

Handson 9: Arrange-Act-Assert (AAA) Pattern, Test Fixtures, Setup and Teardown Methods in Junit

1.This exercise is all about organizing your unit tests properly using the AAA pattern (Arrange-Act-Assert), and learning how to write setup and teardown methods with JUnit annotations like `@Before` and `@After`.

Understanding from this :

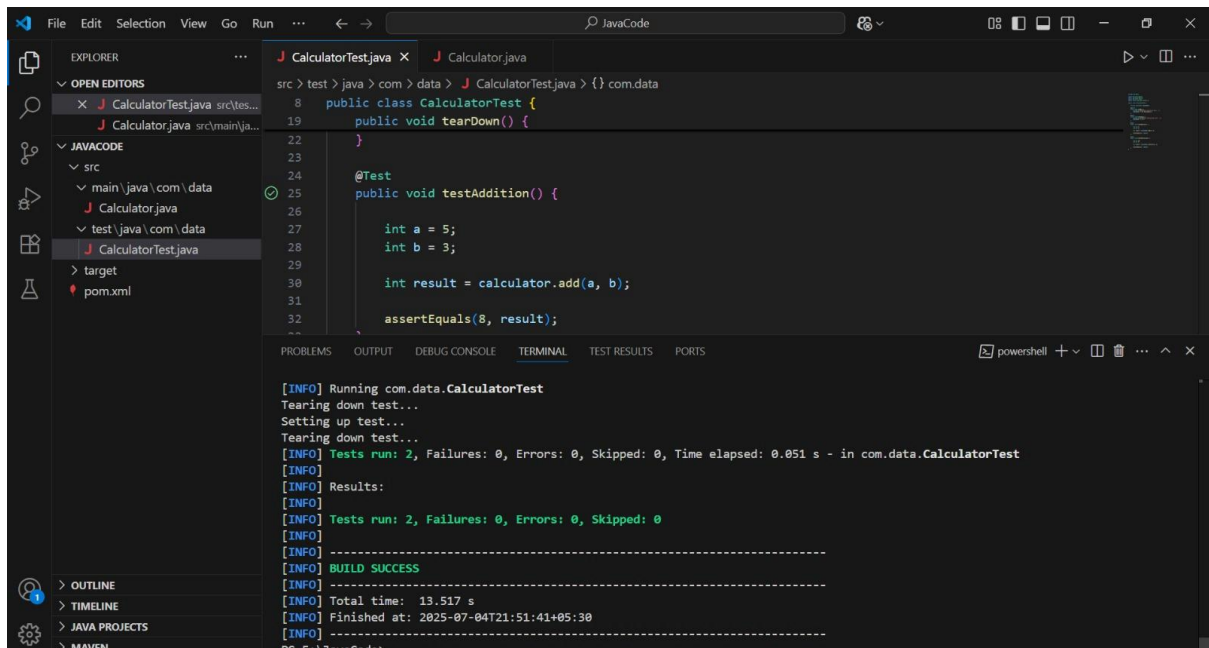
- Structure your test cases cleanly (so they're readable & maintainable)
- Avoid code repetition using setup (`@Before`) and cleanup (`@After`) methods
- Understand what happens *before* and *after* each test method runs

The AAA Pattern: Arrange-Act-Assert

This is a coding/testing style to write tests that are easy to read and understand. Here's what it means:

- Arrange: Set up the objects and values you need (e.g., create an object, set initial data)
- Act: Call the method you want to test (do the action)
- Assert: Check the result (was it what you expected?)

