Two Dimensional Arrays Questions

01. Write a program in C for a 2D array of size 3x3 and print the matrix.
Test Data :
Input elements in the matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3 element
- [1],[0] : 4 element - [1],[1]
: 5
element - [1],[2] : 6 element
- [2],[0] : 7 element - [2],[1]
: 8 element - [2],[2] : 9
Expected Output :
The matrix is :

1 2 3
4 5 6
7 8 9

02. Write a program in C for addition of two Matrices of same size. Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2 element - [1],[0] : 3 element -
[1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :

1 2
3 4
The Second matrix is :

5 6
7 8
The Addition of two matrix is :

6 8

10 12

03. Write a program in C for subtraction of two Matrices. Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 5
element - [0],[1] : 6 element - [1],[0] : 7 element - [1],[1] : 8
Input elements in the second matrix :
element - [0],[0] : 1
element - [0],[1] : 1
element - [1],[0] : 1
element - [1],[1] : 1
Expected Output :
The First matrix is
: 5 1

7 8
The Second matrix is :

1 2
3 4
The Subtraction of two matrix is :

4 4
4 4

04. Write a program in C for multiplication of two square Matrices.
Test Data :
Input the rows and columns of first matrix : 2 2
Input the rows and columns of second matrix : 2 2
Input elements in the first matrix : element - [0],[0] : 1 element - [0],[1] : 2 element - [1],[0] : 3 element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6 element - [1],[0] : 7 element - [1],[1] : 8
Expected Output :
The First matrix is :

1 2
3 4
The Second matrix is :

5 6
7 8
The multiplication of two matrix is :

19 22
43 50

05. Write a program in C to find transpose of a given matrix. Test Data :

Input the rows and columns of the matrix : 2 2
Input elements in the first matrix : element -
[0],[0] : 1 element - [0],[1] : 2 element -
[1],[0] : 3 element - [1],[1] : 4
Expected Output :
The matrix is :

1 2
3 4

The transpose of a matrix is :
1 3
2 4

06. Write a program in C to find sum of right diagonals of a matrix.
Test Data :
Input the size of the square matrix : 2 Input
elements in the first matrix :
element - [0],[0] : 1 element
- [0],[1] : 2 element - [1],[0]
: 3 element - [1],[1] : 4
Expected Output :
The matrix is :
1 2
3 4
Addition of the right Diagonal elements is :5
Elements in array are:

07. Write a program in C to accept two matrices and check whether they are equal.

Test Data :

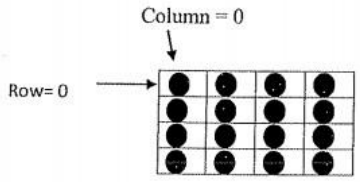
Input Rows and Columns of the 1st matrix :2 2
Input Rows and Columns of the 2nd matrix :2 2
Input elements in the first matrix :
element - [0],[0] : 1 element
- [0],[1] : 2 element - [1],[0]
: 3 element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 1 element
- [0],[1] : 2 element - [1],[0]
: 3 element - [1],[1] : 4
Expected Output :
The first matrix is :
1 2
3 4
The second matrix is :
1 2
3 4
The Matrices can be compared :
Two matrices are equal.

1. .performs several other common array manipulations on a 3-by-4 array studentGrades using for statements. Each row of the array represents a student and each column represents a grade on one of the four exams the students took during the semester. The array manipulations are performed by four functions. Function minimum determines the lowest grade of any student for the semester. Function maximum determines the highest grade of any student for the semester. Function average determines a particular student's semester average. Function printArray outputs the two-dimensional array in a neat, tabular format.

   The array is:
   [0] [1] [2] [3]
   studentGrades[0] 77 68 86 73
   studentGrades[1] 96 87 89 78
   studentGrades[2] 70 90 86 81
   Lowest grade: 68
   Highest grade: 96
   The average grade for student 0 is 76.00
   The average grade for student 1 is 87.50
   The average grade for student 2 is 81.75

PAST PAPER QUESTIONS

A 4 x 4 square display panel consists of LED bulbs of red, green and blue colours. Write a C program to create a character array to represent the LED panel as shown below.



Enter the color of the LED bulbs ('R', 'G' or 'B') of the panel from the keyboard. Display the colours of the LED display.
Go through the array and display the position (row and column) of the "Red" bulbs.

Sample output is given below

R R G B
G G G B
R G B B
B B B G

Red LED bulb positions
[0,0] [0,1] [2,0]

Figure 1 2018 FINAL PAPER

A 2D array is used to store the details of the rating of 3 movies given by 4 reviewers. Some sample data is shown below.

Movies \ Reviewers	1	2	3	4
1	4	6	2	5
2	7	9	4	8
3	6	9	3	7

Write a C program to do the following.

a) Declare an array called **ratings** to store the details of the rating of 3 movies given by 4 reviewers.
b) Read the movie ratings from the key board and store the data in the array.
c) Display the array in tabular format.
d) For each movie display the movie number and the average rating.
e) Find and display the movie which received highest average rating.

Figure 2 2019 FINAL PAPER

LAB SHEET

Exercise 3

i) Write a C program to do the following.
   a) Create a 2D array called ***mark*** to store the exam marks for three modules of three students.
   b) Input the exam marks from the keyboard and store them in the array.
   c) Calculate and display average mark of each student.

Exercise 2

Following is a sample C program that has a 2D array called ***units*** which stores the number of electricity units used for four months by three customers. The following details need to be stored within the 2D array as user inputs.

	Month 01	Month 02	Month 03	Month 04
Customer ID **01**	110	120	105	145
Customer ID **02**	85	100	140	75
Customer ID **03**	180	150	160	155

The program needs to display the maximum number of electricity units used with the customer id and the month.

Exercise 3 : Practice to manipulate 2D arrays

Use a double-subscripted array to solve the following problem. A company has four salespeople (1 to 4) who sell five different products (1 to 5). Once a day, each salesperson passes in a slip for each different type of product sold. Each slip contains:

a) The salesperson number
b) The product number
c) The total dollar value of that product sold that day

Assume that the information from all the slips for a day is available. Write a program that will read all this information for the day and store in a double-subscripted array **sales**. For each product find and display the total sales.