SuperSet ID : 6314413 **Shaik Balaji Mahammad Rafi**

HANDSON EXERCISES - WEEK 2

Skill : Test driven development and Logging framework

JUnit_Basic Testing Exercises

Exercise 1 : Setting Up JUnit

CODE :

MessageUtil.java :

```java
package com.rafi;

public class MessageUtil {
    private String message;

    public MessageUtil(String message) {
        this.message = message;
    }

    public String printMessage() {
        return message;
    }
}
```

MessageUtilTest.java :

```java
package com.rafi;

import org.junit.Test;
import static org.junit.Assert.assertEquals;

public class MessageUtilTest {

    @Test
    public void testPrintMessage() {
        MessageUtil messageUtil = new MessageUtil("Hello World");
        String message = messageUtil.printMessage();
        assertEquals("Hello World", message);
    }
}
```

OUTPUT :

Exercise 3 : Assertions in JUnit

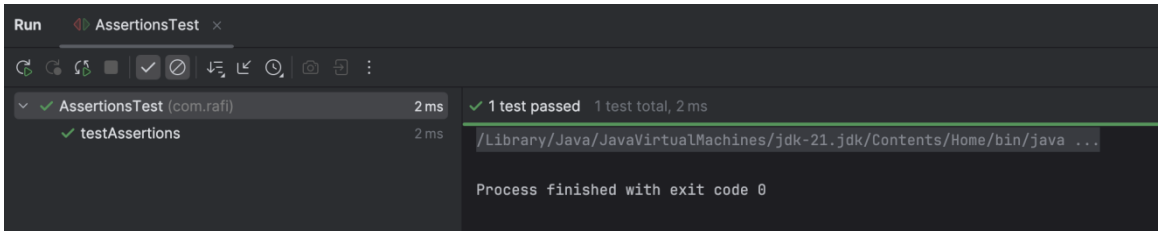
CODE :

AssertionTest.java :

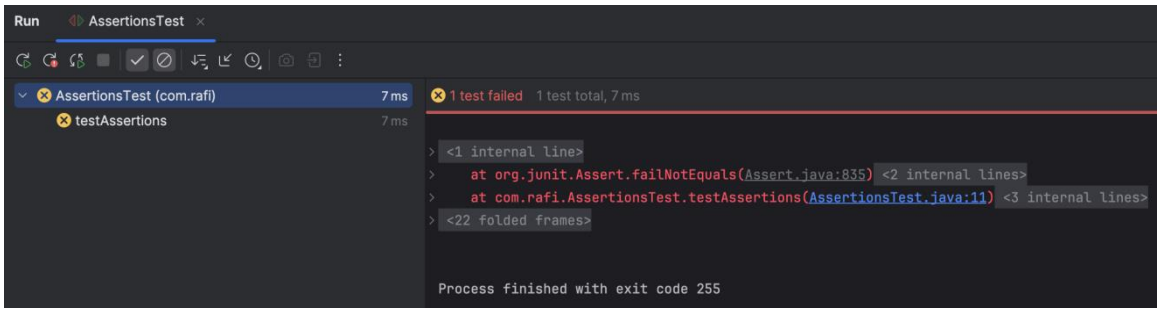
```
package com.rafi;

import org.junit.Test;
import static org.junit.Assert.*;

public class AssertionsTest {

    @Test
    public void testAssertions() {
        assertEquals(5, 2 + 3);

        //assertEquals(5, 2 + 2);  this will fail

        assertTrue(5 > 3);

        assertFalse(5 < 3);

        assertNull(null);

        assertNotNull(new Object());
    }
}
```

OUTPUT :

Success case



Sample Failure case



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

CODE :

Calculator.java :

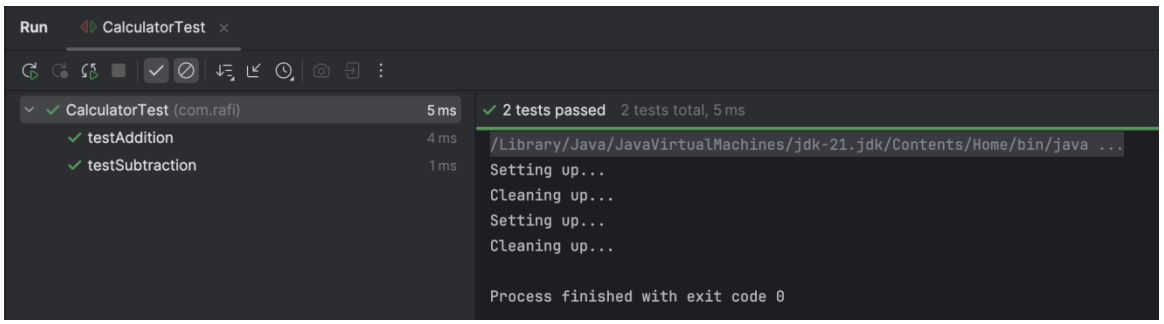
```
package com.rafi;

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.rafi;

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() {
        System.out.println("Setting up...");
        calculator = new Calculator();
    }

    @After
    public void tearDown() {
        System.out.println("Cleaning up...");
        calculator = null;
    }

    @Test
    public void testAddition() {
        // Arrange
        int a = 5;
        int b = 3;
```

```
        int result = calculator.add(a, b);

        assertEquals(8, result);
    }

    @Test
    public void testSubtraction() {
        // Arrange
        int a = 10;
        int b = 4;

        // Act
        int result = calculator.subtract(a, b);

        // Assert
        assertEquals(6, result);
    }
}
```

