PES UNIVERSITY

OOAD with JAVA: Week - 1

JAN 2022

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	Date: 21-01-22	Exercise No: 1

PROBLEM STATEMENTS

1. Input a number from the user and display the number of 1's in the binary representation of a number
2. Write a program to find surface area of a cylinder: 2PIr*r+2PIr*h
3. Create a class called MyNumber as shown below. To this class, add a method to count the number of bits which are 1 in the binary representation of the number. Use the concept of package creation and importing the package

OBJECTIVE

To test the student on JAVA basic concepts like control statements, scanner class and import statements.

PREREQUISITE

In order to write these programs, the student needs to understand the fundamentals of JAVA and Compiler must be available on the student's system. The student must be familiar with basic concepts in JAVA

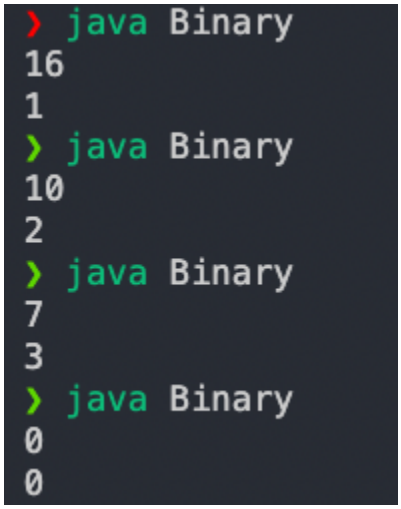
PROGRAM - 1

```
import java.util.Scanner;
public class Binary{
   public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int num = input.nextInt();
        int count = 0;
        while(num!=0){
            if(num%2!=0) count++;
            num=num/2;
        }
        System.out.println(count);
        input.close();
   }
}
```

TEST CASES

10 -> 2
7 -> 3
16 -> 1
0 -> 0

SCREENSHOT OF OUTPUT



PROGRAM - 2

```
package Java;
import java.util.Scanner;
public class TSA{
   public static void main(String[] args){
        double tsa = 2*Math.PI;
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the Radius: ");
        double r = input.nextDouble();
        System.out.println("Enter the Height: ");
        double h = input.nextDouble();
        System.out.println("Total Surface Area: "+ tsa*r*(r+h));
        input.close();
   }
}
```

TEST CASES

r=0 h=1 -> 0
r=10 h=10 -> 1256.63
r=17 h=5 -> 2349.91

SCREENSHOT OF OUTPUT

```
❯ java TSA.java
Enter the Radius:
0
Enter the Height:
1
Total Surface Area: 0.0
❯ java TSA.java
Enter the Radius:
10
Enter the Height:
10
Total Surface Area: 1256.6370614359173
❯ java TSA.java
Enter the Radius:
17
Enter the Height:
5
Total Surface Area: 2349.9113048851655
```

PROGRAM - 3

```
package OOAD.Package;

public class MyNumber {
   private int number = 5;
   public int ctor(){
       int count = 0;
       while(number!=0){
           if(number%2!=0) count++;
           number=number/2;
       }
       return count;
```

```
    }
    public void display_method(int num){
        System.out.println("Display method: " + num);
    }
}
```

```
package OOAD;
import OOAD.Package.MyNumber;

public class Pkg{
 public static void main(String[] args){
    MyNumber myNum = new MyNumber();
    int ctor = myNum.ctor();
    myNum.display_method(ctor);
 }
}
```

TEST CASES

Hardcoded because number is private according to question
5 -> 2

SCREENSHOT OF OUTPUT

```
❯ java Pkg.java
Display method: 2
```