# Government College University, Lahore

## Department of Computer Science

## Programming Fundamentals

# Lab – 07

## Startup (01) (Understand Array Traversal)

### Type the following program in your editor and observe the results

```
#include <iostream>

using namespace std;

main(){

      int Arr[]={12,34,54,67,89,24};

      for(x=0;x<6;x++{

            cout<<Arr[x];
      }

}
```

### Algorithmic Workbench

- *name* is an integer array with 20 elements. Write a for loop that prints each element of the array.

- The arrays *numberArray1* and *numberArray2* have 100 elements. Write a loop that copies the values from numberArray1 to numberArray2.

**Note : please only submit following tasks i.e task 01 to task 10 each in a separate file**

## Task-01 (Largest/Smallest Array Value)

Write a program that asks the user to enter 10 values into an array. The program should then display the largest and smallest value of the array.

**Hint: to input into array use cin>>Arr[index]**

## Task-02 (Rainfall Statistics)

Write a program that asks the user to enter the total rainfall for each of 12 months into an array of doubles. The program should calculate and display the total rainfall for the year, the average monthly rainfall, and the month with the highest and lowest amounts.

I*nput validation: Do not accept negative numbers for monthly rainfall figures*

## Task-03 (Element Swapping)

Write a Program that will input an array of 10 integers. Your program will swap every element with its next elements and then print it.for example !st element will be swapped with 2nd and 3rd will be swapped by 4rth one.

## Task-04 (Reverse Array Elements)

Write a program that will reverse the elements of an array. Your program will do the following.

- Ask user to size of array to insert integer elements
- Inputs array elements
- Reverse them and then print.

## Task-05 (Printing Even Elements)

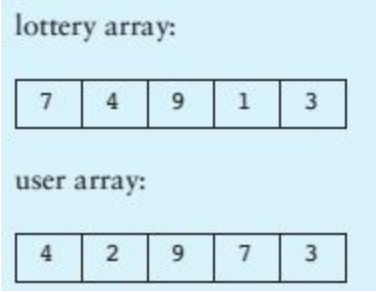
Write a program that inputs an array of size given by the user. The program will then print only even values of arrays.

## Task-06 (Merging Arrays)

Suppose A, B, C are arrays of integers of size M, N, and M + N respectively. The numbers in array A appear in ascending order while the numbers in array B appear in descending order. Write a program in C++ to produce third array C by merging arrays A and B in ascending order. Make use of nested loop where required.

## Task-7 (Lottery Application)

Write a program that simulates a lottery. The program should have an array of five inter named lottery, and should generate a random number in the range of 0 through 9 for each element in the array. The user should enter five digits which should be stored in an integer array named user. The program is to compare the corresponding elements in the two arrays and keep a count of the digits that match. For example, the following shows the lottery array and the user array with sample numbers stored in each.



The program should display the random numbers stored in the lottery array and the number of matching digits. If all the digits match display a message  proclaiming the user as a grand prize winner.

## TASK-8 (phone book)

The following code creates a small phone book.

An array is used to store a **list of names** and another array is used to store the **phone numbers** that go with each name.

For example, ‘Khizer’ phone number is 0333-8000258 and ‘Abdul Rehman’ phone number is 0303-3023302.

Write a program that asks user to enter a name and then looks up in both arrays and displays the phone number for the input target name.

```
int main( )
{
string names[] = {
  "Khizer","Abdul Rehman","Ali Talha","Amina"};

string phoneNumbers[] = {"0333-8000258","0303-3023302",
"0321-4200408","0900-78601"};

string targetName, targetPhone;

}
```

## Task 09 (Tic Tac Toe)

Write a program that will allow two users to play tic-tac-toe. The program should ask for moves alternately from player X and player O. The program displays the game positions as follows:

**1 2 3**
**4 5 6**
**7 8 9**

The players enter their moves by entering the position number they wish to mark. After each move, the program displays the changed board. A
sample board configuration is as follows:

**X X O**

**4 5 6**

**O 8 9**

## Task 10 (Sorting)

Implement Selection , Bubbles and insertion sort on  an array of integers.

## Reading Task

Read about version control systems