

# Software Engineering Lab Practical 10

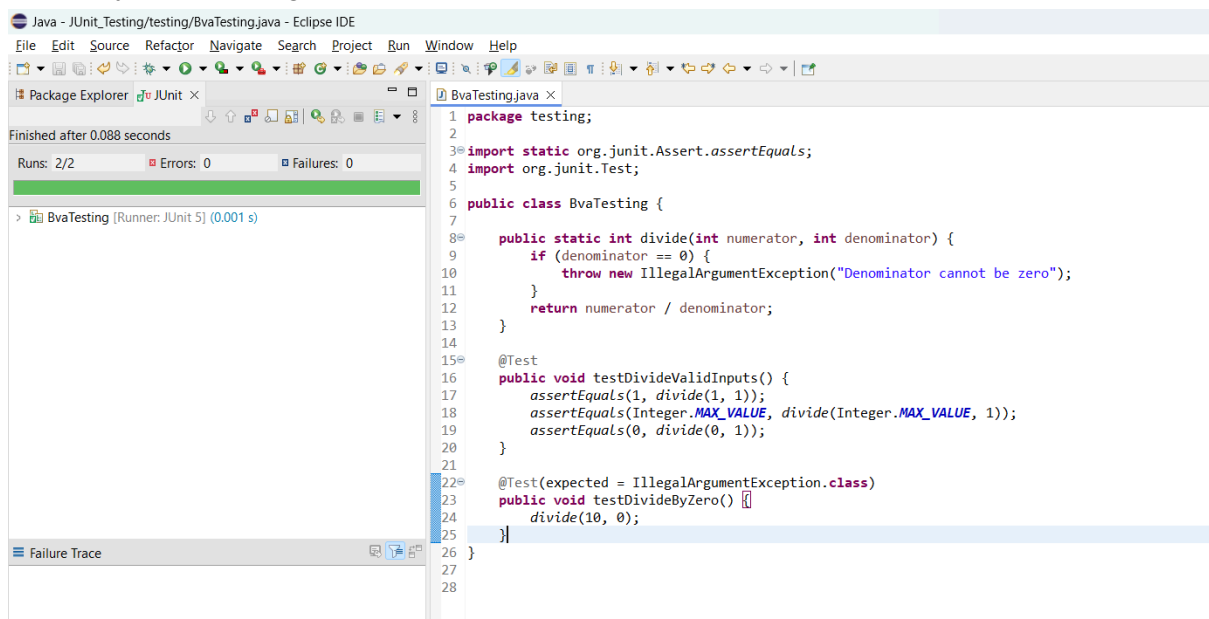
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Roll No. : 03

Batch : B1

**Aim:** To perform White-Box Testing and Black-Box Testing on a test case to demonstrate application/code testing

Boundary value testing -



```
1 package testing;
2
3 import static org.junit.Assert.assertEquals;
4 import org.junit.Test;
5
6 public class BvaTesting {
7
8     public static int divide(int numerator, int denominator) {
9         if (denominator == 0) {
10             throw new IllegalArgumentException("Denominator cannot be zero");
11         }
12         return numerator / denominator;
13     }
14
15     @Test
16     public void testDivideValidInputs() {
17         assertEquals(1, divide(1, 1));
18         assertEquals(Integer.MAX_VALUE, divide(Integer.MAX_VALUE, 1));
19         assertEquals(0, divide(0, 1));
20     }
21
22     @Test(expected = IllegalArgumentException.class)
23     public void testDivideByZero() {
24         divide(10, 0);
25     }
26 }
27
28
```

Java - JUnit\_Testing/testing/BvaTesting.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

