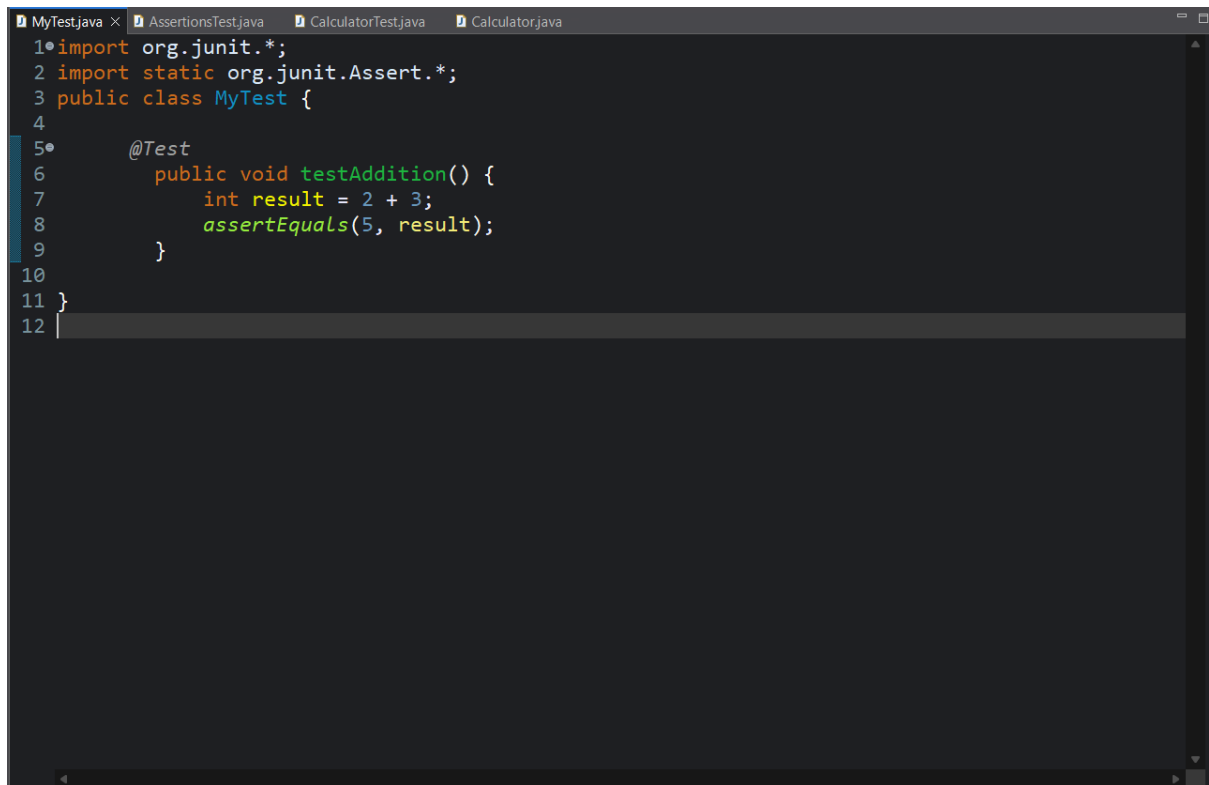


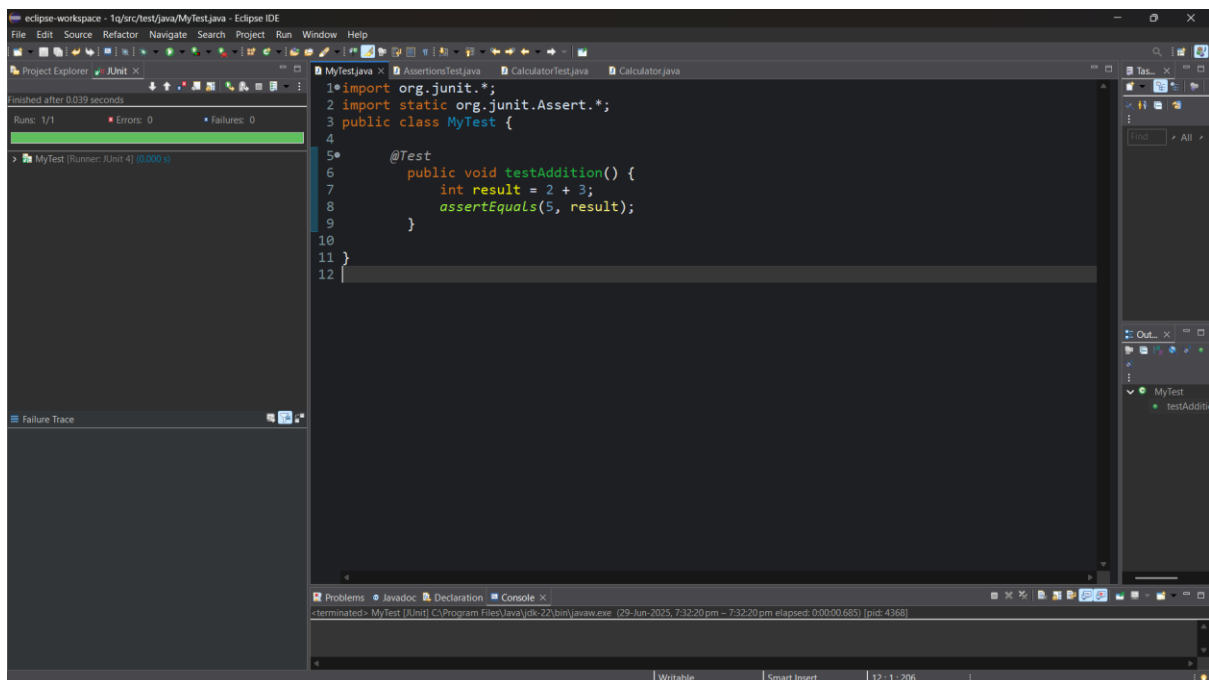
## WEEK 2

### Setting Up Junit



```
1 import org.junit.*;
2 import static org.junit.Assert.*;
3 public class MyTest {
4
5     @Test
6     public void testAddition() {
7         int result = 2 + 3;
8         assertEquals(5, result);
9     }
10
11 }
12
```

### Output



The screenshot shows the Eclipse IDE with the test results. The Project Explorer on the left shows the 'JUnit' folder. The Console at the bottom shows the test execution details.

