

CL-1002
Programming
Fundamentals

LAB – 08 Task
ARRAYS IN C

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES
Fall 2022

INSTRUCTIONS:

NOTE: Violation of any of the following instructions may lead to the cancellation of your submission.

- 1) Create a folder and name it by your student id (k22-0026).
- 2) Paste the .c file for each question with the names such as Q1.c, Q2.c and so on into that folder.
- 3) Submit the zipped folder on google classroom.

Task-01: Write a program that reads the numbers from user and store these numbers into an array of same size. Find and display the sum of all positive numbers and calculate the average.

Task-2: Write a C program to read elements in a matrix and check whether matrix is Sparse matrix or not.

Logic: To check whether a matrix is sparse matrix we only need to check the total number of elements that are equal to zero. The matrix is sparse matrix if $T \geq ((m * n) / 2)$ where T defines total number of zero elements where m and n are rows and columns respectively.

$$\begin{bmatrix} 1 & 6 & 0 \\ 0 & 0 & 0 \\ 4 & 0 & 5 \end{bmatrix}$$

Task-03: You taking a square matrix as input from keyboard and then you transpose the same matrix after meeting the requirements you are also interested to find out whether original Matrix A and transpose of Matrix a are equal are not. If the answer is yes, then you print the matrix along with message “matrix is symmetric” otherwise you print the “matrix is asymmetric”.

Task-04: Write down a program which asks user to input his first name and last name in a separate array. After taking the input your program should be able to concatenate first name and last name and return it as full name. Count down number of characters in the full name as well.

For example:

First name: Nadeem

Second name: Ghouri

Full name: Nadeem Ghouri

Task-05: You are working part time job along with your three friends after university time. All of you sell six different products per day. At end of duty time each of you submit a report which contains the information like employee id of each of you, the id of the product which you sold and the total amount for the products which you have sold. After one month of your job your reporting officer wants you to you write a program which read the report at end of the month and summarize the total sale made by each employee for each product. Your program should display the processed information in the form of table where each row will represent the respective product and each column will be the representation for each employee. Your program should also print the total product sale and the total sale by particular employee.

Task-06: You need to declare an array of 5 x 9 elements. In which first 1st column contains the StudentID and its respective 5 courses obtained marks in following 5 five columns for the semester. In rest of 4 columns total marks, obtained marks, and Percentage as shown in given table.

- Initialize the array with its default value.
- You need to take user input for the first 6 columns.
- Total marks, obtained marks, and Percentage columns will be filled by your program on the basis of required logic for each of the columns.

Std-id	C1-Marks	C2-Marks	C3-Marks	C4-Marks	C5-Marks	Total-marks	Obt-marks	percentage
1								
2								
3								
4								
5								

Task-07: Given an array arr [] of size N which contains elements from 0 to N-1, you need to find all the elements occurring more than once in the given array.

Input:

Array Size =5
 Element 1=2
 Element 2=3
 Element 3=1
 Element 4=2
 Element 5=3

Output:

Number 2 and 3 in array occur more than once.

Task-08: This C program will read a matrix of nxn rows and columns and print its transpose matrix.

Input:

```
Enter number of Rows :2
Enter number of Cols :3

Enter matrix elements :
Enter element [1,1] : 1
Enter element [1,2] : 2
Enter element [1,3] : 3
Enter element [2,1] : 4
Enter element [2,2] : 5
Enter element [2,3] : 6
```

Output:

```
Transpose Matrix is :
1 4
2 5
3 6
```

Task-09: Given a matrix write a C program which takes row numbers from the user and interchange them at the specified rows provided by the user.

Input:

```
Matrix before row exchange:
1 2 3
4 5 6
7 8 9
Enter two row numbers to be exchanged:1 3
```

Output:

```
Matrix after row exchange:
7 8 9
4 5 6
1 2 3
```

Task-10: Your Instructor ask you to write you a program which can help him in storing your quiz marks for pass students within range [5-10] will be stored, consider there are 10 students registered in Section 1C. He wants another array of same size where marks for failed students within range [0-5] are stored. Write a program for the given scenario. Your program should exit if user enters -1 and will display the marks entered along with average of each array.

Note: Use Loops, 1D-Array and decision statement combination

Enjoy Coding 😊