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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.io.*;
import java.util.Scanner;

class Triangle{
   public static void main(String[] arg){
      Scanner sc=new Scanner(System.in);
      int a=sc.nextInt();
      int b=sc.nextInt();
      int c=sc.nextInt();

      if((a==b)&&(a==c)&&(b==c))
         System.out.println("The triangle is Equilateral");
      else if((a==b)||(a==c)||(b==c))
         System.out.println("The triangle is Isosceles");
      else
         System.out.println("The triangle is Scalene");
   }
}
```

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

2. 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

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

class Numbers{
   public static void main(String[] args){
      Scanner sc=new Scanner(System.in);
      int n1=sc.nextInt();
      int n2=sc.nextInt();
```

```
    if((n1%2!=0 && n2%2!=0) || (n1%7==0 || n2%7==0)){
        System.out.print("Condition met: ");

        if(n1%7==0)
        System.out.println(n1);
        else if(n2%7==0)
        System.out.println(n2);
        else //if(n1%2!=0 && n2%2!=0)
        System.out.println("Both numbers are odd");
      }
      else
        System.out.printf("Conditions not met: %d %d",n1,n2);
   }
}
```

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

3. Problem Statement

In the faraway land of Arithmetica, there exists an ancient calculator that can only perform bitwise operations. The calculator is locked with a secret code that only works when the number is modified using a special operation called right shifting.

The ruler of Arithmetica, King Thales, needs your help to unlock the calculator. The lock on the calculator is encoded with a number, and the calculator will only open if you apply a right shift by 2 on the number. Your task is to help King Thales determine the magic number that will unlock the ancient calculator.

Input Format

The first line of input represents an integer.

Output Format

The output should display the right-shifted value by 2 bits.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 16

Output: 4

Answer

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

class MagicNumber{
   public static void main(String[] args){
      Scanner sc=new Scanner(System.in);
      int n=sc.nextInt();
      int right=n>>2;
      System.out.println(right);
   }
}
```

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

```
// You are using Java
import java.io.*;
import java.util.Scanner;
import java.lang.Math;

class PerfectSquare{
   public static void main(String[] args){
      Scanner sc=new Scanner(System.in);
      int n=sc.nextInt();
      int sq=(int)Math.sqrt(n);

      System.out.print("Is the integer a perfect square? ");
      if(n==sq*sq)
         System.out.println("true");
      else
         System.out.println("false");

   }
}
```

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