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**Green University of Bangladesh**

**Department of Computer Science and Engineering (CSE)**

**Faculty of Sciences and Engineering**

**Semester: (Fall, Year: 2024), B.Sc. in CSE (Day)**

**Lab Report NO : 01**

**Course Title: OOP Lab**

**Course Code: CSE 202**

**Section: D9**

**Lab Experiment Name:**  Array, Conditionals, Loops

**Student Details**

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**Lab Date : 29/09/24**

**Submission Date : 06/10/24**

**Course Teacher’s Name : Wahia Tasnim**

**[For Teachers use only: Don’t write anything inside this box]**

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| **Lab Report Status**  **Marks: ………………………………… Signature: .....................**  **Comments: .............................................. Date: ..............................** |

**1. INTRODUCTION**

The purpose of this lab reports is to know the concepts of array, conditionals and loops in java program. Here, we will see how to check if a number is even or odd and also the summation of odd numbers factorial in a range. In this lab report our aim is to solve some real-world problems efficiently.

**2. OBJECTIVES**

The primary objectives of this lab report are as follows:

• To gather knowledge of java syntax, array conditions and loops.

• To implement different types of problem like odd even, sum of odd numbers factorial.

**3. IMPLEMENTATION**

Task 1: Implement checking of odd and even number.

Solution:

import java.util.Scanner;

public class EvenOrOdd{

    public static void main(String[] args) {

        Scanner s = new Scanner(System.in);

        System.out.print("Enter a number:");

        int n;

        n = s.nextInt();

        if(n%2==0){

            System.out.println(n+" is a even number");

        }

        else{

            System.out.println(n+" is a odd number");

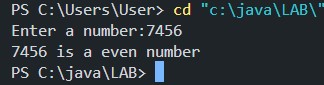
        }

        s.close();

    }

}

Output:



Task 2: Implement summation of factorial odd number series.

Solution:

import java.util.Scanner;

public class OddFactorialSeries {

    public static long factorial(int n) {

        if (n == 0) {

            return 1;

        }

        long fact = 1;

        for (int i = 1; i <= n; i++) {

            fact \*= i;

        }

        return fact;

    }

    public static double calculateSum(double x, int n) {

        double sum = 0.0;

        for (int i = 1; i <= n; i++) {

            if (i % 2 != 0) {

                sum += Math.pow(x, i) / factorial(i);

            }

        }

        return sum;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the value of x: ");

        double x = scanner.nextDouble();

        System.out.print("Enter the number of terms (n): ");

        int n = scanner.nextInt();

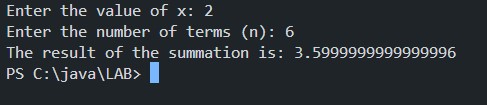
        double result = calculateSum(x, n);

        System.out.println("The result of the summation is: " + result);

    }

}

Output:

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**4. DISCUSSION**

We have explored two methods: determining if a number is even or odd, and calculating the sum of factorials of odd numbers. In the first approach, we use a straightforward if-else statement to check whether a number is odd or even. In the second task, we exclude even numbers and focus on odd ones by iterating through them and summing their factorials. Both approaches demonstrate basic control flow and arithmetic operations in Java.