**Mockito Hands-On Exercises**

Exercise 1: Mocking and Stubbing

**MyServiceTest.java:**

package com.example.junit;

import static org.mockito.Mockito.\*;

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

import org.junit.jupiter.api.Test;

import org.mockito.Mockito;

public 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);

}

}

**MyService.java:**

**package** com.example.junit;

**public** **class** MyService {

**private** ExternalApi api;

**public** MyService(ExternalApi api) {

**this**.api = api;

}

**public** String fetchData() {

**return** api.getData();

}

}

**Pom.xml:**

<project xmlns="http://maven.apache.org/POM/4.0.0"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0

http://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<groupId>com.example</groupId>

<artifactId>Junitex</artifactId>

<version>1.0-SNAPSHOT</version>

<dependencies>

<!-- JUnit 5 -->

<dependency>

<groupId>org.junit.jupiter</groupId>

<artifactId>junit-jupiter-engine</artifactId>

<version>5.9.3</version>

<scope>test</scope>

</dependency>

<!-- Mockito -->

<dependency>

<groupId>org.mockito</groupId>

<artifactId>mockito-core</artifactId>

<version>5.2.0</version>

<scope>test</scope>

</dependency>

</dependencies>

<build>

<plugins>

<!-- Surefire Plugin for running JUnit 5 -->

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-surefire-plugin</artifactId>

<version>3.1.2</version>

</plugin>

</plugins>

</build>

</project>

**ExternalApi.java:**

**package** com.example.junit;

**public** **class** ExternalApi {

**public** String getData() {

**return** "Real Data";

}

}

Exercise 2: Verifying Interactions

**MyServiceTest.java:**

package com.example.junit;

import static org.mockito.Mockito.\*;

import org.junit.jupiter.api.Test;

import org.mockito.Mockito;

public class MyServiceTest {

@Test

public void testVerifyInteraction() {

// Step 1: Create a mock object

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

// Step 2: Use the mock in the service

MyService service = new MyService(mockApi);

service.fetchData(); // This should call mockApi.getData()

// Step 3: Verify that getData() was called exactly once

verify(mockApi).getData();

}

}

**MyService.java:**

package com.example.junit;

public class MyService {

private ExternalApi externalApi;

public MyService(ExternalApi externalApi) {

this.externalApi = externalApi;

}

public String fetchData() {

return externalApi.getData();

}

}

**ExternalApi.java:**

package com.example.junit;

public class ExternalApi {

public String getData() {

return "Real Data"; // This will be mocked

}

}

**Logging using SLF4J**

Exercise 1: Logging Error Messages and Warning Levels

**pom.xml**

<dependency>

<groupId>org.slf4j</groupId>

<artifactId>slf4j-api</artifactId>

<version>1.7.30</version>

</dependency>

<dependency>

<groupId>ch.qos.logback</groupId>

<artifactId>logback-classic</artifactId>

<version>1.2.3</version>

</dependency>

**Main.java**

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");

}

}