

# Rajalakshmi Engineering College

Name: Puvanesu R  
Email: 241901085@rajalakshmi.edu.in  
Roll no: 241901085  
Phone: 6382355104  
Branch: REC  
Department: CSE (CS) - Section 1  
Batch: 2028  
Degree: B.E - CSE (CS)

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 1\_CY

Attempt : 1  
Total Mark : 40  
Marks Obtained : 40

#### **Section 1 : Coding**

##### **1. Problem Statement:**

Tom is tasked with writing a program that determines whether a given integer is the square of another integer. A perfect square is a number that can be expressed as the square of an integer. The program should take an integer as input and determine if it is a perfect square or not.

The task is to implement the logic to check if the provided integer is the square of an integer and return the result.

##### ***Input Format***

The first line of the input contains an integer, "input", where |input| represents the absolute value of the integer.

##### ***Output Format***

The output should display a boolean value, "result," which should be set to true if the input is a perfect square (the square of an integer), and false if it is not.

Refer to the sample output for formatting specifications.

**Sample Test Case**

Input: 16

Output: Is the integer a perfect square? true

**Answer**

```
import java.util.*;
class integer{
    public static void main(String[] arg){
        Scanner g=new Scanner(System.in);
        int a=g.nextInt();
        double b=Math.sqrt(a);
        int u=(int)b;
        System.out.print("Is the integer a perfect square? ");
        if(a<=0 || b*b!=a){
            System.out.print("false");
        }else if(u*u==a){
            System.out.print("true");
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**

**2. Problem Statement:**

Gilbert is tasked with writing a program that checks whether a given integer is an odd number. An odd number is one that cannot be exactly divided by 2. The program should take an integer as input and determine if it is an odd number or not. The task is to implement the logic to check if the provided integer is odd and return the result.

***Input Format***

The first line of the input contains an integer, "input".

#### ***Output Format***

The output should display a boolean value, "result," which should be set to true if the input integer is an odd number and false if it is even.

Refer to the sample output for formatting specifications.

#### ***Sample Test Case***

Input: 0

Output: Is the integer odd? false

#### ***Answer***

```
import java.util.*;
class pro{
    public static void main(String[] arg){
        Scanner g=new Scanner(System.in);
        int a=g.nextInt();
        System.out.print("Is the integer odd? ");
        if(a==0 || a%2==0){
            System.out.println("false");
        }else if(a%2!=0){
            System.out.print("true");
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**

### **3. Problem Statement:**

"Write a program that helps identify the type of a triangle based on the lengths of its three sides. The program prompts the user to input the lengths of sides 'a,' 'b,' and 'c,' and then it classifies the triangle as 'Equilateral' if all sides are equal, 'Isosceles' if two sides are equal, or 'Scalene' if all sides are different. Can you provide the Java code for this task?"

### ***Input Format***

The first line of the input is an integer 'a' representing the length of side 'a.'

The second line of the input is an integer 'b' representing the length of side 'b.'

The third line of the input is an integer 'c' representing the length of side 'c.'

### ***Output Format***

The program outputs a single line that specifies the type of the triangle:  
"Equilateral," "Isosceles," or "Scalene."

### ***Sample Test Case***

Input: 3

4

5

Output: The triangle is Scalene

### ***Answer***

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

        Scanner g=new Scanner(System.in);
        int a=g.nextInt();
        int b=g.nextInt();
        int c=g.nextInt();
        System.out.print("The triangle is ");
        if(a==b && b==c){
            System.out.print("Equilateral");
        }else if(a==b || b==c || a==c){
            System.out.print("Isosceles");
        }else{
            System.out.print("Scalene");
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**

4. Problem Statement

Mandy is working on a cybersecurity project that involves basic encryption techniques. She wants to write a program that takes an integer number and performs a bitwise XOR operation to flip all the bits.

Help Mandy in this encryption using bitwise operations.

***Input Format***

The input consists of an integer N, representing the number to be flipped.

***Output Format***

The output displays "Result: " followed by an integer representing the result of the bitwise XOR operation to flip all the bits.

Refer to the sample output for formatting specifications.

***Sample Test Case***

Input: 0

Output: Result: 255

***Answer***

```
import java.util.*;
class integer{
    public static void main(String[] arg){
        Scanner g= new Scanner(System.in);
        int a=g.nextInt();
        int r=a^255;
        System.out.print("Result: "+r);
    }
}
```

**Status : Correct**

**Marks : 10/10**