School of Information Technology & Engineering

Winter Semester 2021-2022

ITA5004 – Object Oriented Programming using JAVA

DIGITAL ASSIGNMENT LAB-01

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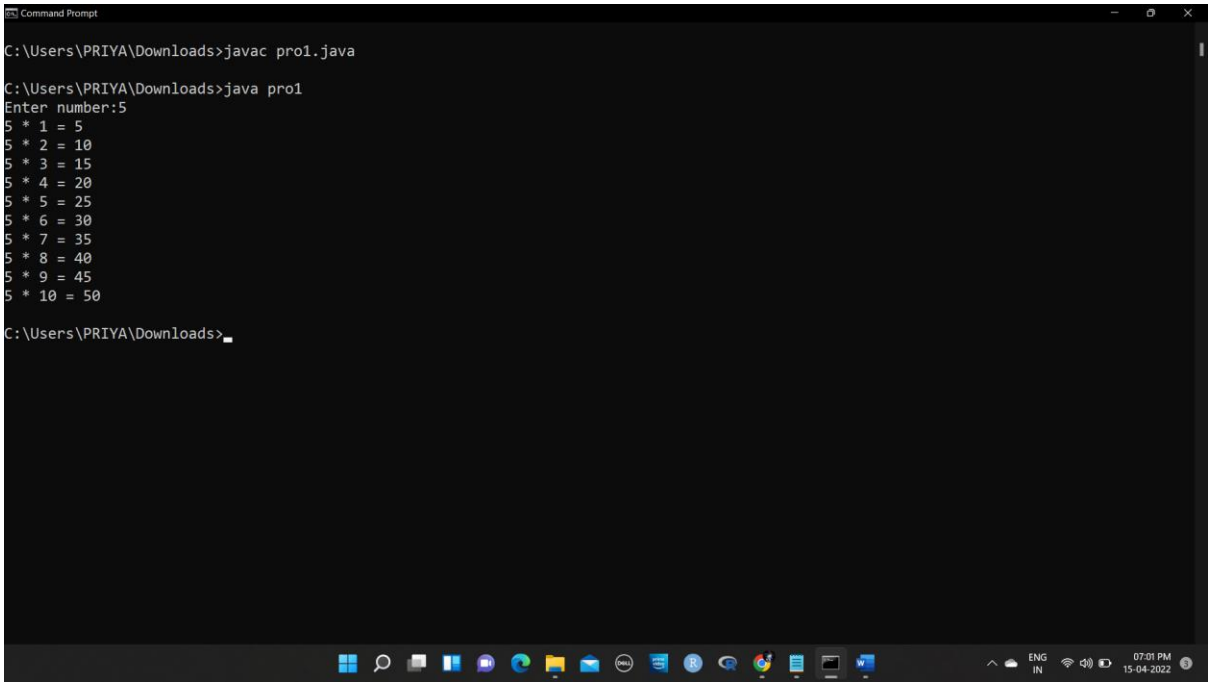
SLOT:L3+L4

1. Write a Java program to display the multiplication table of a number.

PROGRAM:

```
import java.util.Scanner;
public class pro1
{
   public static void main(String[] args)
   {
      Scanner s = new Scanner(System.in);
         System.out.print("Enter number:");
         int n=s.nextInt();
      for(int i=1; i <= 10; i++)
      {
         System.out.println(n+" * "+i+" = "+n*i);
      }
   }
}
```

OUTPUT:



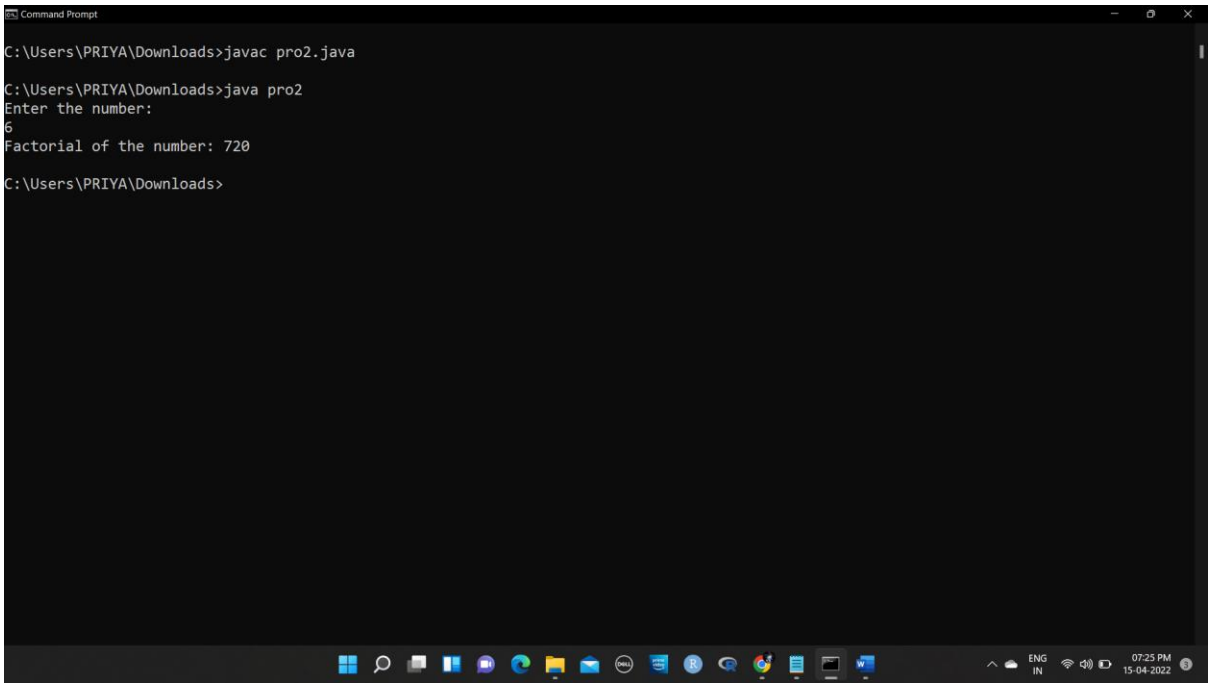
2. Write a Java program to find the factorial of a given number.

