National University

Of Computer & Emerging Sciences Faisalabad-Chiniot Campus

CL-1004
Object Oriented Programming

Lab No 1

Objectives:

- Sorting array Methods
- Searching array Methods
- Pointers
- Pointer Variable Declarations and Initialization
- Referencing/Dereferencing

Note: Carefully read the following instructions (*Each instruction contains a weightage*)

1. There must be a block of comments at start of every question's code by students; the block should contain brief description about functionality of code.
2. Comment on every function about its functionality.
3. Use understandable name of variables.
4. Proper indentation of code is essential
5. Write a C++ statement(s) for each of the following task one after the other, in the same order.
6. Make a Microsoft Word file and paste all of your C++ code with all possible screenshots of every **task output in MS word and submit .cpp file with word file**.
7. Make separate .cpp files for all tasks and use this format **22F-1234_Task1.cpp.**
8. First think about statement problems and then write/draw your logic on copy.
9. After copy pencil work, code the problem statement on MS Studio C++ compiler.
10. At the end when you done your tasks, attached C++ created files in MS word file and make your submission on Google classroom. (Make sure your submission is completed).
11. Please submit your file in this format **22F-1234_L1**.
12. Do not submit your assignment **after deadline**.
13. **Do not copy code from any source otherwise you will be penalized with negative marks.**

Problem 1: | Array and file handling

Write a program that takes 10 numbers as input from the user; the number must be of three digits ranging between 100 to 999 in a random (unsorted) order. Write a C++ program to store the numbers in array name numArray[]. Write a function

1. bubbleSort()
2. SelectionSort()

Sort the array in an ascending order. Store the sorted data in a file "num.txt" and separate them with text **Bubble Sort** and **Selection Sort**.

Problem 2: | Array and file handling

Read the data of selection sort from file "num.txt" used in problem 1 and store it into an array, readData[]. Now search minimum and maximum entry of marks using linear search and binary search. Also return the index where minimum and maximum entries were found. You have to write the functions as;

1. linearSearch()

Problem 3: | Pointers

Write a C++ program where you have two integer variables.

```
int firstvalue = 20, secondvalue = 25;
```

and two pointers

```
int * p1, * p2;
```

You have to perform the following steps

- `// p1 = address of firstvalue`
- `// p2 = address of secondvalue`
- `// value pointed by p1 = 100`
- `// value pointed by p2 = value pointed by p1`
- `// p1 = p2 (address of pointer is copied)`
- `// value pointed by p1 = 200`
- `// print firstvalue, secondvalue`

And comment like above after each step
Values will be p1=100 and p2=200

Problem 4: | Pointer with array

Write a c++ program, you have an array of double and a double type of pointer

```
double balance[5] = {1000.0, 2.01, 3.4, 17.0, 50.40};
   double *p;
   p = balance;
```

Now you have to print the array using **p** pointer.

Problem 5: | Pointer with array

Write a program to reverse a string using pointer.

Proper code indentation will hold extra marks !

Best of luck ☺

You are done with your exercise, submit to the classroom at given time.