Green University of Bangladesh

Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
Fall 2022, B.Sc. in CSE (DAY)

LAB REPORT NO # 01

Course Title: Object Oriented Programming (JAVA)
Course Code: CSE 202 Section: CSE 213 - DA (PC)

Lab Experiment Name(s):

- Implement checking of odd and even number
- Implement summation of factorial odd number series.

$$\text{Sum} = \frac{x^2}{1!} + \frac{x^4}{3!} + \frac{x^6}{5!} + ... \frac{x^n}{(n-1)!}$$

Student Details

Name	ID
Md. Shahidul Islam Prodhan	213902017

Lab Date: 17 October, 2022

Submission Date: 23 October, 2022

Course Teacher's Name: Dr. Muhammad Aminur Rahaman, Associate Professor

[For Teacher's use only: Don't write anything inside this box]

Lab Report Status

Marks:	**Signature:**
Comments:	**Date:**

1. TITLE OF THE LAB EXPERIMENT

Lab Report of C - Java Syntax Similarity : Array, Conditionals, Loops

2. OBJECTIVES

• To gather knowledge of java syntax, array conditions and loops.
• To implement different types of problem like prime number, Fibonacci number, odd even number checking
solved in Java.

3. PROCEDURE/ ANALYSIS / DESIGN

Problem 1: Implement checking of odd and even number

1) Start
2) Create an object of the Scanner class to take input from the user.
3) Declare a variable to store the number.
4) Ask the user to initialize the number.
5) Check whether the number is even or odd by using bitwise XOR.
6) If the number after bitwise XOR with 1 is equal to the original number + 1, then it is an even number.
7) If not equal, then it is an odd number.
8) Display the result.
9) Stop.

Problem 2: Implement summation of factorial odd number series.

1)Use Scanner for user take input on X & N value.
2)Use for loop.
3)Sum= X to the power devided N odd Series factorial.
4)Sum = sum+ value

Implementation

1)Use netbeans Application.
2)Create a project name lab_report_1_problem_solve
3)Take scanner faction foe user take input
4)User giving X &N value this value store x & n
5)Use for loop 0 to n
6)Find odd series factorial & X to the power even series.
7)At last sum = X to the power / factorial and print the sum value.

4. IMPLEMENTATION & TEST RESULT

Problem 1: Implement checking of odd and even number

Main.java

Run

```java
import java.util.Scanner;

public class EvenOdd {

    public static void main(String[] args) {

        Scanner reader = new Scanner(System.in);

        System.out.print("Enter a number: ");
        int num = reader.nextInt();

        if(num % 2 == 0)
            System.out.println(num + " is an even number.");
        else
            System.out.println(num + " is an odd number.");
    }
}
```

Output

```
java -cp /tmp/apmjOORQ9w EvenOdd
Enter a number: 22
22 is an even number.
```

4. IMPLEMENTATION & TEST RESULT

Problem 2: Implement summation of factorial odd number series.

```
1  public class SeriesSum
2      {
3      int x,n;
4      double sum;
5      SeriesSum(int xx,int nn)
6      { x=xx;
7      n=nn;
8      sum=0.0;
9      }
10     double findfact(int a)
11     { return (a<2)? 1:a*findfact(a-1);
12     }
13     double findpower(int a, int b)
14     { return (b==0)? 1:a*findpower(a,b-1);
15     }
16     void calculate()
17     {
18     System.out.println("x ="+x);
19     System.out.println("n ="+n);
20     for(int i=2;i<=n;i+=2){
21
22         System.out.println(x+"^"+i+"/"+(i-1)+"!" +" = " +(findpower(x,i)+"/"+findfact(i-1)) );
23         //System.out.println(findpower(x,i)+"/"+findfact(i-1));
24
25        sum += findpower(x,i)/findfact(i-1);
26     }
27     }
28     void display()
29     { System.out.println("sum="+ sum);
30     }
31     public static void main(String arg[])
32     { SeriesSum obj = new SeriesSum(3,9);
33     obj.calculate();
34     obj.display();
35     }
36 }
37
```

Result

compiled and executed in 1.516 sec(s)

```
x =3
n =9
3^2/1! = 9.0/1.0
3^4/3! = 81.0/6.0
3^6/5! = 729.0/120.0
3^8/7! = 6561.0/5040.0
sum=29.876785714285713
```

6. ANALYSIS AND DISCUSSION

1) The first problem was quite easy for us to solve, as we have learned C programming and solved such problems using various conditions and loops.
2) The 2nd problem is solved by using Java. The problem was quite hard in the beginning to think out and how to solve this in efficient way. In this program we implement calculations in more efficient way to understand the deeper knowledge of such mathematical problems.

7. SUMMARY

1) We have used basics of java using various conditions and loops which we have performed in C language.
2) We have learned to solve complex mathematical problems from the 2nd problem.