Code at Random (OPC) PVT. LTD.

MODULE 5 -

PRINTING SUM OF SERIES

How to print the sum of series ?

- **Question 1:- 1+2+3+4+5+…..+n terms**
  - ***Input Example :- Lets us suppose user wants the sum of first five terms i.e., n=5***
  - ***Output :- 15***
  - ***Explanation :- Here, user gives input n=5 , then the output should be the sum of first five terms of the series i.e., sum = 1+2+3+4+5 which is equal to 15.***
- **Question 2 :- 2+4+6+8+10+…..n terms**
  - ***Input Example :- Lets us suppose user wants the sum of first seven terms i.e., n=7***
  - ***Output :- 56***
  - ***Explanation :- Here, user gives input n=5 , then the output should be the sum of first seven terms of the series i.e., sum = 2+4+6+8+10+12+14 which is equal to 56.***

Implementing in Java

- **Question :- 1+3+5+7+9+….+n terms**
- ✓ **First run the same loop as we do earlier while printing the series as it is.**
- ✓ **We will use for(i=1; i<= 2*n+1; i+=2)**
- ✓ **Now we know that we have to print the sum , not the exact terms as before.**
- ✓ **Therefore, in the loop body we will use the method of adding each term with other.**
- ✓ **That is, we will initialize sum= 0 and then adding each term with it.**
- ✓ **Final Code :- for(i=1; i<= 2*n+1; i+=2)**

  sum= sum+I;
- ✓ **Finally, after the loop print the value of sum.**

Practice Problems

- $S = \frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \ldots$ *n terms, where n will be given by the user*
- $S = x + x^2 + x^3 + \ldots$ *n terms, where x and n will be given by user*
- $S = x + \frac{x}{2} + \frac{x}{3} + \ldots$ *n terms , where x and n will be given by user*
- $S = x + 2x + 3x + \ldots$ *n terms , where x and n will be given by user*
- $S = x + \frac{x^2}{4} + \frac{x^3}{9} + \ldots$ n terms, *where x and n will be given by user*
- $S = x + \frac{x^3}{2} + \frac{x^5}{3} + \ldots$ n terms, *where x and n will be given by user*

Solution to above questions

1.
```
import java.util.*;
class sumseries2 {
    public static void main(String[] Args)  {
     int i,n;
     double s= 0.0;
     Scanner sc = new Scanner(System.in);
     System.out.println("Enter the terms in the series");
     n=sc.nextInt();
     for(i=1;i<=n;i++)  {
         s=s+(i/i+1);
     }
      System.out.print("Sum of this series is "+s );
    }
}
```

2.
```
import java.util.*;
class sumseries3{
    public static void main(String[] Args)  {
     int i,n,x;
     double s= 0.0;
     Scanner sc = new Scanner(System.in);
     System.out.println("Enter the terms in the series and the value of x");
     n=sc.nextInt();
     x= sc.nextInt();
     for(i=1;i<=n;i++)
         s=s+(Math.pow(x,i));
System.out.print("Sum of this series is "+s );
    }
}
```

Solution to above questions

3.
```
import java.util.*;

class sumseries4 {

    public static void main(String[] Args)   {

     int i,n,x;

     double s= 0.0;

     Scanner sc = new Scanner(System.in);

     System.out.println("Enter the terms in the series and the value of x");

     n=sc.nextInt();

     x= sc.nextInt();

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

         s=s+(x/i);

System.out.print("Sum of this series is "+s );

    }

}
```

4.
```
import java.util.*;

class sumseries5 {

    public static void main(String[] Args)  {

     int i,n,x;

     double s= 0.0;

     Scanner sc = new Scanner(System.in);

     System.out.println("Enter the terms in the series and the value of x");

     n=sc.nextInt();

     x= sc.nextInt();

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

          s=s+(x*i);

System.out.print("Sum of this series is "+s );

    }

}
```

Solution to above questions

```
5. import java.util.*;

class sumseries6 {

    public static void main(String[] Args)   {

     int i,n,x;

     double s= 0.0;

     Scanner sc = new Scanner(System.in);

     System.out.println("Enter the terms in the series
and the value of x");

     n=sc.nextInt();

     x= sc.nextInt();

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

       s=s+(Math.pow(x,i)/(i*i));

System.out.print("Sum of this series is "+s );

    }
```

```
6. import java.util.*;

class sumseries7 {

    public static void main(String[] Args)  {

     int i,n,x;

     double s= 0.0;

     Scanner sc = new Scanner(System.in);

     System.out.println("Enter the terms in the series and
the value of x");

     n=sc.nextInt();

     x= sc.nextInt();

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

         s=s+(Math.pow(x,2*i-1)/i);

System.out.print("Sum of this series is "+s );

    }
```