National University of Computer and Emerging Sciences



Lab Manual 02

Object Oriented Programming

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## Objectives

After performing this lab, students shall be able to:

* Have an improved understanding of pointers.
* Dynamically allocate and deallocate memory.
* Create and manipulate dynamic 1D array.
* Create and manipulate dynamic 2D array.

**TASK 1:**

A C++ program “**Incrementer**” creates an array of **size 10**. This function adds 3 to each element of the array. You have to add to the elements using pointer only. Array subscript notation cannot be used.

**TASK 2:**

Fibonacci sequence is a sequence in which every number after the first two is the sum of the two preceding ones. Write a C++ program that takes a number **n** from user and populate a dynamic array with first n Fibonacci numbers. De-allocation is also required.

**For example**:

For n=10

Fibonacci Numbers: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55

**TASK 3:**

Write a C++ program that declares and initializes a float array dynamically and finds the index of the first occurrence of the second largest element in the array.

**For Example:**

**Input:**

Please enter size: 5

Please enter elements: 1.5

7.8

3.2

9.0

7.1

**Output:**

Second Largest element is: 7.8

Index of second largest element is: 1

**TASK 4:**

Given 3 sets of integer A, B and C with equal length; you are required to compute A∩B, B∩C and C∩A. The intersection results should be stored in a 2d integer array such that A∩B is in row

0, B∩C is in row 1, and C∩A is in row2 of the resultant array.

You’ll have to do the following jobs:

**1-** Input the three integer Sets.

**2-** Calculate Intersection and store in 2d array.

**3-** Output the resultant 2d array.

**For Example:**

A={1,2,3,4,5,6,7,8,9,10}

B={1,2,5,6,9,10,13,14,18,20}

C={2,4,6,8,10,11,13,15,17,19}

**Resultant array:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | 2 | 5 | 6 | 9 | 10 |
| 2 | 6 | 10 | 13 |  |  |
| 2 | 4 | 6 | 8 | 10 |  |