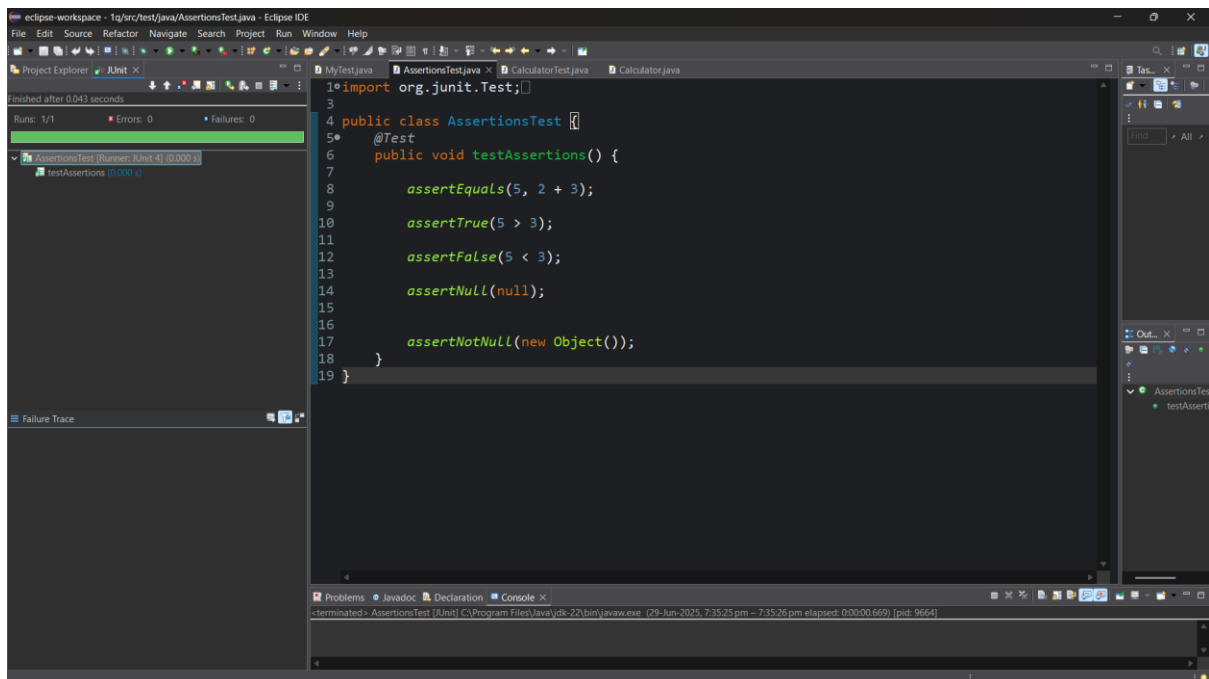
```
Finished after 0.039 seconds
Runs: 1/1 Errors: 0 Failures: 0
MyTest (Runner: JUnit 4) (0.000 s)
Failure Trace
<terminated> MyTest [JUnit] C:\Program Files\Java\jdk-22\bin\javaw.exe (29-Jun-2025, 7:32:20 pm - 7:32:20 pm elapsed: 0.0000.685) [pid: 4368]
```

# Assertions in Junit

## Code

```
1 import org.junit.Test;
2
3
4 public class AssertionsTest {
