



# CL-1002

## Programming Fundamentals

### Lab # 13

#### Objectives:

1. Selection sort
2. Static variable, local/global variable
3. Practicing user defined function
4. Pass by value
5. Pass by reference
6. Function Overloading

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

1. Solve your tasks in same sequence as given in lab manual.
2. First think about statement problems and then write your program.
3. Write Program in C compiler/IDE and save source file **for each program**.
4. Do not copy from any source otherwise your tasks will not accept.
5. Complete your lab **within given Time Slot**. Late submission only accepted with at least 20% deduction (even a single minute late).
  - Submission deadline for CS – 11:30 am
  - Submission deadline for SE – 04:30 pm
6. Add your source code in this word document (take screen shots of code + output) + Make one ZIP file of your all source codes.
7. Please submit your **Both files** with this naming convention ROLLNO\_SECTION\_LABNO.
8. Submit your lab on Google Classroom.



## Problems

### 1. Write a C++ program that create following functions:

**bool insertAtIndex(int arr[],int index, int size, int data);**

//the above function will take an array , its size ,index and data and add that data on that specific index. If the index entered is not in range of array then it should return true else it should return false

**int returnAtIndex(int arr[],int index,int size);**

//the above function will return whatever is present on specific index. Return -1 if the index passed in array is out of bound

**bool search(int arr[],int size,int searchData);**

//the above function will take an array, its size and return true if the data is searched and false otherwise

**void sort(int arr[],int size);**

//the above function will perform selection sort

**void display (int arr[],int size);**

//the above function will display the content of the array

Create a menu driven main where you will ask the user to enter option in loop and run the function against the entered option for example if users 1 the insert at index functions should run and you have to take appropriate inputs to be passed to that function inside the main also i.e index and data to be inserted . in case of error , show the appropriate error to user too.

Note: you have to create just one array with size 10 inside main and pass only that array inside each function.

2. Write a c++ program that creates two function

```
void sortArray(int arr[],int size); //use bubble sorting  
bool binarySearch(int arr[],int size,int data);
```

inside binarySearch, first call the sortArray function because binary search can't be performed without sorted array and then write the remaining logic of binary search

3. Write a c++ program that creates a function which takes an array as input and return true if array is a set or false otherwise
4. Write a function that takes an array of integers as input and finds the length of the longest increasing subsequence.

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5. You have collected data on the number of likes each post received on a social media platform. Write a program that takes an array of post likes as input and calculates the average number of likes, the most liked post, and the least liked post.

Hint : you assume that index of array is movie name/number and value inside that index is likes on that movie.

