National University of Computer and Emerging Sciences



**Laboratory Manual**

***(Computer Programming)***

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| Section | A |
| Semester | Spring-2017 |
| Lab Date | 31-02-2017 |

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**Lab Manual (2)**

**(Dynamic Memory Allocation and Deallocation)**

**Instructions:**

This is an individual Lab. You are NOT allowed to work/submit in form of group. Absolutely NO collaboration is allowed. Any traces of cheating would result in an “F” grade in this Lab.’

Keep the following good programming practices in mind when writing your code:

• Comment your code intelligently.

• Indent your code properly.

• Use meaningful variable names.

• Use meaningful prompt lines/labels for input/output.

**Problem 1:**

**Exercise 1:** Write a function int\* GetSquares(const int& size) that inputs the size from user, creates an array of integers (of size entered by user), saves squares of index “i” in the array and returns the pointer of this array. For example if user enters size 5, your function will return pointer of following array:

|  |
| --- |
| 0  1  4  9  16 |

Write driver program (main) and test your function.

**Exercise 2:** Update your program (that of Exercise 1). Write a function void PrintArray(int\* myArray, const int& size) that prints the array pointed by myArray. Call this function and print the array of squares (returned by Exercise 1).

**Problem 2:**

Write a program to find maximum, minimum and average CGPA of students.

* Create an array dynamically to store CGPA of 10 students. (Use proper data type)
* Use pointer offset method to access array elements.
* Input values from user and display whole array too.
* Deallocate array properly.

**Problem 3:**

Write a program that takes a c-string ***myStr*** and two characters ***charToFind*** and ***charToReplace*** from user and replaces all the occurrences of ***charToFind*** with ***charToReplace*** in ***myStr***. Your program should create a space of 50 characters on heap in order to save *myStr*.

**Sample output:**

|  |
| --- |
| InputString: **dd**s**d**fhgrts**d**fhjghjks**dd**  CharToFind: d  CharToReplace: $  ModifiedString: **$$**s**$**fhgrts**$**fhjghjks**$$** |

***Remember:*** *Honesty always gives fruit (no matter how frightening is the consequence); and*

*Dishonesty is always harmful (no matter how helping it may seem in a certain situation)!*