PROGRAM:

```
import java.util.*;
public class pro2
{
    public static void main(String []args)
    {

      Scanner sc=new Scanner(System.in);
      System.out.println("Enter the number: ");
      int num=sc.nextInt();
      int i=1,fact=1;
      while(i<=num)
      {
         fact=fact*i;
         i++;
      }
      System.out.println("Factorial of the number: "+fact);
    }
```

}

OUTPUT:



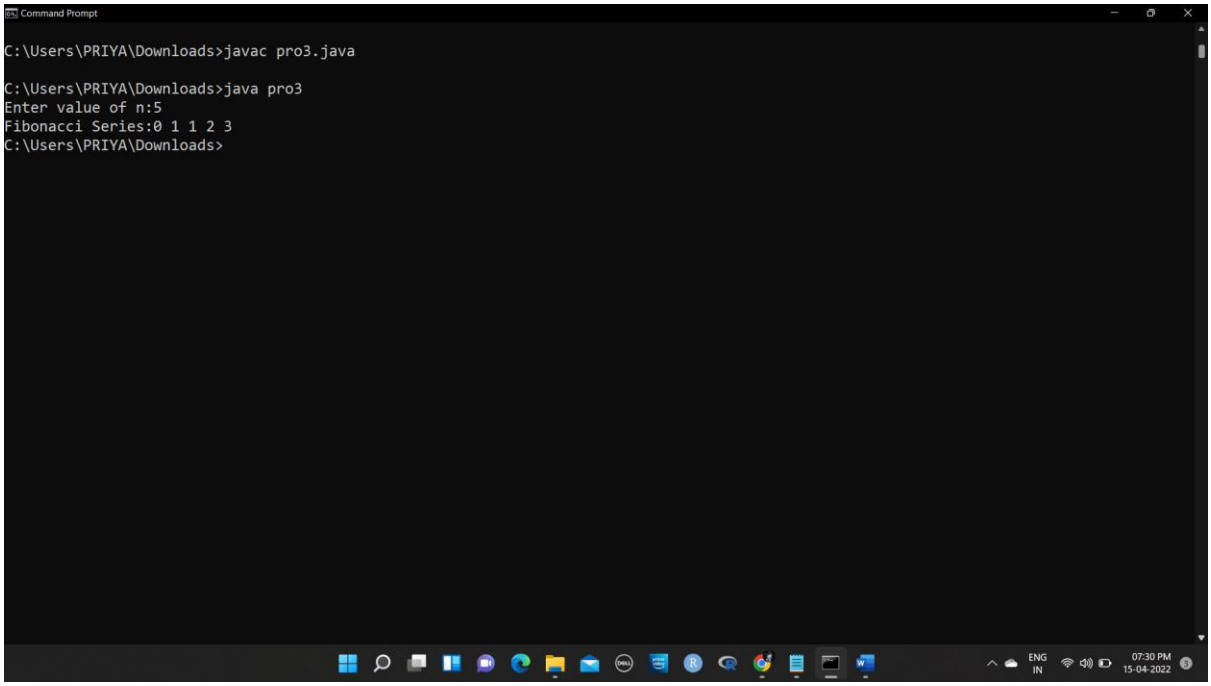
3. Write a Java Program to generate the Fibonacci series till n number.

PROGRAM:

```
import java.util.Scanner;
public class pro3
{
   public static void main(String[] args)
   {
      int n, a = 0, b = 0, c = 1;
      Scanner s = new Scanner(System.in);
      System.out.print("Enter value of n:");
      n = s.nextInt();
      System.out.print("Fibonacci Series:");
      for(int i = 1; i <= n; i++)
      {
         a = b;
         b = c;
```

```
            c = a + b;
            System.out.print(a+" ");
        }
    }
}
```

OUTPUT:



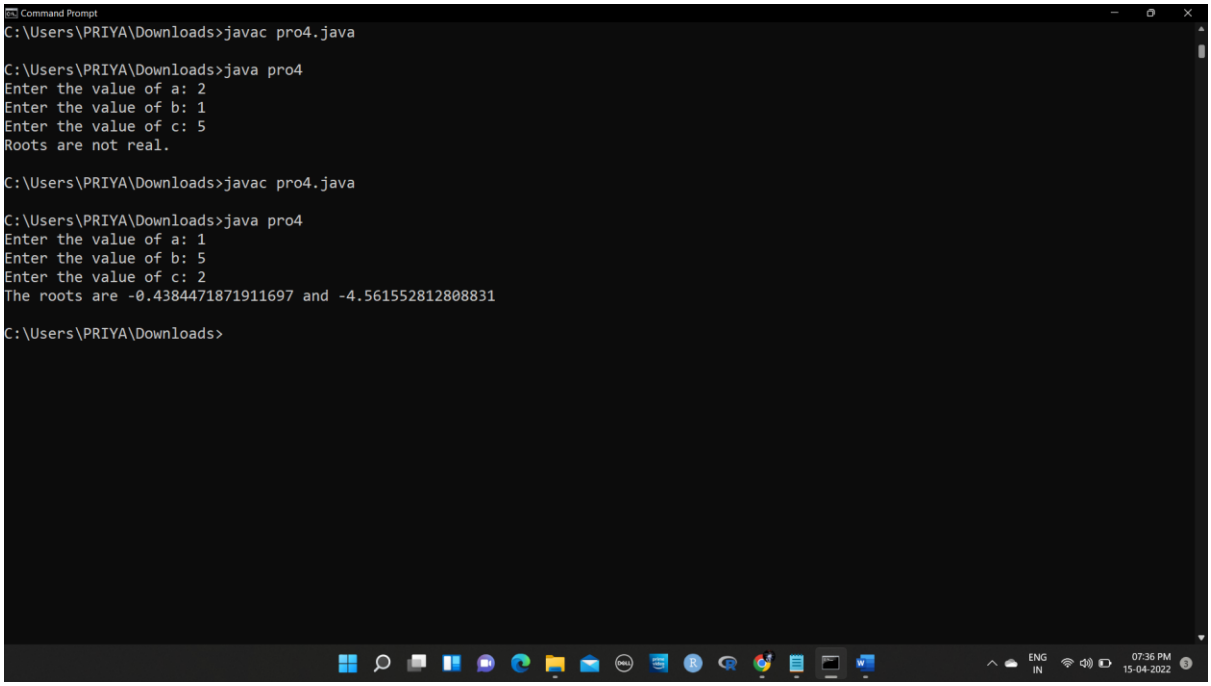
4. Write a Java Program to find the roots of a quadratic equation.

