**ASSIGNMENT-7**

**Q1. WAP in Java to print and find the sum of following series:**

**1+ 1/2 + 1/3 + 1/4 + 1/5 + .. 1/N. Find the sum of this series.**

**Source Code:**

import java.util.Scanner;

public class **Series** {

public static void main(String[] args) {

Scanner scan = new Scanner(System.in);

int n;

double sum = 0.0;

System.out.print("Enter N value: ");

n = scan.nextInt();

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

sum += 1.0 / i;

System.out.println("1/"+i+"+");

}

System.out.println("\b");

System.out.println("Sum of Series = " + sum);

}

}

**OUTPUT:**

**FOR Compilation** :- javac **Series**.java

**For run** :- java **Series**

Enter N value: 9

1/1+1/2+

1/3+

1/4+

1/5+

1/6+

1/7+

1/8+

1/9+

Sum of Series = 2.8289682539682537

**Q2. 1 + 1/x + 1/x2 + 1/x3 +.......+1/xn . Find the sum of this series**

**Source Code:**

import java.util.Scanner;

public class Series2{

public static void main(String args[])

{

Scanner sc = new Scanner(System.in);

int n,x;

double sum=0;

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

x=sc.nextInt();

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

n=sc.nextInt();

for(int i=0;i<=n;i++){

System.out.print("1/"+x+"^"+i);

if(i<n){

System.out.print(" + ");

}

sum=sum+1/(Math.pow(x,i)); }

System.out.println(" \nThe sum of series = " +sum);

} }

**OUTPUT:**

**FOR Compilation** :- javac **Series2**.java

**For run** :- java **Series2**

**Enter the value of X: 5**

**Enter any number: 5**

**1/5^0 + 1/5^1 + 1/5^2 + 1/5^3 + 1/5^4 + 1/5^5**

**The sum of series =**

**1.2499200000000001**

**Q3. 1 + 1/2! + 1/3!+....... +1/n!. Also find the sum.**

**Source Code:**

import java.util.Scanner;

public class **Series3**{

public static void main(String args[]){

Scanner sc = new Scanner(System.in);

int n,fact=1;

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

n=sc.nextInt();

double sum=0;

for(int i=0;i<=n;i++){

System.out.print("1/"+i+"!");

if(i<n){

System.out.print(" + ");

}

for(int j=1;j>0;j--){

fact =fact\*j;

}

double num= 1.0/fact;

sum = sum +num;

}

System.out.println("\nThe sum of series = "+sum);

} }

**OUTPUT:**

**FOR Compilation** :- javac **Series3**.java

**For run** :- java **Series3**

**Enter a number:**

**5**

**1/0!+ 1/1!+ 1/2!+ 1/3!+ 1/4! + 1/5!**

**The sum of series = 6.0**

**Q4. 1 + 2^3 + 3^2 + 4^3 + …….+n**

**Source Code:**

import java.lang.Math;

class **power**{

public static void main(String args[]){

double i, sum=0.0,even=0.0,odd=1.0,n=5.0,d=3.0,b=2.0,y=0.0,x=0.0;

for(i=1.0;i<=n;i++)

{

if(i%2==0){

x=Math.pow(i,d);

System.out.println(i+"^"+d+"+");

}

else {

y=Math.pow(i,b);

System.out.println(i+"^"+b+"+");

}

sum=sum + x + y;

}

System.out.print("\b");

System.out.println("sum of series ="+sum);

}

}

**OUTPUT:**

**FOR Compilation** :- javac **power**.java

**For run** :- java **power**

1.0^2.0 + 2.0^3.0 + 3.0^2.0 + 4.0^3.0 + 5.0^2.0+

sum of series =189.0

**Q5. Generate the following patterns:**

**1 0 0 0 1**

**0 1 0 1 0**

**0 0 1 0 0**

**0 1 0 1 0**

**1 0 0 0 1**

**Source Code:**

class **PatternGenerator** {

public static void main(String[] args) {

int n = 5; // Size of the pattern

for (int i = 0; i < n; i++) {

for (int j = 0; j < n; j++) {

if (i == j || i == n - j - 1) {

System.out.print("1 ");

} else {

System.out.print("0 ");

}

}

System.out.println();

}

}

}

**OUTPUT:**

**FOR Compilation** :- javac **PatternGenerator**.java

**For run** :- java **PatternGenerator**

**1 0 0 0 1**

**0 1 0 1 0**

**0 0 1 0 0**

**0 1 0 1 0**

**1 0 0 0 1**

**Q6)**

**5 4 3 2 1**

**4 3 2 1**

**3 2 1**

**2 1**

**1**

**Source Code:**

class **PatternGenerator** {

public static void main(String[] args) {

int n = 5; // Size of the pattern

for (int i = 0; i < n; i++) {

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

System.out.print(n - j + " ");

}

System.out.println();

}

}

}

**OUTPUT:**

**FOR Compilation** :- javac **PatternGenerator**.java

**For run** :- java **PatternGenerator**

**5 4 3 2 1**

**4 3 2 1**

**3 2 1**

**2 1**

**1**