**JUNIT BASIC TESTING EXCERCISES**

**EX 1- Setting up Junit**

package com.example;

public class Calculator {

public int add(int a, int b) {

return a + b;

}

}

package com.example;

import org.junit.Test;

import static org.junit.Assert.assertEquals;

public class CalculatorTest {

@Test

public void testAdd() {

Calculator calc = new Calculator();

assertEquals(5, calc.add(2, 3));

}

}

**EX 3- Assertions in Junit**

test class:-

import org.junit.Test;

import static org.junit.Assert.\*;

public class AssertionsTest {

@Test

public void testAssertions() {

assertEquals(5, 2 + 3);

assertTrue(5 > 3);

assertFalse(5 < 3);

assertNull(null);

assertNotNull(new Object());

}

}

**EX 4- AAA pattern**

import org.junit.Before;

import org.junit.After;

import org.junit.Test;

import static org.junit.Assert.\*;

public class CalculatorTest {

private Calculator calculator;

@Before

public void setUp() {

calculator = new Calculator();

}

@After

public void tearDown() {

calculator = null;

}

@Test

public void testAdd() {

// Arrange

int a = 2;

int b = 3;

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

assertEquals(5, result);

}

}

class Calculator {

public int add(int x, int y) {

return x + y;

}

}

**MOCKITO EXCERCISES**

**EX1- Mocking and stubbing**

import static org.mockito.Mockito.\*;

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

import org.junit.jupiter.api.Test;

import org.mockito.Mockito;

class MyServiceTest {

@Test

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);

}

}

interface ExternalApi {

String getData();

}

class MyService {

private final ExternalApi api;

public MyService(ExternalApi api) {

this.api = api;

}

public String fetchData() {

return api.getData();

}

}

**EX 2- Verifying interactions**

import static org.mockito.Mockito.\*;

import org.junit.jupiter.api.Test;

class MyServiceTest {

@Test

void testVerifyInteraction() {

ExternalApi mockApi = mock(ExternalApi.class);

MyService service = new MyService(mockApi);

service.fetchData();

verify(mockApi).getData();

}

}

interface ExternalApi {

String getData();

}

class MyService {

private final ExternalApi api;

public MyService(ExternalApi api) {

this.api = api;

}

public String fetchData() {

return api.getData();

}

}

**LOGGING USING SLF4J**

**Ex 1- Logging error messages and warning levels**

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");

}

}