PROGRAM:

```
import java.util.Scanner;
public class pro4
{
public static void main(String[] Strings)
{
Scanner input = new Scanner(System.in);
System.out.print("Enter the value of a: ");
double a = input.nextDouble();
System.out.print("Enter the value of b: ");
double b = input.nextDouble();
System.out.print("Enter the value of c: ");
```

```
double c = input.nextDouble();
double d= b * b - 4.0 * a * c;
if (d> 0.0)
{
double r1 = (-b + Math.pow(d, 0.5)) / (2.0 * a);
double r2 = (-b - Math.pow(d, 0.5)) / (2.0 * a);
System.out.println("The roots are " + r1 + " and " + r2);
}
else if (d == 0.0)
{
double r1 = -b / (2.0 * a);
System.out.println("The root is " + r1);
}
else
{
System.out.println("Roots are not real.");
}
}
}
```

OUTPUT:



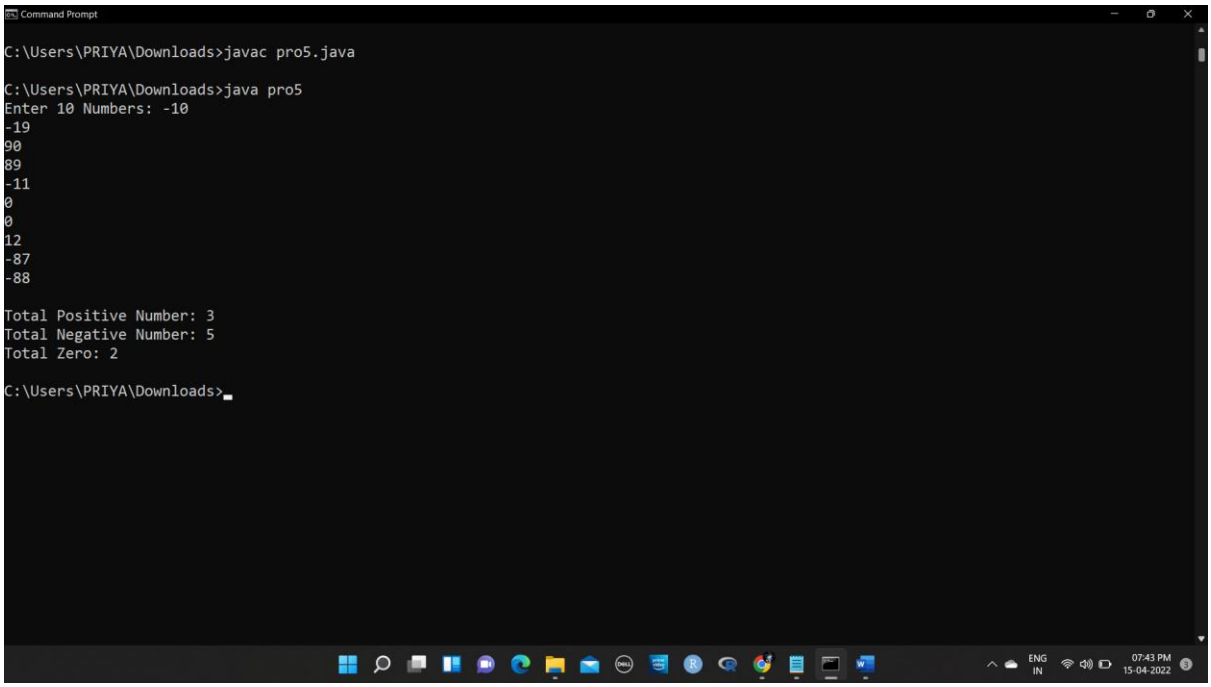
5. Write a Java program to get n numbers from the user and display the number of positive, negative and zeroes.

PROGRAM:

```
import java.util.Scanner;


public class pro5
{
  public static void main(String[] args)
  {
    int countP=0, countN=0, countZ=0, i;
    int[] arr = new int[10];
    Scanner scan = new Scanner(System.in);


    System.out.print("Enter 10 Numbers: ");
    for(i=0; i<10; i++)
      arr[i] = scan.nextInt();


    for(i=0; i<10; i++)
    {
```

```
        if(arr[i]<0)
          countN++;
        else if(arr[i]>0)
          countP++;
        else
          countZ++;
      }

      System.out.println("\nTotal Positive Number: " +countP);
      System.out.println("Total Negative Number: " +countN);
      System.out.println("Total Zero: " +countZ);
    }
}
```

OUTPUT:



