Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 2_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

Noah is analyzing numbers within a given range [A, B] and wants to calculate a special sum. For each number in the range, he calculates the product of its odd digits (ignoring even digits). If the number contains no odd digits, it is skipped. The sum of these products for all numbers in the range is the result.

Write a program to compute this sum.

Example

Input:

10 12

Output:

3

Explanation:

For 10, odd digits = 1, product = 1.

For 11, odd digits = 1, 1, product = 1 * 1 = 1.

For 12, odd digits = 1, product = 1.

Total sum = 1 + 1 + 1 = 3

Input Format

The input consists of two space-separated integers A and B, representing the inclusive range boundaries.

Output Format

The output prints a single integer representing the sum of the products of odd digits for all numbers in the range.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10 12

Output: 3

Answer

```
import java.io.*;
import java.util.Scanner;
class SpecialSum {
   public static void main(String[] args) {
      Scanner sc= new Scanner(System.in);
      int A=sc.nextInt();
      int B=sc.nextInt();
      int sum=0;
      for (int i=A;i<=B;i++) {
         int product=OddProd(i);
         if (product != 0) {
            sum += product;
         }
```

```
        }
        System.out.println(sum);
    }

    private static int OddDigitProduct(int num) {
        int product = 1;
        boolean hasOddDigit = false;
        while (num > 0) {
            int digit = num % 10;
            if (digit % 2 != 0) {
                product *= digit;
                hasOddDigit = true;
            }
            num /= 10;
        }
        return hasOddDigit ? product : 0;
    }
}
```

Status : Wrong **Marks : 0/10**

2. Problem Statement

Ted, the computer science enthusiast, has accepted the challenge of writing a program that checks if the number of digits in an integer matches the sum of its digits.

Guide Ted in designing and writing the code to solve this problem using a 'do-while' loop.

Input Format

The input consists of an integer N, representing the number to be checked.

Output Format

If the sum is equal to the number of digits, print "The number of digits in N matches the sum of its digits."

Else, print "The number of digits in N does not match the sum of its digits."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 20
Output: The number of digits in 20 matches the sum of its digits.

Answer

```
// You are using Java
import java.io.*;
import java.util.Scanner;
class DigitSumMatch {
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int N = sc.nextInt();
        int digitCount=0;
        int digitSum=0;
        int temp=N;
        do {
            digitCount++;
            digitSum+=temp%10;
            temp /=10;
        } while (temp>0);
        if (digitCount==digitSum) {
            System.out.printf("The number of digits in %d matches the sum of its
digits.%n", N);
        } else {
            System.out.printf("The number of digits in %d does not match the sum of
its digits.%n", N);
        }
    }
}
```

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

3. Problem Statement

Raj is solving a physics problem involving projectile motion, where he needs to calculate the time a ball hits the ground using a quadratic equation of the form $ax^2 + bx + c = 0$. Depending on the coefficients, the ball may hit the ground once, twice, or not at all in real time.

Help Raj find all real roots of the equation, if any.

Note: discriminant = b2 - 4ac

Input Format

The input consists of three space-separated doubles a, b, and c, representing the coefficients of the quadratic equation.

Output Format

If there are two real roots, print:

- "Two real solutions:"
- "Root1 = <value>"
- "Root2 = <value>"

If there is one real root, print:

- "One real solution:"
- "Root = <value>"

If there are no real roots, print:

- "There are no real solutions."

Note: values are rounded to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 1 6 9
Output: One real solution:
Root = -3.00

Answer

```
// You are using Java
import java.io.*;
import java.util.Scanner;
class QuadraticRoots {
   public static void main(String[] args) {
      Scanner sc= new Scanner(System.in);
      double a =sc.nextDouble();
      double b =sc.nextDouble();
      double c =sc.nextDouble();
      double discriminant = b*b- 4*a*c;

      if (discriminant>0) {
         double root1=(-b+Math.sqrt(discriminant))/(2* a);
         double root2=(-b-Math.sqrt(discriminant))/(2* a);
         System.out.println("Two real solutions:");
         System.out.printf("Root1 = %.2f%n", root1);
         System.out.printf("Root2 = %.2f%n", root2);
      } else if (discriminant == 0) {
         double root = -b / (2*a);
         System.out.println("One real solution:");
         System.out.printf("Root = %.2f%n", root);
      } else {
         System.out.println("There are no real solutions.");
      }
   }
}
```

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

4. Problem Statement

Samantha is a diligent math student who is exploring the world of programming. She is learning Java and has recently studied conditional statements. One day, her teacher gives her an interesting problem to solve, which takes a number as input and checks whether it is a multiple of 5 or 7.

Help her complete the task.

Input Format

The input consists of a single integer N, representing the number to be checked.

Output Format

If the number is a multiple of 5 but not 7, the output prints "N is a multiple of 5".

If the number is a multiple of 7, the output prints "N is a multiple of 7".

Otherwise the output prints "N is neither multiple of 5 nor 7" where N is an entered integer.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10

Output: 10 is a multiple of 5

Answer

```
// You are using Java
import java.io.*;
import java.util.Scanner;
class MultipleChecker {
    public static void main(String[] args) {
        Scanner sc= new Scanner(System.in);
        int N = sc.nextInt();
        if (N%5==0 && N%7!=0) {
            System.out.printf("%d is a multiple of 5%n", N);
        } else if (N%7==0) {
            System.out.printf("%d is a multiple of 7%n", N);
        } else {
            System.out.printf("%d is neither multiple of 5 nor 7%n", N);
        }
    }
}
```

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