# Rajalakshmi Engineering College

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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:

"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***

```
// You are using Java
import java.util.*;
class main{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();
        if(a==b && b==c)
        {
            System.out.println("The triangle is Equilateral");
        }
        else if((a==b) || (b==c) || (a==c))
        {
            System.out.println("The triangle is Isosceles");
        }
        else
        {
            System.out.println("The triangle is Scalene");
        }
    }
}
```

***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***

```
// You are using Java
import java.util.*;
class main{
   public static void main(String args[])
   {
      Scanner sc = new Scanner(System.in);
      int a = sc.nextInt();
      if(a%2==0)
      {
         System.out.println("Is the integer odd? false");
      }
      else
      {
         System.out.println("Is the integer odd? true");
      }
   }
}
```

***Status :*** Correct ***Marks : 10/10***

3. 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***

```
// You are using Java
import java.util.*;
class main
{
   public static void main(String args[])
   {
      Scanner sc = new Scanner(System.in);
      int a = sc.nextInt();
      int b = (1<<8)-1;
      int res = a^b;
      System.out.println("Result: "+res);
   }
}
```

***Status :*** Correct ***Marks : 10/10***

4. Problem Statement

In a logistics company, each delivery pack contains a specific number of items, and the priority customer receives double the amount. Write a program to determine the total number of delivery packs required for the operation, considering the number of items per pack and the number of customers given as input by the user.

Example

Input:

Number of items per pack = 96

Number of customers = 8

Output:

10

Explanation:

Given the number of items per pack = 96 and the number of customers = 8, the calculations are as follows:

Total number of items needed = number of items per pack * number of customers = 96 * 8 = 768.Priority customer's share = double the amount of items per pack = 2 * 96 = 192.Total items with the priority customer = total items needed + priority share = 768 + 192 = 960.Number of packs needed = (960 + 96 − 1)/ 96 = 10.98Since we cannot have a fraction of a pack, the output is 10.

***Input Format***

The input consists of two space-separated integers N and C, representing the number of items per pack and the number of customers.

***Output Format***

The output displays an integer, representing the total number of delivery packs required for the operation.

Refer to the sample output for formatting specifications.

***Sample Test Case***

Input: 1 1

Output: 3

***Answer***

```
// You are using Java
import java.util.*;
class main
{
   public static void main(String args[])
   {
      Scanner sc = new Scanner(System.in);
      int a = sc.nextInt();
      int b = sc.nextInt();
      int c = a*b;
      int d = 2*a;
      int total = c+d;
      int n = (total+a-1)/a;
      System.out.println(n);
   }
}
```

***Status :*** Correct ***Marks : 10/10***