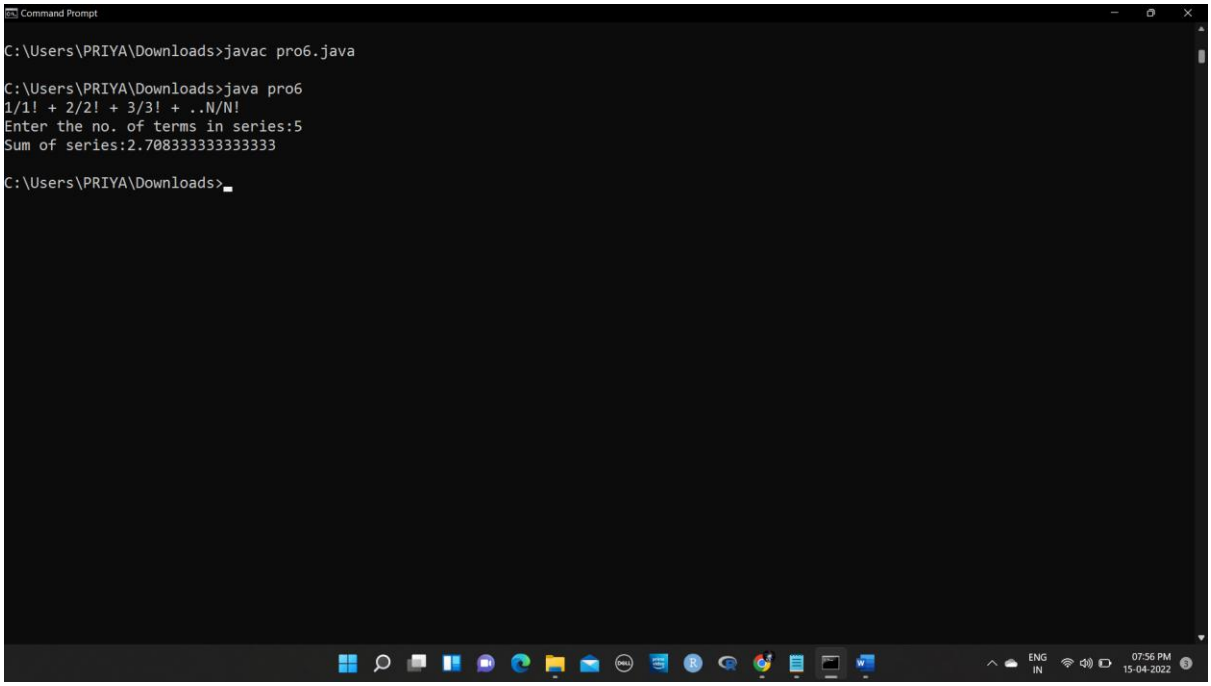
6. Write a Java program to find the sum of the series: 1+2/2!+3/3!+….n/n!

PROGRAM:

```
import java.util.Scanner;
public class pro6
{
```

```
    public static void main(String[] args)
    {
        double sum = 0;
        int n;
        System.out.println("1/1! + 2/2! + 3/3! + ..N/N!");
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the no. of terms in series:");
        n = s.nextInt();
        pro6 obj = new pro6();
        for(int i = 1; i <= n; i++)
        {
            sum = sum + (double)i / (obj.fact(i));
        }
        System.out.println("Sum of series:"+sum);
    }
    int fact(int x)
    {
        int mul = 1;
        while(x > 0)
        {
            mul = mul * x;
            x--;
        }
        return mul;
    }
}
```

OUTPUT:



7. Write a Java program to find the sum of the series: x - x 2 /2! + x3 /3! - x 4 /4! +….+ xn /n!

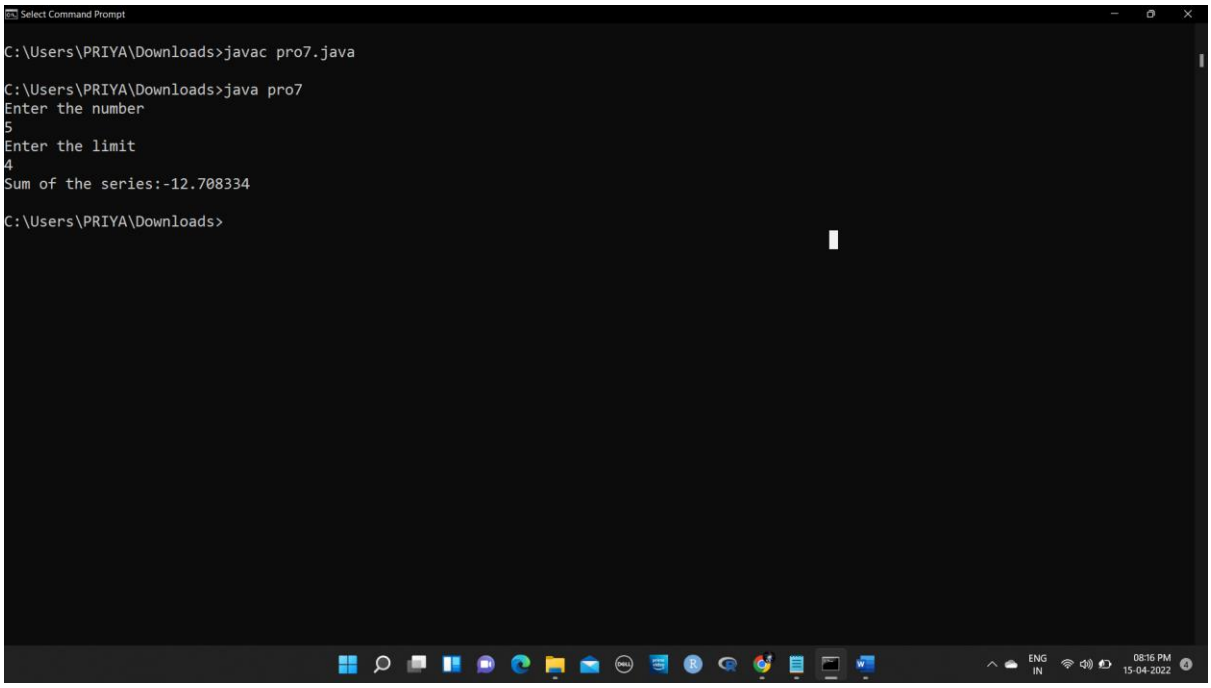
PROGRAM:

```
import java.util.Scanner;
public class pro7
{
  int num,limit;
  public pro7()
  {
     num=0;
     limit=0;
   }
   public void getnum(int n,int l)
   {
      num=n;
      limit=l;
   }
```

```
public int fact(int n)
{
   int f=1;
   for(int i=1;i<=n;i++)
   {
      f*=i;
   }
   return f;
}

public void findsumseries()
{
   float sum=0;
   for(int i=0;i<limit;i++)
   {
      sum+=Math.pow(-1,i)*(Math.pow(num,i+1)/fact(i+1));
   }
   System.out.println("Sum of the series:"+sum);
}

public static void main(String[]args)
{
  pro7 ob=new pro7();
  Scanner in=new Scanner(System.in);
  System.out.println("Enter the number");
  int n=in.nextInt();
  System.out.println("Enter the limit");
  int l=in.nextInt();
  ob.getnum(n,l);
  ob.findsumseries();
```

```
    }
}
```

OUTPUT:



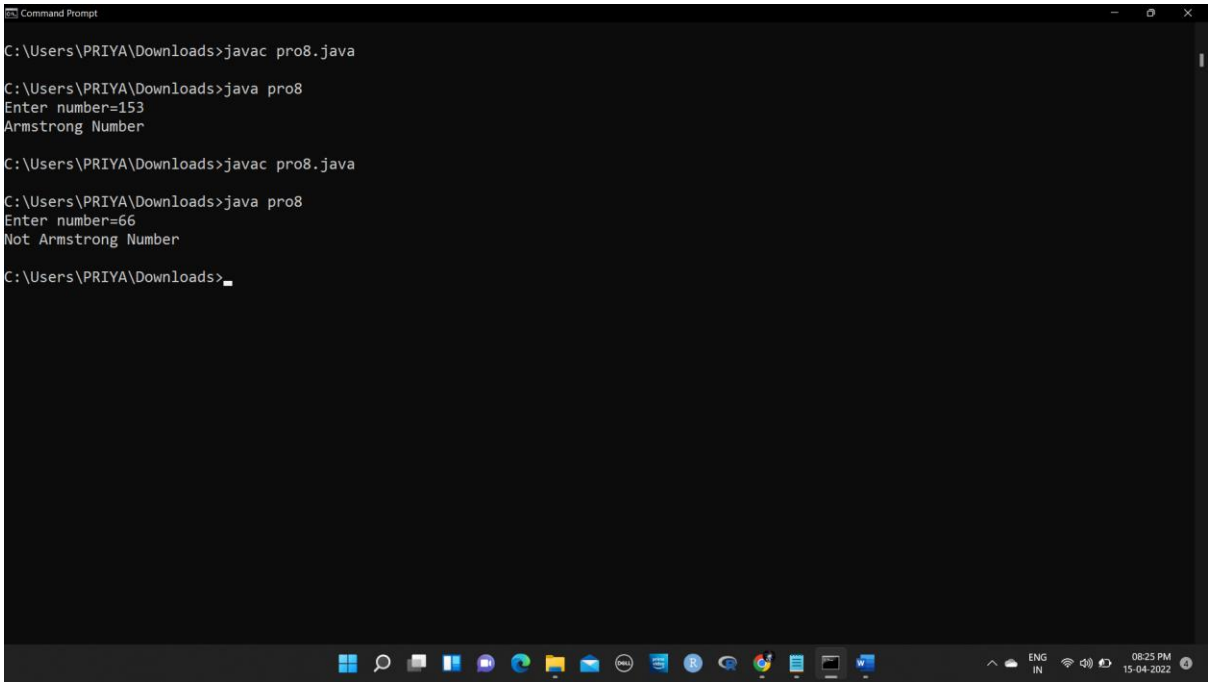
8. Write a Java program to find the given number is Armstrong or not. (if the sum of cubes of the digits of the number is equal to the given number)

PROGRAM:

```
import java.util.Scanner;


public class pro8
{
   public static void main(String[] args)
   {
      int n,
      cubeSum = 0, num, r;
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter number=");
      n = sc.nextInt();
      num = n;
      while (num > 0)
```

```
        {
            r = num % 10;
            cubeSum = cubeSum + (r * r * r);
            num = num / 10;
        }
        if (n == cubeSum)
        {
            System.out.println("Armstrong Number");
        }
        else
        {
            System.out.println("Not Armstrong Number");
        }
    }
}
```

OUTPUT:

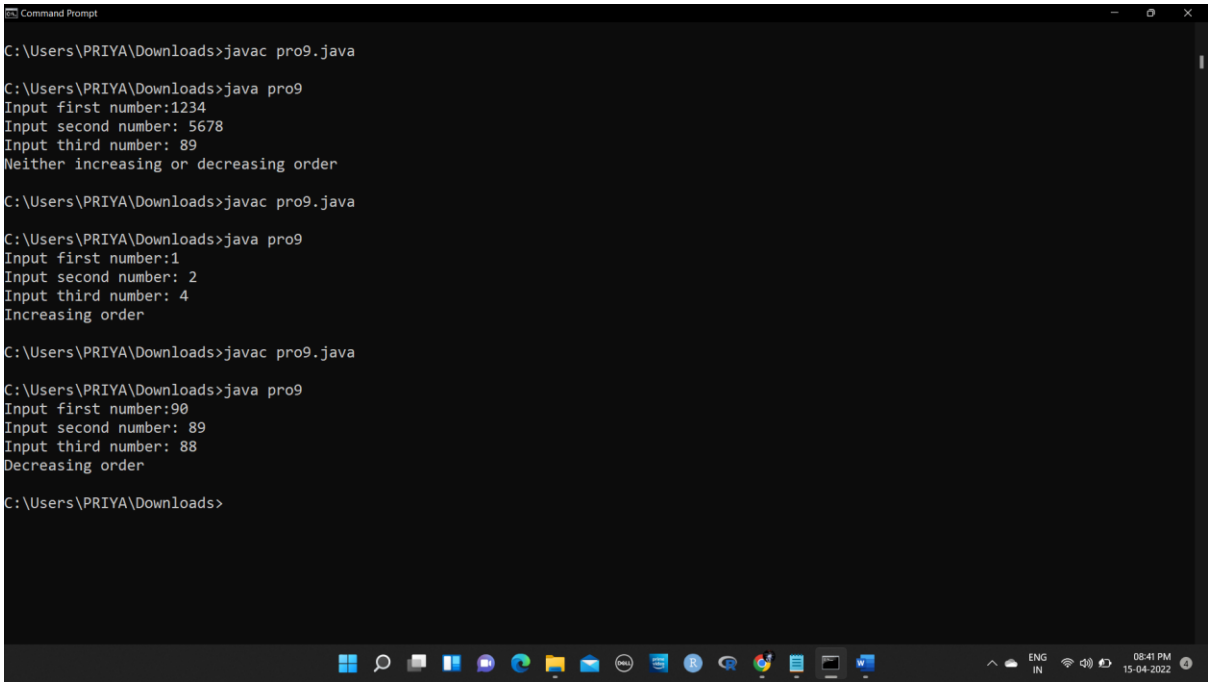


9. Write a program that accepts three numbers from the user and prints "increasing" if the numbers are in increasing order, "decreasing" if the numbers are in decreasing order, and "Neither increasing nor decreasing order" otherwise.