OUTPUT :



Mockito exercises

Exercise 1 : Mocking and Stubbing

CODE :

ExternalApi.java :

```
package com.rafi;

public interface ExternalApi {
    String getData();
}
```

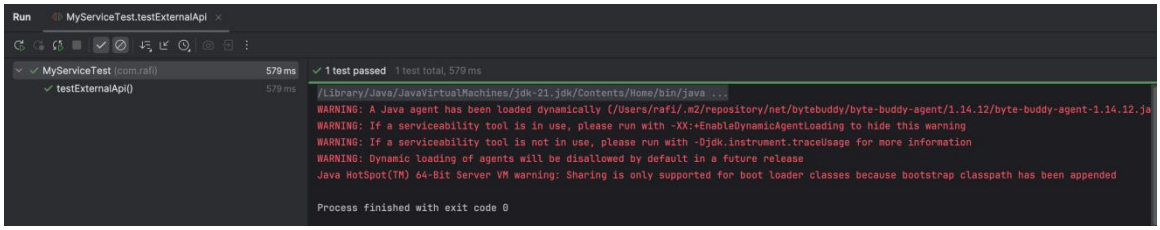
MyService.java :

```
package com.rafi;

public class MyService {
    private ExternalApi api;

    public MyService(ExternalApi api) {
        this.api = api;
    }

    public String fetchData() {
        return api.getData();
    }
}
```

MyServiceTest.java :

```
package com.rafi;

import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.assertEquals;
import static org.mockito.Mockito.*;

public class MyServiceTest {

    @Test
    public void testExternalApi() {

        ExternalApi mockApi = mock(ExternalApi.class);
        when(mockApi.getData()).thenReturn("Mock Data");
        MyService service = new MyService(mockApi);
        String result = service.fetchData();
        assertEquals("Mock Data", result);

    }
}
```

OUTPUT :



Exercise 2 : Verifying Interactions

CODE :

ExternalApi.java :

```
package com.rafi;

public interface ExternalApi {
    String getData();
}
```

MyService.java :

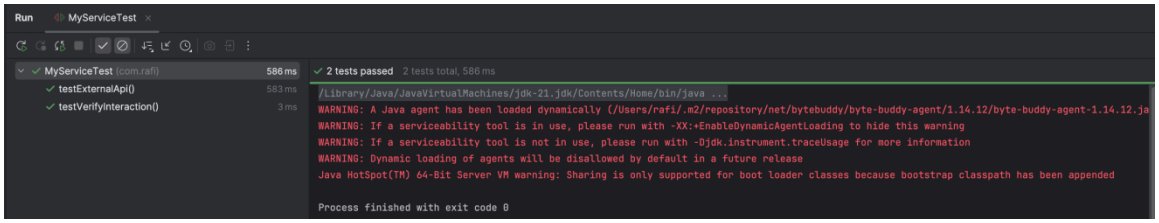
```
package com.rafi;

public class MyService {
    private ExternalApi api;

    public MyService(ExternalApi api) {
        this.api = api;
    }

    public String fetchData() {
        return api.getData();
    }
}
```

MyServiceTest.java :

```
package com.rafi;

import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.assertEquals;
import static org.mockito.Mockito.*;

public class MyServiceTest {

    @Test
    public void testExternalApi() {

        ExternalApi mockApi = mock(ExternalApi.class);
```

```
        when(mockApi.getData()).thenReturn("Mock Data");
        MyService service = new MyService(mockApi);
        String result = service.fetchData();
        assertEquals("Mock Data", result);
    }

    @Test
    public void testVerifyInteraction() {

        ExternalApi mockApi = mock(ExternalApi.class);
        MyService service = new MyService(mockApi);
        service.fetchData();
        verify(mockApi).getData();

    }
}
```

OUTPUT :



SL4J Logging exercises

Exercise 1 : Logging Error Messages and Warning Levels

CODE :

LoggingExample.java :

```
package com.rafi;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

public class LoggingExample {

    private static final Logger logger = LoggerFactory.getLogger(LoggingExample.class);

    public static void main(String[] args) {
        logger.error("This is an error message");
        logger.warn("This is a warning message");
    }
}
```

OUTPUT :