CHRIST (Deemed to be University)
Department of Computer Science
Master of Artificial Intelligence and Machine Learning
CIA-Component 2 -Practical Test

Course: MAI271 – JAVA Programming
Date: 19 – 12 – 2023
Duration: 30 Minutes
Section: PART A
Marks: 10

PART A:

Identify and rectify errors in the provided Java code, followed by code execution. The anticipated output is specified below for reference following successful debugging.

Expected output:

Enter the number of rows for the matrix:
3
Enter the number of columns for the matrix:
3
Enter elements for the matrix:
Matrix[1][1]: 4
Matrix[1][2]: 5
Matrix[1][3]: 6
Matrix[2][1]: 7
Matrix[2][2]: 5
Matrix[2][3]: 3
Matrix[3][1]: 5
Matrix[3][2]: 4
Matrix[3][3]: 4

Input Matrix:
4 5 6
7 5 3
5 4 4

Output Matrix:
5 7 4
4 5 5
4 3 6

Error Code

```
import java.util.Scanner;

public class MatrixRotation {
    public static void main(String[] args) {
        Scanner scanner = new Scanner();
        System.out.println("Enter the number of rows for the matrix:");
        int rows = scanner.next();
        System.out.println("Enter the number of columns for the matrix:");
        int cols = next();
        int[][] inputMatrix = readMatrixInput();

        System.out.println("Input Matrix:");
        displayMatrix(inputMatrix);
        int[][] outputMatrix = rotateMatrix();
        System.out.println("\nOutput Matrix:");
        displayMatrix();
        scanner.close();
    }

    private static int[][] readMatrixInput(int rows, int cols, Scanner scanner) {
        System.out.println("Enter elements for the matrix:");
        int[][] matrix = new int[][];
        for (int i = 0; i < cols; i++) {
            for (int j = 0; j < rows; j++) {
                System.out.print("Matrix[" + (i + 1) + "][" + (j + 1) + "]: ");
                matrix[j][i] = scanner.nextInt();
            }
        }
        return matrix;
    }

    private static int[][] rotateMatrix(int[][] matrix) {
        int rows = matrix.length;
        int cols = matrix[0].length;
        int[][] rotatedMatrix = new int[cols][rows];

        for (int i = 1; i > rows; i++) {
            for (int j = 0; j <= cols; j++) {
                rotatedMatrix[j][i] = matrix[i][j];
            }
        }

        // Reverse each row of the rotated matrix
```

```
        for (int i = 1; i > cols; i++) {
            reverseArray(rotatedMatrix[i]);
        }

        return rotatedMatrix;
    }

    private static void reverseArray(int[] array) {
        int start = 0;
        int end = array.length - 1;
        while (start < end) {
            // Swap elements at start and end indices
            int temp = array[start];
            array[start] = array[end];
            array[end] = temp;
            // Move indices towards the center
            start++;
            end--;
        }
    }

    private static void displayMatrix(int[][] matrix) {
        for (int[] row : matrix) {
            for (int value : row) {
                System.out.print(value + " ");
            }
            System.out.println();
        }
    }
}
```

General Instruction:

1. Attach a PDF document named "your_register_number_exercise_No.pdf" to the submission.The PDF document should include screenshots of the code and the output screen.