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

```
import java.util.Scanner;

public 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.print("The triangle is Equilateral");
        } else if (a == b || b == c || a == c) {
            System.out.print("The triangle is Isosceles");
        } else {
            System.out.print("The triangle is Scalene");
        }

        sc.close();
    }
}
```

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

2. 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;
class main{
   public static void main(String[] args){
      Scanner s=new Scanner(System.in);
      int n=s.nextInt();
      int res=n^255;
      System.out.println("Result: " +res);
   }
}
```

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

3. PROBLEM STATEMENT:

Jule a mathematician expert is given two integers to find if the second integer is above the average of the first and second integer. Write a program that achieves this using the ternary operator.

Input Format

The first line of input represents the first integer.

The second line of input represents the second integer.

Output Format

The output should be displayed as "Below Average" or "Above Average"

REFER THE SAMPLE TESTCASES FOR THE FORMAT SPECIFICATIONS.

Sample Test Case

Input: 1
1
Output: Below Average

Answer

```
// You are using Java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int first = sc.nextInt();
        int second = sc.nextInt();

        String result = second > (first + second) / 2 ? "Above Average" : "Below
Average";
        System.out.print(result);

        sc.close();
    }
}
```

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

4. 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.Scanner;
class main{
   public static void main(String[] args){
      Scanner s=new Scanner(System.in);
      int a=s.nextInt();
      boolean res=false;
      if(a>=0)
      {
         int sq=(int) Math.sqrt(a);
         if(sq*sq==a)
         {
            res=true;
         }
      }
      System.out.println("Is the integer a perfect square? " +res);
```

```
    }
}
```

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