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 : 40

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

```
// You are using Java
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 totalSum = 0;

      for (int num = A; num <= B; num++) {
         int temp = num;
```

```
        int product = 1;
        boolean hasOdd = false;

        while (temp > 0) {
            int digit = temp % 10;
            if (digit % 2 != 0) {
                product *= digit;
                hasOdd = true;
            }
            temp /= 10;
        }

        if (hasOdd) {
            totalSum += product;
        }
    }

    System.out.print(totalSum);
    sc.close();
  }
}
```

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

2. 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.util.Scanner;

public class Main {
    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.print(N + " is a multiple of 5");
        } else if (N % 7 == 0) {
            System.out.print(N + " is a multiple of 7");
        } else {
            System.out.print(N + " is neither multiple of 5 nor 7");
        }

        sc.close();
    }
}
```

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

3. Problem Statement

Maya, a student in an arts and crafts class, wants to create a pattern using

stars (*) in a specific format. She plans to use a program to help her construct the pattern.

Write a program that takes an integer as input and constructs the following pattern using nested for loops.

Input: 5

Output:

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

Input Format

The input consists of a number (integer) representing the number of rows.

Output Format

The output displays the required pattern.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 5
Output:

```
*
* *
* * *
```

```
* * * *
* * * * *
* * * *
* * *
* *
*
```

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 rows = sc.nextInt();

        for (int i = 1; i <= rows; i++) {
            for (int j = 1; j <= i; j++) {
                System.out.print("* ");
            }
            System.out.println();
        }

        for (int i = rows - 1; i >= 1; i--) {
            for (int j = 1; j <= i; j++) {
                System.out.print("* ");
            }
            System.out.println();
        }
        sc.close();
    }
}
```

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

4. 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.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = sc.nextInt();
        int temp = N;
        int digits = 0;
        int sum = 0;

        do {
            sum += temp % 10;
            temp /= 10;
            digits++;
        } while (temp > 0);

        if (digits == sum) {
```

```
            System.out.println("The number of digits in " + N + " matches the sum of
its digits.");
        } else {
            System.out.println("The number of digits in " + N + " does not match the
sum of its digits.");
        }

        sc.close();
    }
}
```

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