National University of Computer and Emerging Sciences



Lab Manual 06

Data Structures Lab

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| Course Instructor | Dr. Zareen Alamgir |
| Lab Instructor (s) | Fariha Maqbool  Humna Shabir |
| Section | F |
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Department of Computer Science

FAST-NU, Lahore, Pakistan

## Objectives

After performing this lab, students shall be able to:

* Learn and practice recursion.

**TASK 1:**

You are required to write a recursive function named **'IsMember'** that accepts a number X, size of array and the elements of array 'ARR'; and determines if a given number X is present in the array 'ARR' or not. In each recursive step, you can compare only 1 element of 'ARR' to X. If the number X is found in ARR return 0, else return -1.

**TASK 2:**

Implement a C++ program to recursively sum the digits in a positive integer. If the recursive function is named **sum\_digit**, and the number input by the user is 795, then the first call will be to sum\_digit(795), the next recursive call will be to sum\_digit(21) because 7+9+5 is 21. The next recursive call will be to sum\_digit(3).

**TASK 3:**

Write a recursive C++ program that recursively flip a float array. You’ll need to take starting index, ending index, array and size as parameters.

E.g:

Array: 1.0, 5.4, 0.85, 91.2, 6.5

Array after recursion: 6.5, 91.2, 0.85, 5.4, 1.0

**TASK 4:**

Implement a global function stringCompare which compares two character strings recursively and:

* returns 0 if the two strings are equal.
* If the character of the first string at the index, where the first mismatch occurred, is greater in ASCII value; then it returns 1
* else it returns -1.

int stringCompare (char const\* string1, char const\* string2)