OUTPUT SNAPSHOTS:

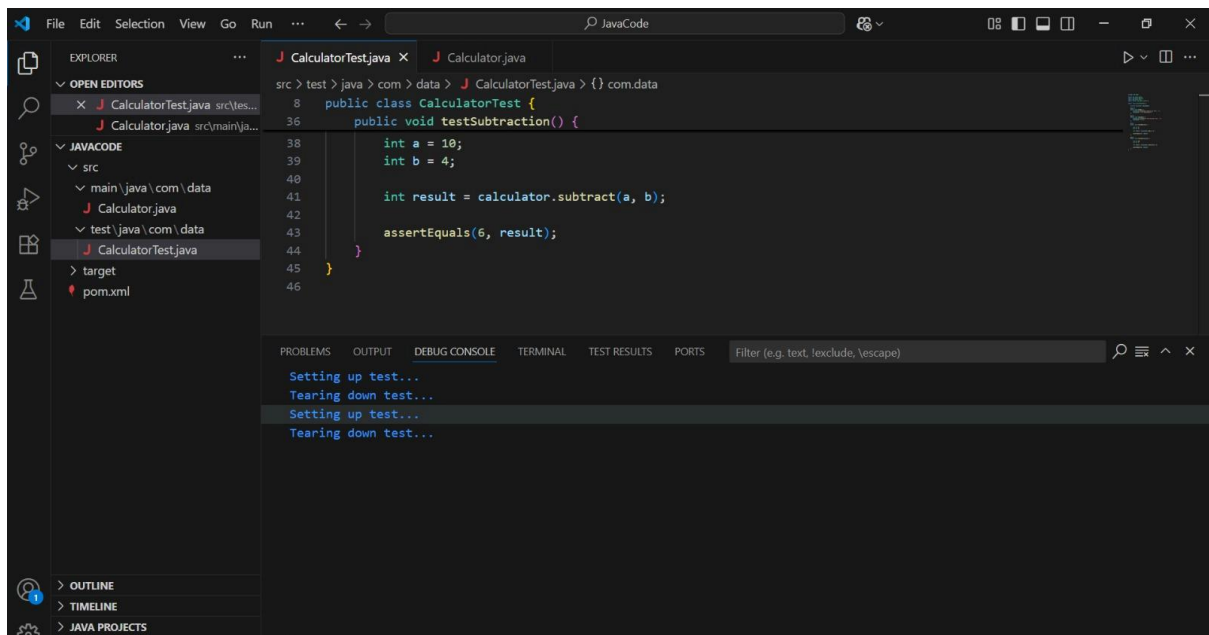


The screenshot shows an IDE with the following components:

- EXPLORER:** Shows the project structure with 'src' containing 'main' and 'test' directories. 'test' contains 'com' which contains 'data' which contains 'CalculatorTest.java'.
- EDITOR:** Displays the code for 'CalculatorTest.java'. The code includes a package declaration, imports, a class declaration, and a test method 'testAddition()'.
- TERMINAL:** Shows the output of the test run. The output indicates that the test passed successfully.

```
src > test > java > com > data > CalculatorTest.java > {} com.data
8 public class CalculatorTest {
19 public void tearDown() {
22 }
23
24 @Test
25 public void testAddition() {
26
27     int a = 5;
28     int b = 3;
29
30     int result = calculator.add(a, b);
31
32     assertEquals(8, result);
33 }
```

```
[INFO] Running com.data.CalculatorTest
Tearing down test...
Setting up test...
Tearing down test...
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.051 s - in com.data.CalculatorTest
[INFO] Results:
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0
[INFO] BUILD SUCCESS
[INFO] Total time: 13.517 s
[INFO] Finished at: 2025-07-04T21:51:41+05:30
[INFO]
```



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- EXPLORER:** Shows the project structure with 'src' containing 'main' and 'test' directories. 'test' contains 'com' which contains 'data' which contains 'CalculatorTest.java'.
- EDITOR:** Displays the code for 'CalculatorTest.java'. The code includes a package declaration, imports, a class declaration, and a test method 'testSubtraction()'.
- DEBUG CONSOLE:** Shows the output of the test run. The output indicates that the test failed.

```
src > test > java > com > data > CalculatorTest.java > {} com.data
8 public class CalculatorTest {
36 public void testSubtraction() {
38     int a = 10;
39     int b = 4;
40
41     int result = calculator.subtract(a, b);
42
43     assertEquals(6, result);
44 }
45 }
```

```
Setting up test...
Tearing down test...
Setting up test...
Tearing down test...
```