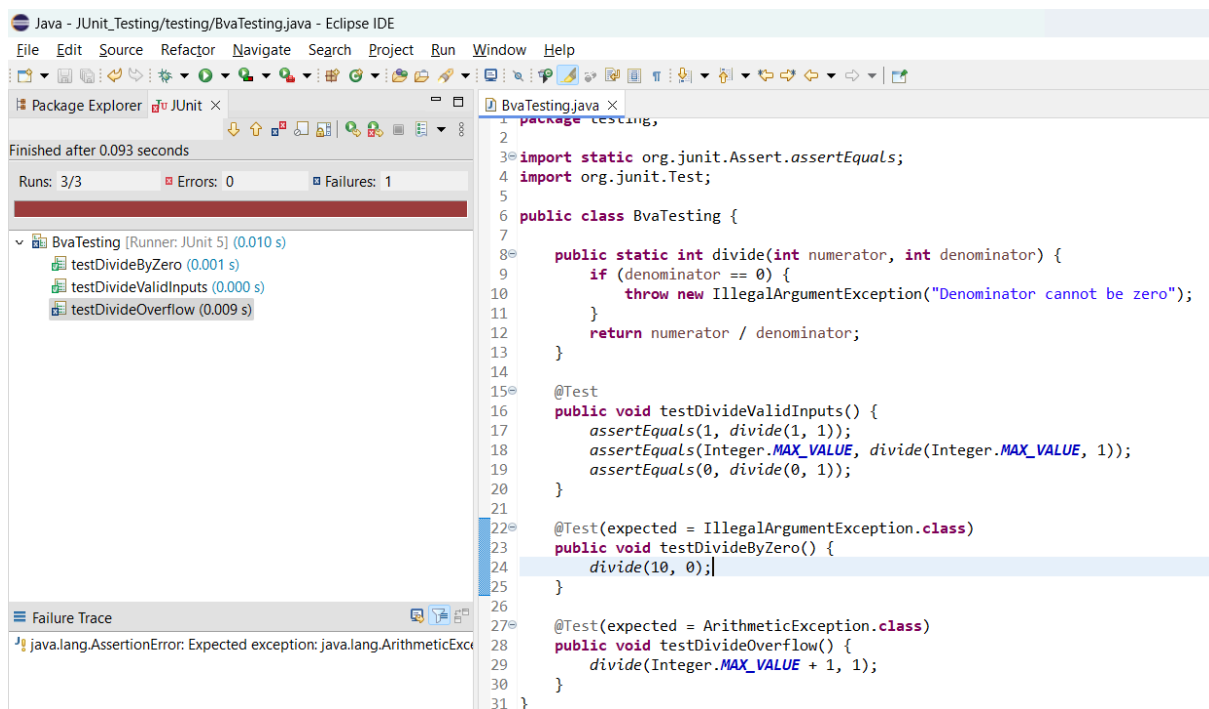
Package Explorer JUnit x

Finished after 0.088 seconds

Runs: 2/2 Errors: 0 Failures: 0

BvaTesting [Runner: JUnit 5] (0.001 s)

Failure Trace



```
1 package testing;
2
3 import static org.junit.Assert.assertEquals;
4 import org.junit.Test;
5
6 public class BvaTesting {
7
8     public static int divide(int numerator, int denominator) {
9         if (denominator == 0) {
10             throw new IllegalArgumentException("Denominator cannot be zero");
11         }
12         return numerator / denominator;
13     }
14
15     @Test
16     public void testDivideValidInputs() {
17         assertEquals(1, divide(1, 1));
18         assertEquals(Integer.MAX_VALUE, divide(Integer.MAX_VALUE, 1));
19         assertEquals(0, divide(0, 1));
20     }
21
22     @Test(expected = IllegalArgumentException.class)
23     public void testDivideByZero() {
24         divide(10, 0);
25     }
26
27     @Test(expected = ArithmeticException.class)
28     public void testDivideOverflow() {
29         divide(Integer.MAX_VALUE + 1, 1);
30     }
31 }

```

Java - JUnit\_Testing/testing/BvaTesting.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit x

Finished after 0.093 seconds

Runs: 3/3 Errors: 0 Failures: 1

BvaTesting [Runner: JUnit 5] (0.010 s)

- testDivideByZero (0.001 s)
- testDivideValidInputs (0.000 s)
- testDivideOverflow (0.009 s)

Failure Trace

java.lang.AssertionError: Expected exception: java.lang.ArithmeticException

## Experimental testing -

The screenshot displays the Eclipse IDE interface with three open Java files: `BvaTesting.java`, `ExperimentalTesting.java`, and `ExperimentalTestingTest.java`.

**ExperimentalTesting.java** (lines 1-16):

```
1 package testing;
2
3 public class ExperimentalTesting {
4
5     public static int add(int a, int b) {
6         return a + b;
7     }
8
9     public static double calculateAreaOfRectangle(int length, int width) {
10         if (length <= 0 || width <= 0) {
11             throw new IllegalArgumentException("Length and width must be positive numbers");
12         }
13         return length * width;
14     }
15 }
16
```

**ExperimentalTestingTest.java** (lines 1-32):

```
1 package testing;
2
3 import static org.junit.Assert.assertEquals;
4 import static org.junit.Assert.fail;
5 import org.junit.Test;
6
7 public class ExperimentalTestingTest {
8
9     @Test
10     public void testAdd() {
11         assertEquals(5, ExperimentalTesting.add(2, 3));
12         assertEquals(-10, ExperimentalTesting.add(-5, -5));
13         assertEquals(0, ExperimentalTesting.add(0, 0));
14     }
15
16     @Test
17     public void testCalculateAreaOfRectangle() {
18         assertEquals(20.0, ExperimentalTesting.calculateAreaOfRectangle(4, 5), 0.0);
19         assertEquals(30.0, ExperimentalTesting.calculateAreaOfRectangle(3, 10), 0.0);
20     }
21
22     @Test(expected = IllegalArgumentException.class)
23     public void testCalculateAreaOfRectangleWithNegativeValues() {
24         ExperimentalTesting.calculateAreaOfRectangle(-4, 5);
25     }
26
27     @Test(expected = IllegalArgumentException.class)
28     public void testCalculateAreaOfRectangleWithZeroValues() {
29         ExperimentalTesting.calculateAreaOfRectangle(0, 5);
30     }
31 }
32
```

The bottom of the IDE shows the **JUnit** test runner results for `ExperimentalTestingTest`. It indicates that the tests finished after 0.082 seconds, with 4/4 runs, 0 errors, and 0 failures. The test runner is JUnit 5, and the execution time is 0.001 s.

