Lab 04

Nested Loop

1. Write a Java code of a program that reads the value of N from the user and calculates the value of y if the expression of y is as follows:

$$y = -(1) - (1 + 2) - (1 + 2 + 3) - \ldots - (1 + 2 + 3 + \ldots + N)$$

Sample Input:
The value of N: 2

Sample Input:
The value of N: -4

2. Write a Java program that will keep taking even positive integer numbers as inputs from the user and print the number of divisors of those numbers until it gets an odd number and then stops.

Sample Input/Output: (The purple numbers are input.)
Enter Number: 44
44 has 6 divisors
Enter Number: 30
30 has 8 divisors
Enter Number: 8
8 has 4 divisors
Enter Number: 4
4 has 3 divisors
Enter Number: 6
6 has 4 divisors
Enter Number: 20
20 has 6 divisors
Enter Number: 24
24 has 8 divisors

Enter Number: 5

3. Write a Java program to take a positive integer ***N*** as user input and print the **first *N* prime numbers starting from 2**. Your code should check all the positive integers starting from 2 and determine whether they are prime or not until ***N*** prime numbers are found.

   Sample Input 1:
   5
   Sample Output 1:
   2
   3
   5
   7
   11
   Sample Input 2:
   7
   Sample Output 2:
   2
   3
   5
   7
   11
   13
   17

4. Write a program to compute the sum of the series:
   S=1!+2!+3!+...+N!S = 1! + 2! + 3! + ... + N!S=1!+2!+3!+...+N!
   Where N is an integer input provided by the user.

   Sample Input 1:
   The value of N: 4
   Sample Output 1:
   The sum of the series: 33
   Sample Input 2:
   The value of N: 5
   Sample Output 2:
   The sum of the series: 153

5. Write a program that, for each number from 1 to N, finds and prints the number of divisors it has. The program should print the divisors count for all numbers in that range.

Sample Input 1:

The value of N: 5

Sample Output 1:

1 has 1 divisor
2 has 2 divisors
3 has 2 divisors
4 has 3 divisors
5 has 2 divisors

Sample Input 2:

The value of N: 7

Sample Output 2:

1 has 1 divisor
2 has 2 divisors
3 has 2 divisors
4 has 3 divisors
5 has 2 divisors
6 has 4 divisors
7 has 2 divisors