PROGRAM:

```
import java.util.Scanner;
public class pro9 {

public static void main(String[] args)

{

Scanner in = new Scanner(System.in);
System.out.print("Input first number:");
double x = in.nextDouble();
System.out.print("Input second number: ");
double y = in.nextDouble();
System.out.print("Input third number: ");
double z = in.nextDouble();
if (x < y && y < z)
{
System.out.println("Increasing order");
}
else if (x > y && y > z)
{
System.out.println("Decreasing order");
}
else
{
System.out.println("Neither increasing or decreasing order");
}
}
}
```

OUTPUT:



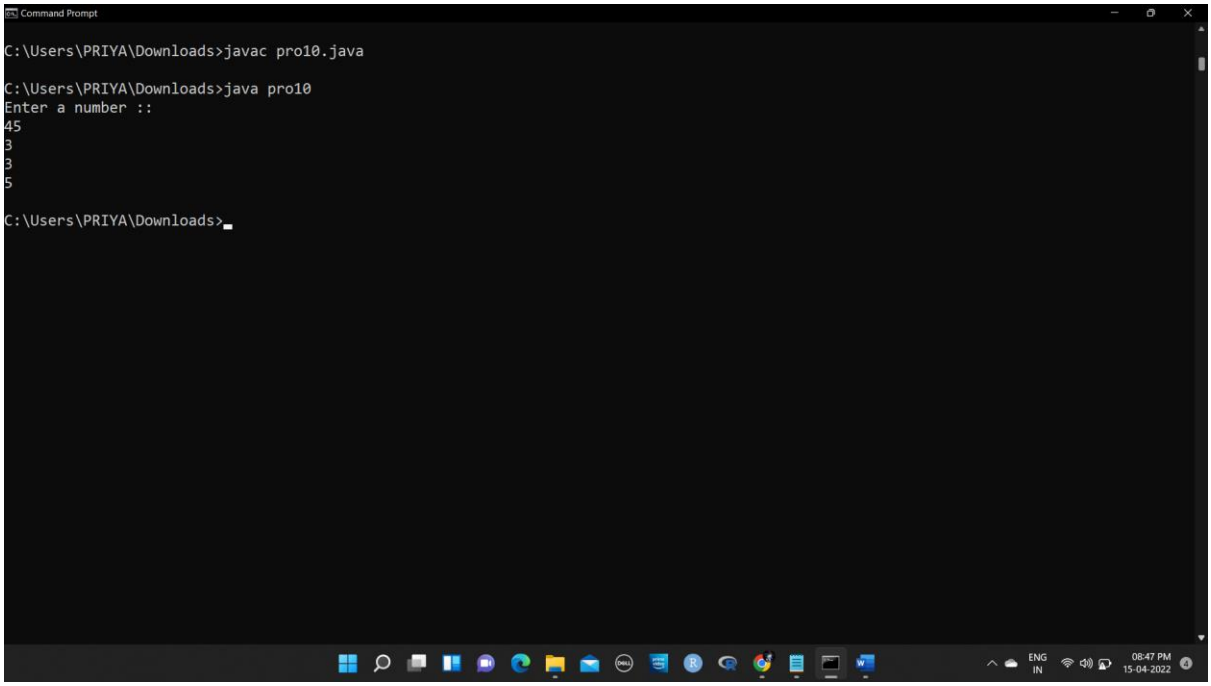
10. Given a number n, write a Java program to print all prime factors of n. For example, if the input number is 12, then the output should be "2 2 3". And if the input number is 315, then the output should be "3 3 5 7".

PROGRAM:

```
import java.util.Scanner;


public class pro10 {
  public static void main(String args[]){
    int number;
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter a number ::");
    number = sc.nextInt();


    for(int i = 2; i< number; i++) {
      while(number%i == 0) {
        System.out.println(i+" ");
        number = number/i;
      }
    }
```

```
    if(number >2) {
       System.out.println(number);
    }
  }
}
```

OUTPUT:



11. Write a Java program to display the following pattern:

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

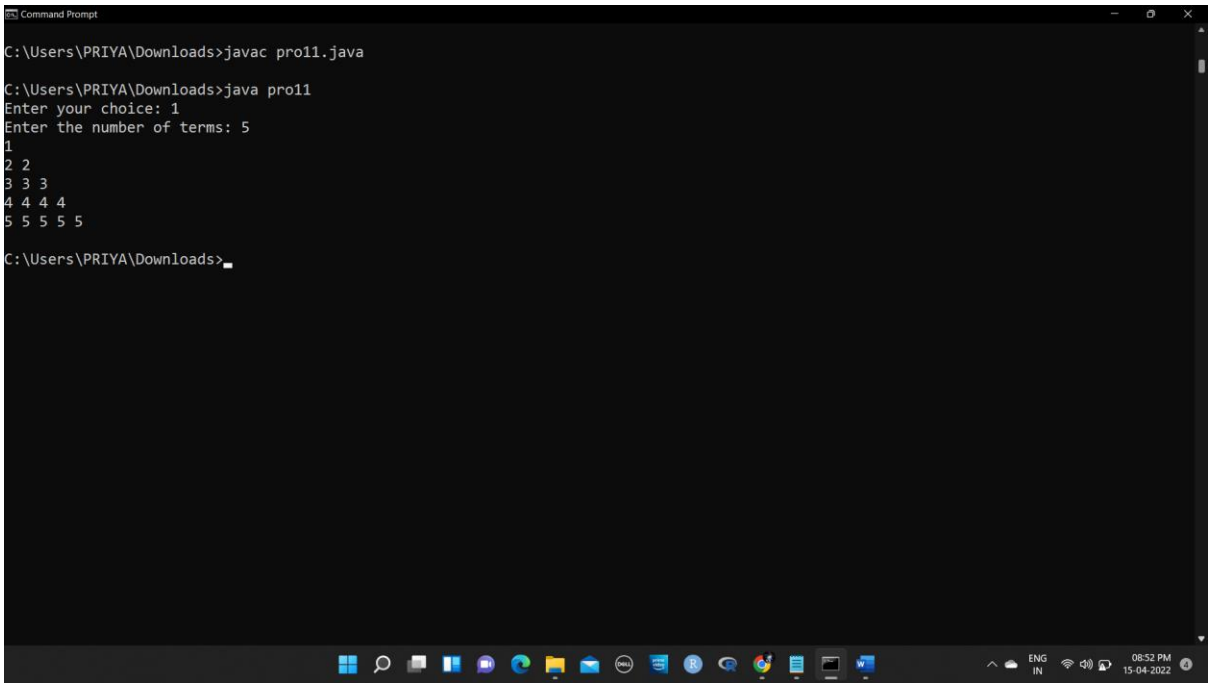
PROGRAM:

```
import java.util.Scanner;

public class pro11
{
   public static void main(String[]args)
```

```
{

        Scanner in = new Scanner(System.in);
        System.out.print("Enter your choice: ");
        int ch = in.nextInt();

        System.out.print("Enter the number of terms: ");
        int n = in.nextInt();

        switch (ch) {
            case 1:
            for (int i = 1; i <= n; i++) {
                for (int j = 1; j <= i; j++) {
                    System.out.print(i + " ");
                }
                System.out.println();
            }
            break;

            case 2:
            for (int i = n; i > 0; i--) {
                for (int j = 1; j <= i; j++) {
                    System.out.print(i + " ");
                }
                System.out.println();
            }
            break;

            default:
            System.out.println("Incorrect Choice");
```

```
        }
    }
}
```