5     @Test
6     public void testAssertions() {
7
8         assertEquals(5, 2 + 3);
9
10        assertTrue(5 > 3);
11
12        assertFalse(5 < 3);
13
14        assertNull(null);
15
16
17        assertNotNull(new Object());
18    }
19 }
```

## Output



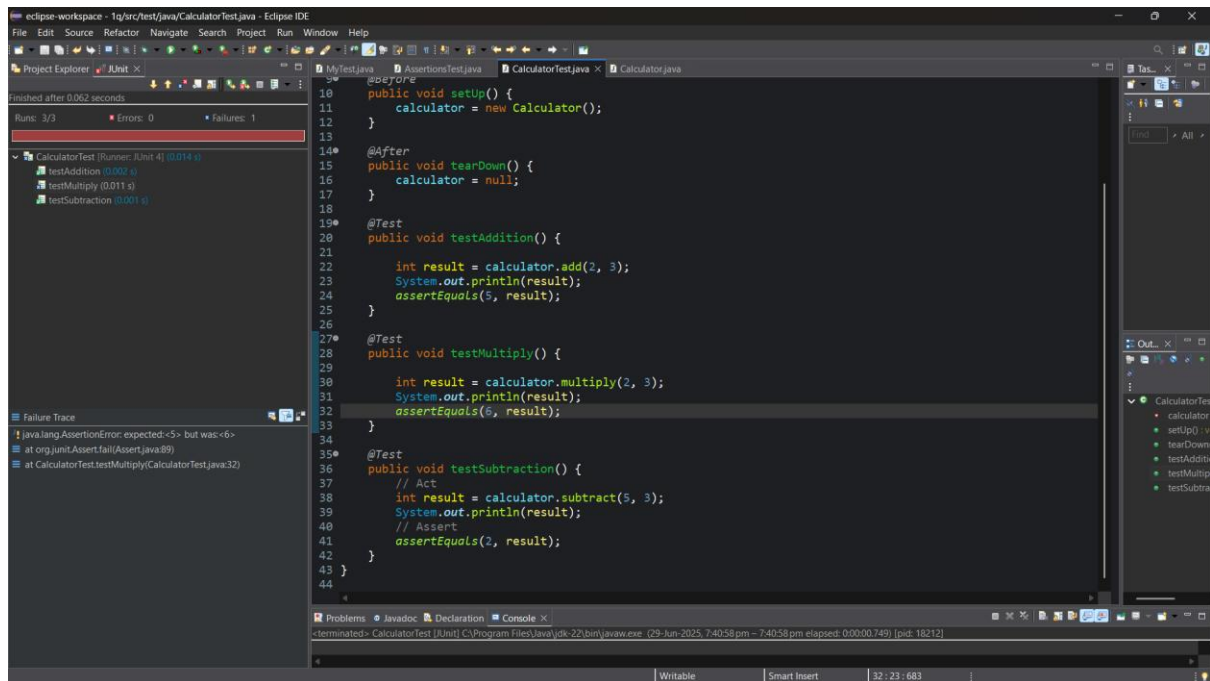
# Arrange-Act-Assert (AAA) Pattern, Test Fixtures, Setup and Teardown Methods in Junit

