

# Rajalakshmi Engineering College

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Branch: REC

Department: AI & ML - Section 1

Batch: 2028

Degree: B.E - AI & ML

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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**

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

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

        // Read size of matrix
        int N = sc.nextInt();

        int[][] matrix = new int[N][N];

        // Read 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 sums
for (int i = 0; i < N; i++) {
    mainDiagonalSum += matrix[i][i];      // main diagonal
    secondaryDiagonalSum += matrix[i][N - 1 - i]; // secondary diagonal
}

// Print results in required format
System.out.println("Sum of the main diagonal: " + mainDiagonalSum);
System.out.println("Sum of the secondary diagonal: " +
secondaryDiagonalSum);

sc.close();
}
```

**Status :** Correct

**Marks :** 10/10