2D Array

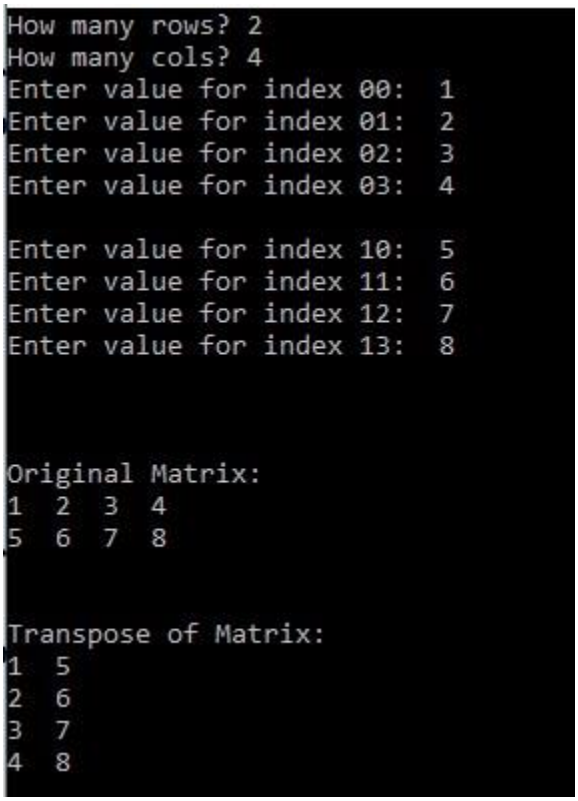
Note:

- Copied task will be awarded **zero** marks.
- Note that these lab task marks could be graded through a viva in lab.

Problem: 1 | Transpose of a Matrix

Write a C Program to Find the Transpose of a Matrix.

The program takes a matrix and prints the transpose of the matrix. In a transpose matrix, rows become columns and vice versa. Your program should find the transpose for matrix of any dimensions. See the screenshot below and your output and formatting must be like the following. Proper and user-friendly!



Problem: 2 | Student Marks

Write a program in which user will enter the marks of each 4 students for 3 subjects. And stores in 2D array. Each row represents the marks of a specific student. Below is a pictorial representation for your understanding. Your task is to find the total marks of each student and the highest and lowest marks in the whole array and print it.

Student 1	Marks 1	Marks 2	Marks 3
Student 2	Marks 1	Marks 2	Marks 3
Student 3	Marks 1	Marks 2	Marks 3
Student 4	Marks 1	Marks 2	Marks 3

Sample Output:

```
Enter the marks for student 1:
Subject 1: 20
Subject 2: 30
Subject 3: 10
Enter the marks for student 2:
Subject 1: 30
Subject 2: 40
Subject 3: 20
Enter the marks for student 3:
Subject 1: 20
Subject 2: 30
Subject 3: 10
Enter the marks for student 4:
Subject 1: 20
Subject 2: 40
Subject 3: 10
Total marks for student 1: 60
Total marks for student 2: 90
Total marks for student 3: 60
Total marks for student 4: 70
Highest marks: 40
Lowest marks: 10
```

Problem: 3 | Magic Square

Write a C program in which user will enter a square matrix of any dimension. The program will check if the matrix is a magic square or not. A magic square is a special type of matrix whose sum of each row, column, left diagonal and right diagonal is the same. Eg. Below matrix is a magic square.