## Code

```
MyTest.java AssertionsTest.java CalculatorTest.java × Calculator.java
1 import org.junit.Before;
2 import org.junit.After;
3 import org.junit.Test;
4 import static org.junit.Assert.*;
5
6 public class CalculatorTest {
7     private Calculator calculator;
8
9     @Before
10    public void setUp() {
11        calculator = new Calculator();
12    }
13
14    @After
15    public void tearDown() {
16        calculator = null;
17    }
18
19    @Test
20    public void testAddition() {
21
22        int result = calculator.add(2, 3);
23        System.out.println(result);
24        assertEquals(5, result);
25    }
26
27    @Test
28    public void testMultiply() {
29
30        int result = calculator.multiply(2, 3);
31        System.out.println(result);
32        assertEquals(5, result);
33    }
34
35    @Test
36    public void testSubtraction() {
37        // Act
38        int result = calculator.subtract(5, 3);
39        System.out.println(result);
40        // Assert
41        assertEquals(2, result);
42    }
43 }
44
```

```
1 public class Calculator {
2     public int add(int a, int b) {
3         return a + b;
4     }
5
6     public int subtract(int a, int b) {
7         return a - b;
8     }
9
10    public int multiply(int a, int b) {
11        return a * b;
12    }
13
14    public int divide(int a, int b) {
15        if (b == 0) {
16            throw new IllegalArgumentException("Cannot divide by zero");
17        }
18        return a / b;
19    }
20 }
21
```

## Output



The screenshot shows the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The Project Explorer on the left shows a project named 'CalculatorTest' with a sub-project 'JUnit'. The Run console shows the test results: 'Finished after 0.062 seconds', 'Runs: 3/3', 'Errors: 0', and 'Failures: 1'. The Failure Trace shows a 'java.lang.AssertionError: expected:<5> but was:<6>' at 'org.junit.Assert.fail(Assert.java:89)' and 'at CalculatorTest.testMultiply(CalculatorTest.java:32)'. The main editor shows the code for 'CalculatorTest.java' with the following content:

```
10 public void setUp() {
11     calculator = new Calculator();
12 }
13
14 @After
15 public void tearDown() {
16     calculator = null;
17 }
18
19 @Test
20 public void testAddition() {
21     int result = calculator.add(2, 3);
22     System.out.println(result);
23     assertEquals(5, result);
24 }
25
26 @Test
27 public void testMultiply() {
28     int result = calculator.multiply(2, 3);
29     System.out.println(result);
30     assertEquals(6, result);
31 }
32
33 @Test
34 public void testSubtraction() {
35     // Act
36     int result = calculator.subtract(5, 3);
37     System.out.println(result);
38     // Assert
39     assertEquals(2, result);
40 }
41
42 }
43
44 }
```

## Making a test case to fail