

Question :01

$$1^2 + 2^2 + 3^2 + 4^2 + 5^2 + \dots + N^2$$

CODE :-

```
import java.util.Scanner;

public class SquaresSum {
    @Contract(pure = true)
    static int sumSquare(int n){ 2 usages
        if(n==1){
            return 1;
        }
        return (n*n) + sumSquare(n-1);
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int N=sc.nextInt();
        System.out.print(sumSquare(N));
    }
}
```

OUTPUT :-

```
7
140
Process finished with exit code 0
```

Question :02

$$2^0 + 2^1 + 2^2 + 2^3 + \dots + 2^N$$

CODE :-

```
import java.util.Scanner;

public class twoToThePower {

    static double powerSum(double n){ 2 usages
        if(n==0){
            return 1;
        }
        return Math.pow(2.0,n)+powerSum(n-1);
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        double N=sc.nextInt();
        System.out.print(powerSum(N));
    }
}
```

OUTPUT :-

```
7
255.0
Process finished with exit code 0
```

Question :03

Factorial of N $\rightarrow 1*2*3*4*5*.....*N$

CODE :-

```

import java.util.Scanner;

public class _24sept_Factorial {
    @Contract(pure = true)
    static long factorial(int n){ 2 usages
        if(n==0 || n==1){
            return 1;
        }else{
            return n*factorial(n-1);
        }
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int N=sc.nextInt();
        System.out.print(factorial(N));
    }
}

```

OUTPUT :-

```

5
120
Process finished with exit code 0

```

Question :04

Fibonacci → 1,1,2,3,5,8,13.....

CODE :-

```

import java.util.Scanner;

public class _24sept_Fibonacci {

    static int fibinacci(int n){ 3 usages
        if(n==1 || n==2){
            return 1;
        }
        return fibinacci(n-1)+fibinacci(n-2);
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int N=sc.nextInt();
        System.out.print(fibinacci(N));
    }
}

```

OUTPUT :-

```

7
13
Process finished with exit code 0

```

Question :05

Max. and Min. element in array using Recursion

CODE :-

```

import java.util.Scanner;

public class _24sept_MaxMin {

    static int max(int a[], int n) { 2 usages
        if (n == 1) {
            return a[0];
        }
        int Max = max(a, n - 1);
        return Math.max(a[n - 1], Max);
    }

    static int min(int a[], int n) { 2 usages
        if (n == 1) {
            return a[0];
        }
        int Min = min(a, n - 1);
        return Math.min(a[n - 1], Min);
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int arr[]={99,4,51,69,6,31};
        System.out.println("Max element : "+max(arr, arr.length));
        System.out.print("Min element : "+min(arr, arr.length));
    }
}

```

OUTPUT :-

```

Max element : 99
Min element : 4
Process finished with exit code 0

```

Question :06

Check whether String is Palindrome or not using recursion

CODE :-

```
import java.util.Scanner;

public class _24sept_palindrome {

    static boolean check(String str, int n, int m) { 2 usages
        if (n >= m) {
            return true;
        }
        if (str.charAt(n) != str.charAt(m)) {
            return false;
        }
        return check(str, n: n + 1, m: m - 1);
    }

    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        String str=sc.next();
        if(check(str, n: 0, m: str.length()-1)){
            System.out.print("This is Palindrome");
        }else {
            System.out.print("This is not Palindrome");
        }
    }
}
```

OUTPUT :-

```
level
This is Palindrome
Process finished with exit code 0
```

```
public
This is not Palindrome
Process finished with exit code 0
```

Question :07

Leetcode → problem No. 509