OUTPUT:



12. Write a Java program to display the following pattern

1

2 1

3 2 1

4 3 2 1

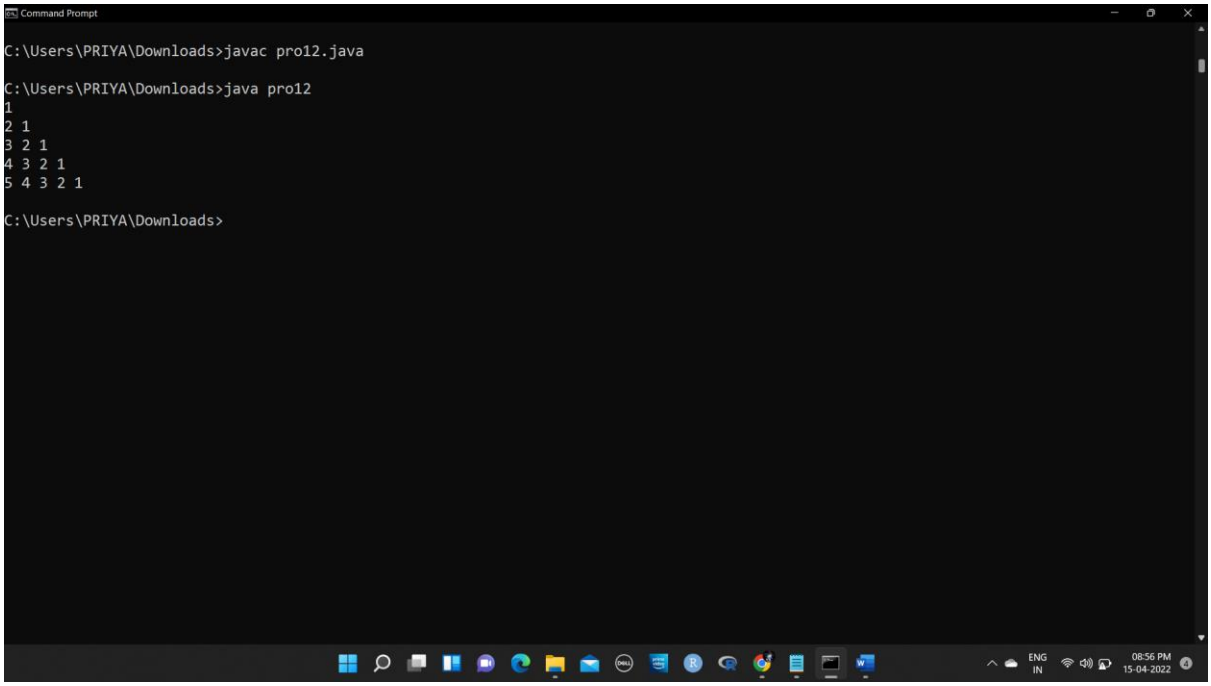
5 4 3 2 1

PROGRAM:

```
public class pro12
{
    public static void main(String args[]) {
        for (int i = 1; i <= 5; i++) {
            for (int j = i; j >= 1; j--) {
                System.out.print(j + " ");
            }
```

```
            System.out.println();
        }
    }
}
```

OUTPUT:



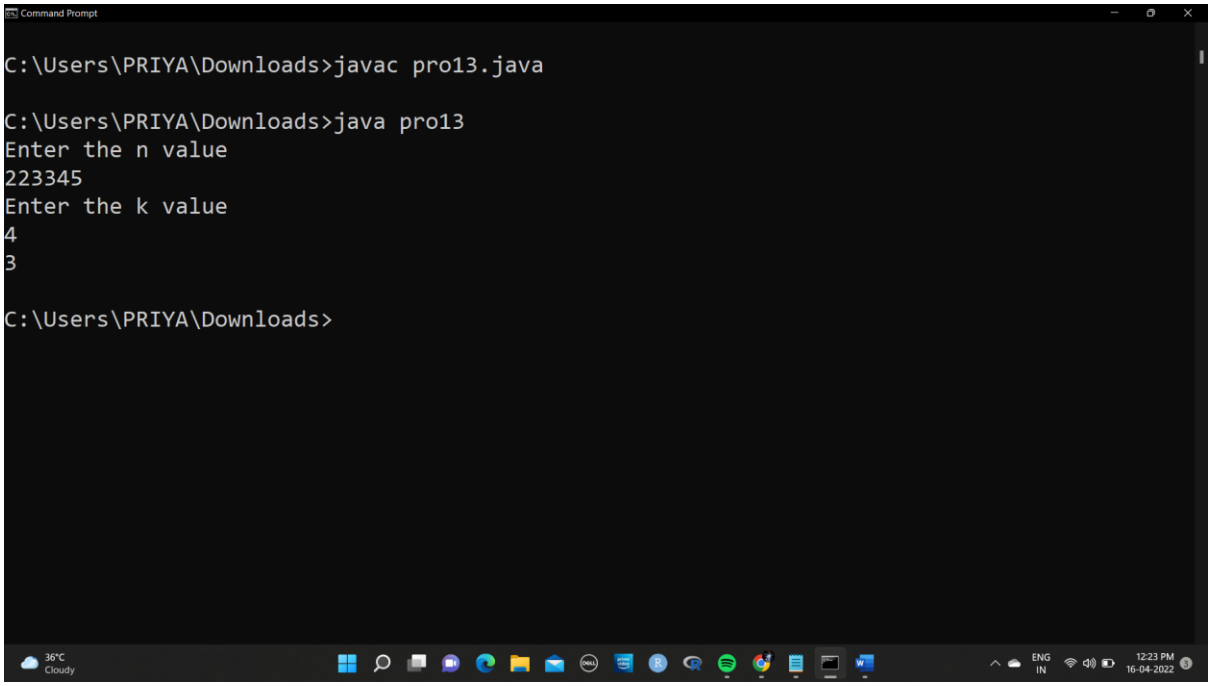
13. Write a Java program to print the k-th digit from last. e.g., input 23617 and k=4 output 3.

PROGRAM:

```
import java.util.*;
class pro13{
public static void kthDigitFromLast(int n, int k)
{
if (k <= 0)
{
System.out.println(-1);
return;
}
String temp = Integer.toString(n);
if (k > temp.length())
```

```
{
System.out.println(-1);
}
else
{
int index = temp.length() - k;
int res = temp.charAt(index) - '0';
System.out.println(res);
}
}
 public static void main(String[] args)
{
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the n value");
    int n=sc.nextInt();
    System.out.println("Enter the k value");
    int k=sc.nextInt();
    kthDigitFromLast(n, k);
}
}
```

OUTPUT:



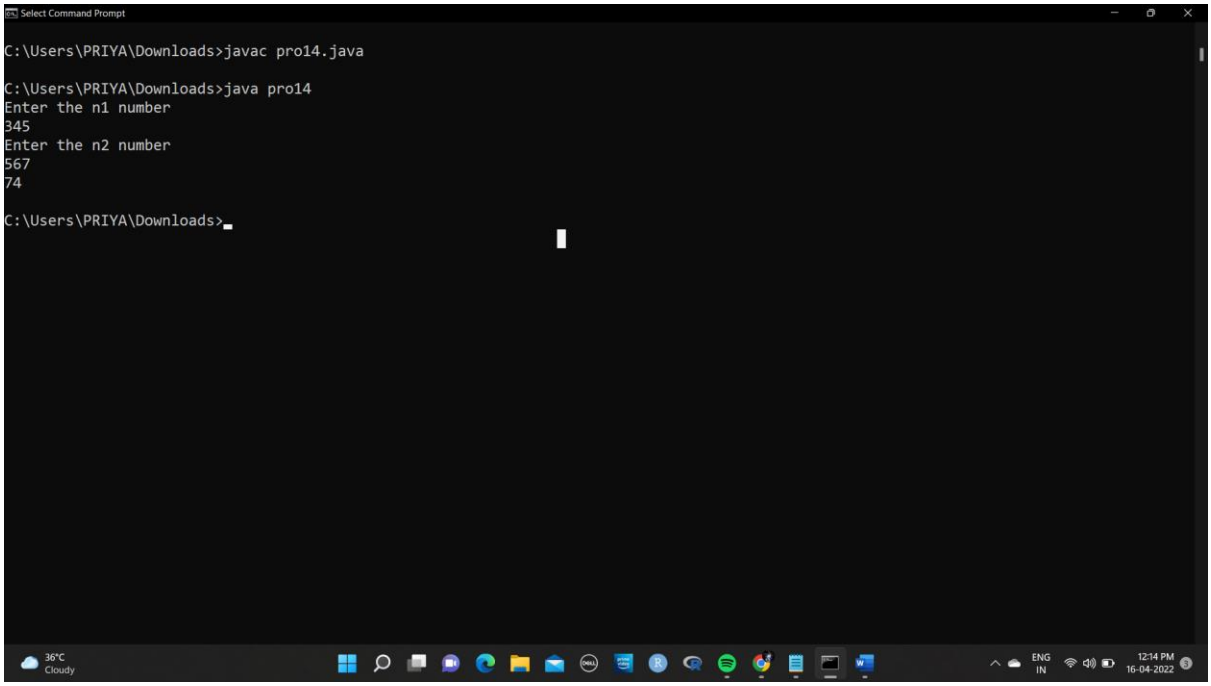
14. Write a Java program that reads two numbers (assume that both have the same number of digits). The program outputs the sum of the product of corresponding digits. Input 327 and 539 output 3x5+2x3+7x9=84.

PROGRAM:

```
import java.util.*;
class pro14{
static int sumOfProductOfDigits(int n1,int n2)
{
int sum = 0;
while (n1 > 0 && n2 > 0) {
sum += ((n1 % 10) * (n2 % 10));
n1 /= 10;
n2 /= 10;
}
return sum;
}
public static void main(String args[])
{
Scanner sc=new Scanner(System.in);
System.out.println("Enter the n1 number");
```

```
int n1=sc.nextInt();
System.out.println("Enter the n2 number");
int n2=sc.nextInt();
System.out.println(sumOfProductOfDigits(n1, n2));
}
}
```

OUTPUT:



15. Write a Java program to find the number of digits. Input 423 output 3. Input 21151 output 5.

PROGRAM:

```
import java.util.Scanner;
public class pro15 {
  public static void main(String args[]){
    Scanner sc = new Scanner(System.in);
    int count = 0;
    System.out.println("Enter a number :");
    int num = sc.nextInt();
    while(num!=0){
      num = num/10;
```

```
        count++;
      }
      System.out.println("Number of digits in the entered integer are :: "+count);
   }
}
```

OUTPUT: