Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Monica is interested in finding a treasure but the key to opening is to get the sum of the main diagonal elements and secondary diagonal elements.

Write a program to help Monica find the diagonal sum of a square 2D array.

Note: The main diagonal of the array consists of the elements traversing from the top-left corner to the bottom-right corner. The secondary diagonal includes elements from the top-right corner to the bottom-left corner.

Input Format

The first line of input consists of an integer N, representing the number of rows and columns.

The following N lines consist of N space-separated integers, representing the 2D array elements.

Output Format

The first line of output prints "Sum of the main diagonal: " followed by an integer, representing the sum of the main diagonal.

The second line prints "Sum of the secondary diagonal: " followed by an integer, representing the sum of the secondary diagonal.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3
1 2 3
4 5 6
7 8 9

Output: Sum of the main diagonal: 15
Sum of the secondary diagonal: 15

Answer

```
import java.util.*;

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

      // Read the size of the matrix
      int N = sc.nextInt();
      int[][] matrix = new int[N][N];

      // Read the matrix elements
      for (int i = 0; i < N; i++) {
         for (int j = 0; j < N; j++) {
            matrix[i][j] = sc.nextInt();
         }
      }

      int mainDiagonalSum = 0;
```

```
        int secondaryDiagonalSum = 0;

        // Calculate diagonal sums
        for (int i = 0; i < N; i++) {
            mainDiagonalSum += matrix[i][i]; // Top-left to bottom-right
            secondaryDiagonalSum += matrix[i][N - 1 - i]; // Top-right to bottom-left
        }

        // Output the results
        System.out.println("Sum of the main diagonal: " + mainDiagonalSum);
        System.out.println("Sum of the secondary diagonal: " +
secondaryDiagonalSum);
    }
}
```

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