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 : 38.5

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

```java
// You are using Java
import java.util.*;
class NewClass{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        double a_sqrt = Math.sqrt(a);
        boolean msg;

        if(((double)a)==(a_sqrt *a_sqrt)){
            msg = true;
        }
        else{
            msg = false;
        }
        System.out.println("Is the integer a perfect square? "+ msg);
    }
}
```

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.util.*;
class NewClass{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        int b = sc.nextInt();
        boolean Is_a_odd = (a%2!=0);
        boolean Is_b_odd = (b%2!=0);
        boolean Is_a_div7 = (a%7==0);
```

```java
        boolean Is_b_div7 = (b%7==0);
        if(Is_a_odd && Is_b_odd){
            System.out.println("Condition met: Both numbers are odd");
        }
        else if(Is_a_div7 || Is_b_div7){
            System.out.printf("Condition met: %d", (a%7==0)? a:b);
        }
        else{
            System.out.printf("Conditions not met: %d %d",a,b);
        }
    }
}
```

Status : Partially correct   ***Marks : 8.5/10***

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 = 10.98Since 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

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

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

4.   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

```java
// You are using Java
import java.util.*;
class NewClass{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        int a = sc.nextInt();
        int b = sc.nextInt();
        int avg = (a+b)/2;
        String res = (avg < b)?"Above Average":"Below Average";
        System.out.println(res);
        sc.close();
    }
}
```

Status : Correct   *Marks : 10/10*