

Junit, Mockito, SLF4J

>JUNIT:

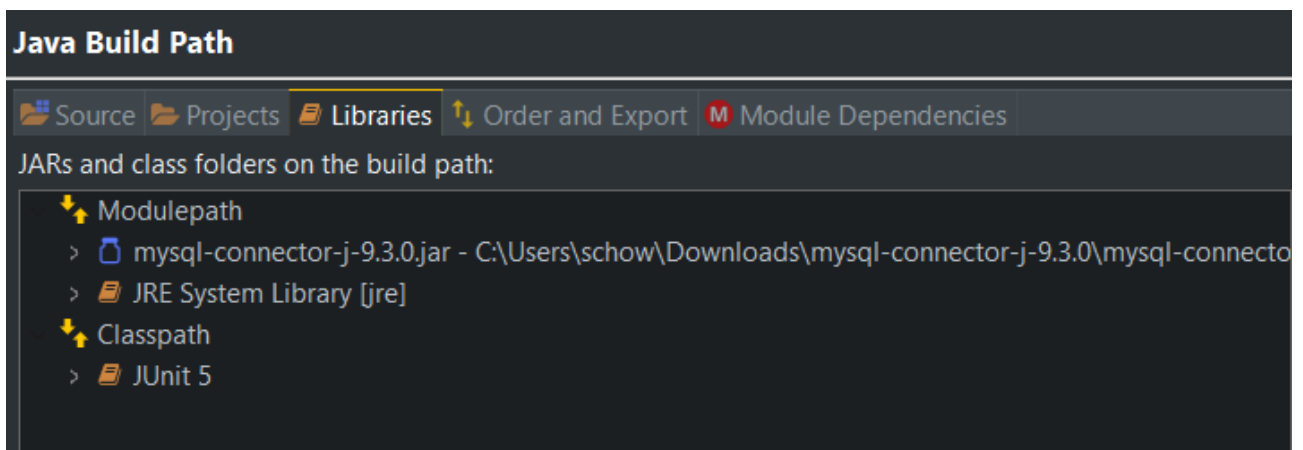
- Exercise 1: Setting Up Junit

(creating a java project)

```
package com.shom.junit;

public class Calculator {
    public int add(int a, int b) {
        return a+b;
    }
}
```

(Adding Junit dependency)



(creating a new test class)

```
package com.shom.junit;

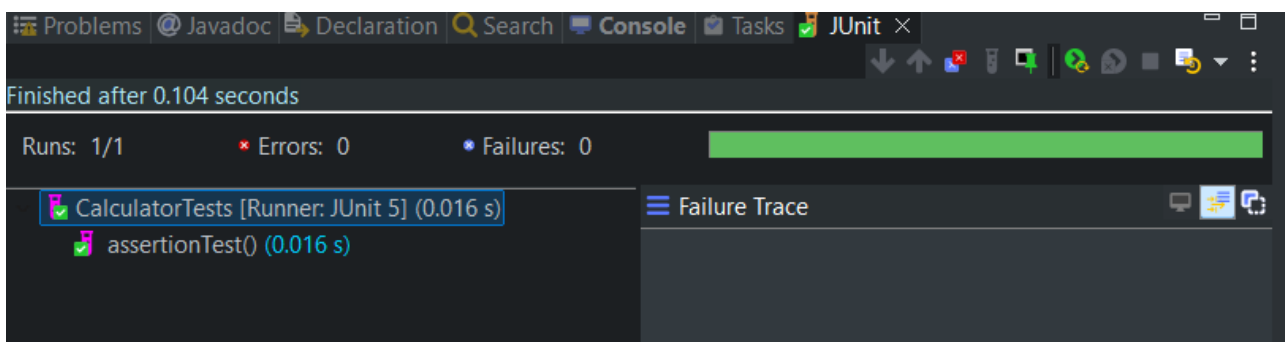
import static org.junit.jupiter.api.Assertions.*;

class CalculatorTests {

    @Test
    void test() {
        // var calc = new Calculator();
        // int val = calc.add(2, 3);
        // assertEquals(5, val);
    }
}
```

- **Exercise 3: Assertions in JUnit**

```
package com.shom.junit;  
import static org.junit.jupiter.api.Assertions.*;  
import org.junit.jupiter.api.Test;  
  
class CalculatorTests {  
    @Test  
    public void assertionTest() {  
  
        assertEquals(6, 2+4);  
  
        assertTrue(8>3);  
  
        assertFalse(3>8);  
  
        assertNull(null);  
  
        assertNotNull(new Calculator());  
    }  
}
```



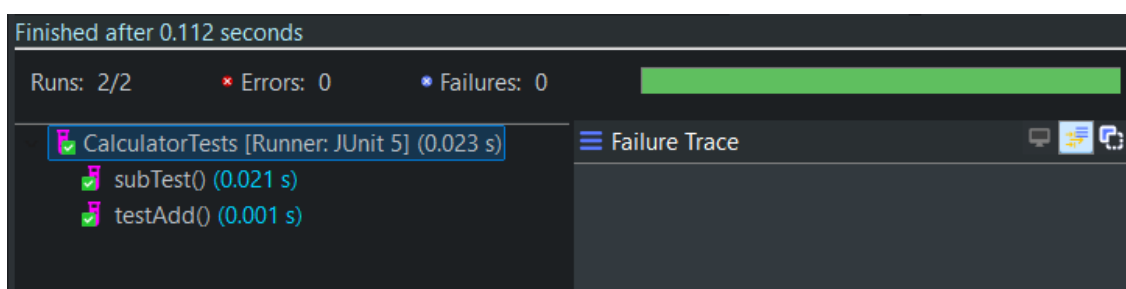
- **Exercise 4: Arrange-Act-Assert (AAA) Pattern, Test Fixtures, Setup and Teardown Methods in JUnit**

```
package com.shom.junit;
import static org.junit.jupiter.api.Assertions.assertEquals;
import org.junit.jupiter.api.AfterEach;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;

class CalculatorTests {
    private Calculator calc;
    @BeforeEach
    public void setUp() {
        calc = new Calculator();
    }
    @AfterEach
    public void tearDown() {
        calc = null;
    }
    @Test
    public void testAdd() {
        //arrange
        int a = 2;
        int b = 3;
        //act
        int val = calc.add(a,b);
        //assert
        assertEquals(5, val);
    }
    @Test
    public void subTest() {
        int a = 5;
        int b = 2;

        int val = calc.sub(a,b);

        assertEquals(3, val);
    }
}
```



>Mockito

- **Exercise 1: Mocking and Stubbing**

ExternalApi.java

```
package com.shom.mockito;

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

MyService.java

```
package com.shom.mockito;

public class MyService {
    private final ExternalApi extApi;

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

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

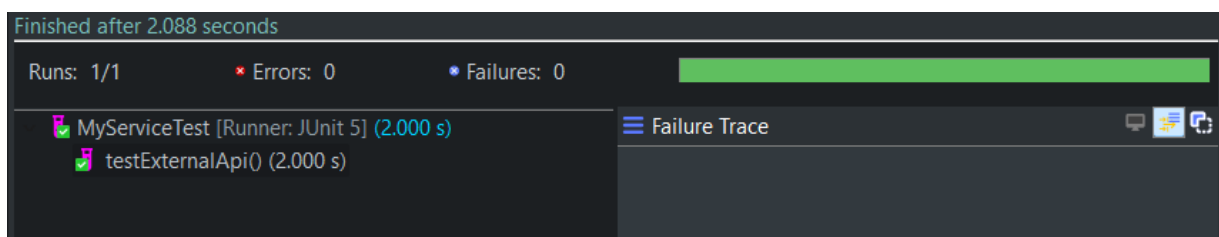
MyServiceTest.java

```
package com.shom.mockito;
import static org.junit.jupiter.api.Assertions.assertEquals;
import static org.mockito.Mockito.when;
import org.junit.jupiter.api.Test;
import org.mockito.Mockito;

class MyServiceTest {
    @Test
    public void testExternalApi() {
        ExternalApi mockApi = Mockito.mock(ExternalApi.class);
        when(mockApi.getData())
            .thenReturn("Mock Data");
        MyService service = new MyService(mockApi);

        String result = service.fetchData();

        assertEquals("Mock Data", result);
    }
}
```



- **Exercise 2: Verifying Interactions**

MyServiceTest.java

```
package com.shom.mockito;

import static org.mockito.Mockito.verify;
import static org.mockito.Mockito.when;

import org.junit.jupiter.api.Test;
import org.mockito.Mockito;

class MyServiceTest {

    @Test
    public void testExternalApi() {
        ExternalApi mockApi = Mockito.mock(ExternalApi.class);
        when(mockApi.getData())
            .thenReturn("Mock Data");
        MyService service = new MyService(mockApi);

        service.fetchData();

        verify(mockApi).getData();
    }
}
```

Finished after 2.536 seconds

Runs: 1/1

✖ Errors: 0

• Failures: 0

✔ MyServiceTest [Runner: JUnit 5] (2.397 s)

✔ testExternalApi() (2.397 s)

≡ Failure Trace

>SLF4J:

- Exercise 1: Logging Error Messages and Warning Levels

LoggingExample.java

```
package com.shom.slf4j;

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");
    }
}
```

```
<terminated> LoggingExample [Java Application] C:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.3.v20210720-1902\jre\bin\java.exe
20:20:49.366 [main] ERROR com.shom.slf4j.LoggingExample - This is an error message
20:20:49.369 [main] WARN com.shom.slf4j.LoggingExample - This is a warning message
```