CC-112L

Programming Fundamentals

Laboratory 09

Introduction to Programming, Algorithms and C

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Department of Information Technology

University of the Punjab

Lahore, Pakistan

Contents:

Learning Objectives:

- Understand the declaration, initialization, and access of arrays in C/C++.
- Perform input/output operations on numeric and character arrays.
- Pass arrays to functions and understand their reference behavior.

Resources Required:

- Desktop Computer or Laptop
- Microsoft ® Visual Studio 2022

General Instructions:

- In this Lab, you are **NOT** allowed to discuss your solution with your colleagues, even not allowed to ask how is s/he doing, this may result in negative marking. You can **ONLY** discuss with your Teaching Assistants (TAs) or Lab Instructor.
- Your TAs will be available in the Lab for your help. Alternatively, you can send your queries via email to one of the followings.

Teachers:		
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Pre-Lab Tasks

Task 01

Write a C program to find the largest element in an array of integers.

```
Enter the number of elements in the array: 3
Enter the elements of the array:
5 10 100
The largest element in the array is: 100
```

Task 02

Write a C program to calculate the sum of elements in an array of integers.

```
Enter the number of elements in the array: 3
Enter the elements of the array:
5 10 5
The sum of the elements in the array is: 20
```

Task 03

Write a C program to reverse the elements of an array

```
Enter the number of elements in the array: 3
Enter the elements of the array: 1 2 3
The reversed array is: 3 2 1
```

Task 04

Write a C program to count the number of even numbers in an array.

```
Enter the number of elements in the array: 5
Enter the elements of the array: 3 2 4 5 6
The number of even elements is: 3
```

Task 05

Write a C program to count how many **vowels (a, e, i, o, u – both uppercase and lowercase)** are present in a character array. The user will enter a string.

```
Enter a string: Maheen
Number of vowels: 3
```

Task 06

Write a C program to check if an integer array is **sorted in ascending order**. Return 1 (true) if it is sorted, else return 0 (false).

```
Enter number of elements: 5
Enter array elements: 2 5 1 7 4
Array is NOT sorted (ascending).
```

Task 07

Write a C program to find the element in an array that appears **only once**, while every other element appears **exactly twice**.
Use a **nested loop** and a **boolean flag**. Take input from the user.

```
Enter number of elements: 5
Enter 5 elements:
2 3 4 3 2
Single number is: 4
```

"First, solve the problem.
Then, write the code ☺"