Exercise 1: Reverse a String

Write a Java program that reverses a given string.

java

Copy code

public class StringReverse {

public static String reverseString(String input) {

// Your code here

}

}

JUnit Test Case:

java

Copy code

import org.junit.Test;

import static org.junit.Assert.assertEquals;

public class StringReverseTest {

@Test

public void testReverseString() {

assertEquals("tac", StringReverse.reverseString("cat"));

assertEquals("god", StringReverse.reverseString("dog"));

// Add more test cases

}

}

Exercise 2: Sum of Array Elements

Write a Java program to find the sum of all elements in an integer array.

java

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public class ArraySum {

public static int calculateSum(int[] numbers) {

// Your code here

}

}

JUnit Test Case:

java

Copy code

import org.junit.Test;

import static org.junit.Assert.assertEquals;

public class ArraySumTest {

@Test

public void testCalculateSum() {

assertEquals(15, ArraySum.calculateSum(new int[]{1, 2, 3, 4, 5}));

assertEquals(0, ArraySum.calculateSum(new int[]{}));

// Add more test cases

}

}

Exercise 3: Factorial Calculation

Write a Java program to calculate the factorial of a given number.

java

Copy code

public class Factorial {

public static int calculateFactorial(int n) {

// Your code here

}

}

JUnit Test Case:

java

Copy code

import org.junit.Test;

import static org.junit.Assert.assertEquals;

public class FactorialTest {

@Test

public void testCalculateFactorial() {

assertEquals(120, Factorial.calculateFactorial(5));

assertEquals(1, Factorial.calculateFactorial(0));

// Add more test cases

}

}

Exercise 4: Prime Numbers in a Range

Write a Java program to find and return all prime numbers within a specified range.

java

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public class PrimeNumbers {

public static int[] findPrimesInRange(int start, int end) {

// Your code here

}

}

JUnit Test Case:

java

Copy code

import org.junit.Test;

import static org.junit.Assert.assertArrayEquals;

public class PrimeNumbersTest {

@Test

public void testFindPrimesInRange() {

assertArrayEquals(new int[]{2, 3, 5, 7, 11, 13}, PrimeNumbers.findPrimesInRange(1, 15));

assertArrayEquals(new int[]{2, 3, 5, 7}, PrimeNumbers.findPrimesInRange(1, 10));

// Add more test cases

}

}