest (0.006 s)

```
import static org.junit.Assert.*;
import org.junit.Test;
public class MyFirstTest {
    @Test
    public void sampleTest() {
        assertTrue(true);
    }
}
```

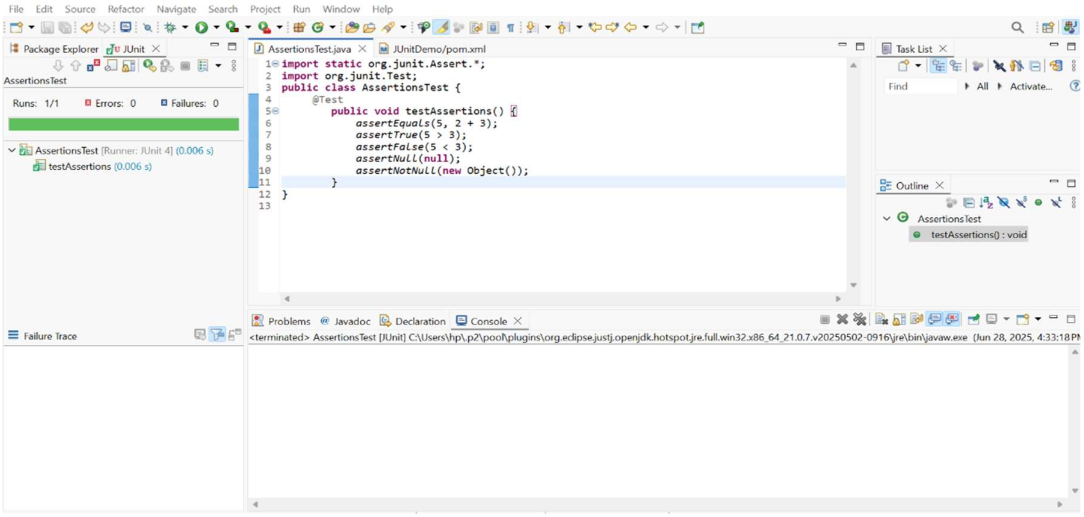
```
<terminated> MyFirstTest [JUnit] C:\Users\hp\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.7.v20250502-0916\jre\bin\javaw.exe (Jun 29, 2025, 1:04:13 PM –
```

Exercise 3: Assertions in JUnit:

Write tests using various JUnit assertions.

```
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:



Runs: 1/1 Errors: 0 Failures: 0

AssertionsTest [Runner: JUnit 4] (0.006 s)
testAssertions (0.006 s)

```
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());
           }
}
```

```
<terminated> AssertionsTest [JUnit] C:\Users\hp\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.7.v20250502-0916\jre\bin\javaw.exe (Jun 28, 2025, 4:33:18 PM
```

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

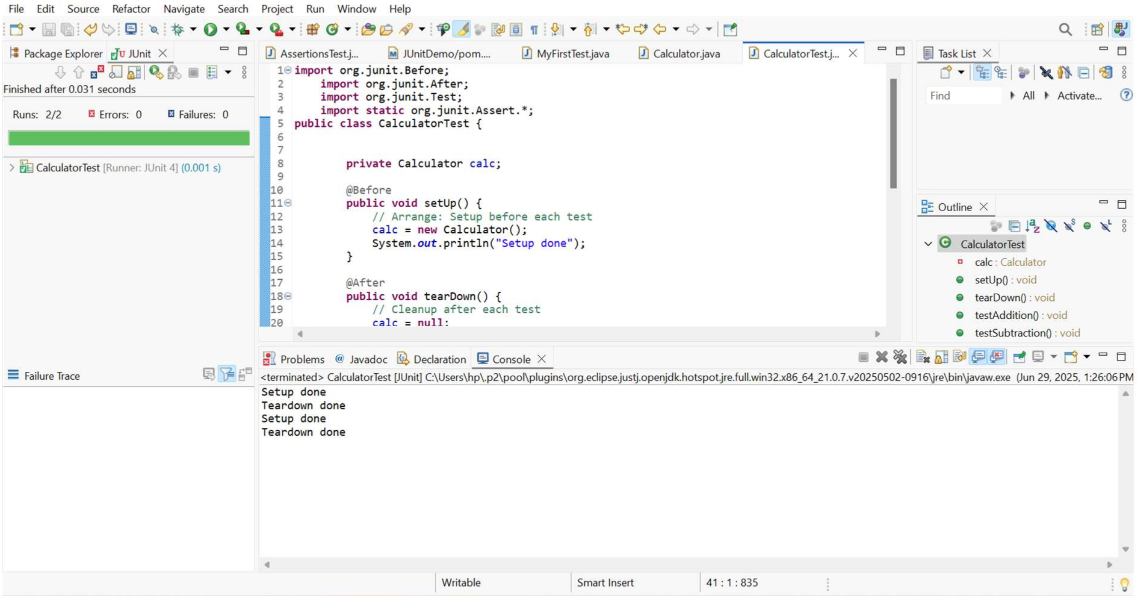
Calculator.java

```
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 calc;

          @Before
          public void setUp() {
              // Arrange: Setup before each test
              calc = new Calculator();
              System.out.println("Setup done");
          }

          @After
          public void tearDown() {
              // Cleanup after each test
              calc = null;
              System.out.println("Teardown done");
          }

          @Test
          public void testAddition() {
              // Act
              int result = calc.add(2, 3);

              // Assert
              assertEquals(5, result);
          }

          @Test
          public void testSubtraction() {
              int result = calc.subtract(10, 4);
              assertEquals(6, result);
          }
       }
```

Output:



Finished after 0.031 seconds

Runs: 2/2 Errors: 0 Failures: 0

CalculatorTest [Runner: JUnit 4] (0.001 s)

```java
import org.junit.Before;
    import org.junit.After;
    import org.junit.Test;
    import static org.junit.Assert.*;
public class CalculatorTest {


        private Calculator calc;

        @Before
        public void setUp() {
            // Arrange: Setup before each test
            calc = new Calculator();
            System.out.println("Setup done");
        }

        @After
        public void tearDown() {
            // Cleanup after each test
            calc = null;
```

```
<terminated> CalculatorTest [JUnit] C:\Users\hp\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.7.v20250502-0916\jre\bin\javaw.exe  (Jun 29, 2025, 1:26:06 PM
Setup done
Teardown done
Setup done
Teardown done
```