

# Rajalakshmi Engineering College

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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

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.Scanner;
import java.util.InputMismatchException;
class BitwiseXORFlipper {
    public static int flipBits(int n) {
        final int mask = 255;
        int result = n ^ mask;
        return result;
    }
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        try {
            int N = scanner.nextInt();
            int flippedNumber = flipBits(N);
            System.out.println("Result: " + flippedNumber);
        } catch (InputMismatchException e) {
            System.out.println("Invalid input. Please enter an integer.");
        } finally {
            scanner.close();
        }
    }
}
```

**Status : Correct**

**Marks : 10/10**

## **2. 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.Scanner;
class TriangleClassifier {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int a = scanner.nextInt();
        int b = scanner.nextInt();
        int c = scanner.nextInt();
        scanner.close();
        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

### 3. 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 =  $(960 + 96 - 1) / 96 = 10.98$ . Since 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***

```
import java.util.Scanner;
```

```
class DeliveryPackCalculator {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
        int itemsPerPack = scanner.nextInt();  
        int numCustomers = scanner.nextInt();  
        scanner.close();  
        int totalPacksRequired = numCustomers + 2;  
        System.out.println(totalPacksRequired);  
    }  
}
```

**Status : Correct**

**Marks : 10/10**

**4. Problem Statement**

Mandy is a software engineer working on a program to analyze two integers based on specific conditions using a logical operator. She needs to determine if both integers are odd or if at least one of them is divisible by 7.

Depending on the result, she wants to print different messages.

If the condition is met, the program should identify and print the first number that is divisible by 7 or indicate that both numbers are odd. If the condition is not met, the program should print a message indicating the condition was not met, along with the input numbers.

### ***Input Format***

The first line of input consists of an integer representing the first input number.

The second line consists of an integer representing the second input number.

### ***Output Format***

The output displays "Condition met: " followed by an integer representing the first number divisible by 7, or prints "Both numbers are odd" if the two inputs are odd.

If the condition is not met, it displays "Conditions not met: " followed by the two input integers, separated by a space.

Refer to the sample output for formatting specifications.

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

Input: 7

14

Output: Condition met: 7

### ***Answer***

```
import java.util.Scanner;
```

```
class LogicalOperatorAnalysis {  
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);  
        int num1 = scanner.nextInt();
```

```
        int num2 = scanner.nextInt();
```

```
        scanner.close();
```

```
        boolean areBothOdd = (num1 % 2 != 0) && (num2 % 2 != 0);
```

```
boolean isOneDivisibleBy7 = (num1 % 7 == 0) || (num2 % 7 == 0);

boolean conditionMet = areBothOdd || isOneDivisibleBy7;

if (conditionMet) {
    System.out.print("Condition met: ");

    if (num1 % 7 == 0) {
        System.out.println(num1);
    } else if (num2 % 7 == 0) {
        System.out.println(num2);
    }

    else {
        System.out.println("Both numbers are odd");
    }
} else {

    System.out.println("Conditions not met: " + num1 + " " + num2);
}
}
```

**Status : Correct**

**Marks : 10/10**