Java - JUnit\_Testing/testing/ExperimentalTestingTest.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit x

Finished after 0.096 seconds

Runs: 4/4 Errors: 0 Failures: 1

ExperimentalTestingTest [Runner: JUnit 5] (0.012 s)

- testCalculateAreaOfRectangleWithNegativeValues (0.002 s)
- testAdd (0.009 s)
- testCalculateAreaOfRectangle (0.000 s)
- testCalculateAreaOfRectangleWithZeroValues (0.001 s)

Failure Trace

```

java.lang.AssertionError: expected:<5> but was:<-5>
    at org.junit.Assert.fail(Assert.java:89)
    at testing.ExperimentalTestingTest.testAdd(ExperimentalTestingTest.java:13)

```

```

1 package testing;
2
3 import static org.junit.Assert.assertEquals;
4 import static org.junit.Assert.fail;
5 import org.junit.Test;
6
7 public class ExperimentalTestingTest {
8
9     @Test
10    public void testAdd() {
11        assertEquals(5, ExperimentalTesting.add(2, 3));
12        assertEquals(-10, ExperimentalTesting.add(-5, -5));
13        assertEquals(5, ExperimentalTesting.add(3, 3));
14    }
15
16    @Test
17    public void testCalculateAreaOfRectangle() {
18        assertEquals(20.0, ExperimentalTesting.calculateAreaOfRectangle(4, 5), 0.0);
19        assertEquals(30.0, ExperimentalTesting.calculateAreaOfRectangle(3, 10), 0.0);
20    }
21
22    @Test(expected = IllegalArgumentException.class)
23    public void testCalculateAreaOfRectangleWithNegativeValues() {
24        ExperimentalTesting.calculateAreaOfRectangle(-4, 5);
25    }
26
27    @Test(expected = IllegalArgumentException.class)
28    public void testCalculateAreaOfRectangleWithZeroValues() {
29        ExperimentalTesting.calculateAreaOfRectangle(0, 5);
30    }
31 }
32

```

## Selenium :

Selenium IDE - DemoWebsiteTest\*

Project: DemoWebsiteTest\*

Executing -

Leetcode\_Website\_Testin | https://leetcode.com/

Command	Target	Value
1. open	https://leetcode.com/	
2. set window size	1051x797	
3. click	linkText=Problems	
4. click	linkText=1. Two Sum	
5. mouse down at	css= flexlayout__splitter_vert	232,308
6. // mouse move at	css=body > div:nth-child(21)	262,315
7. // mouse up at	css=body > div:nth-child(21)	262,315
8. run script	window.scrollTo(0,0)	
9. mouse down	css= view-line:nth-child(9). mtk3:nth-child(1)	
10. mouse up	css= flex:nth-child(2). view.lines	

Command

Target

Value

Description

Runs: 1 Failures: 0

Log Reference

20. mouseOut on css= text-text-primary > .text-sm OK 00:56:03

21. Trying to find css= text-green-60 > .text-sm... OK 00:56:04

22. click on css= text-green-60 > .text-sm OK 00:56:05

23. mouseOut on css= text-green-60 > .text-sm OK 00:56:06

24. mouseOver on css= text-text-primary > .text-sm OK 00:56:06

25. mouseOut on css= text-text-primary > .text-sm OK 00:56:06

'Leetcode\_Website\_Testing' completed successfully 00:56:06

Selenium IDE - DemoWebsiteTest\*

Project: DemoWebsiteTest\*

Executing

https://leetcode.com/

	Command	Target	Value
1	✓ open	https://leetcode.com/	
2	✓ set window size	1051x797	
3	✓ click	linkText=Problems	
4	✓ click	linkText=1. Two Sum	
5	✓ mouse down at	css= flexlayout__splitter_vert	232,308
6	✗ mouse move at	css=body > div:nth-child(21)	262,315
7	mouse up at	css=body > div:nth-child(21)	262,315
8	run script	window.scrollTo(0,0)	
9	mouse down	css= view-line:nth-child(9) .mtk3:nth-child(1)	
10	mouse up	css= flex:nth-child(2) .view-lines	

Command

Target

Value

Description

Runs: 1

Failures: 1

Log

Reference

1. open on https://leetcode.com/ OK

2. setWindowSize on 1051x797 OK

3. click on linkText=Problems OK

4. click on linkText=1. Two Sum OK

5. Trying to find css= flexlayout\_\_splitter\_vert... OK

6. Trying to find css=body > div:nth-child(21)... Failed:  
Implicit Wait timed out after 30000ms

'Leetcode\_Website\_Testing' ended with 1 error(s)

00:56:52

00:56:52

00:56:52

00:56:53

00:56:58

00:56:59

00:57:29