# 

# Department of Software Engineering

**CS 250: Data Structures and Algorithms**

**Class: BESE-7AB**

**Lab 03: Doubly & Circular Linked List**

**CLO1: Understand the fundamentals of data structures and algorithms**

**Date: September 29th, 2017**

**Time: 09:00 am - 12:00pm, 02:00pm – 5:00pm**

# Instructor: Dr. Muhammad Shahzad

# Lab 3: Circular & Doubly Linked List

**Introduction**

This lab consists of the implementations of doubly & circular linked list.

**Objectives**

In this lab you will learn doubly linked lists and circular linked list implementation.

**Tools/Software Requirement**

Visual Studio c++

**Description**

This lab is about the implementation of the doubly linked list and circular linked list. In doubly linked list you have two pointers in the link part of node i.e. next and previous pointers. With the help of these pointers it becomes very easy to transverse the list. In circular linked list the successor of tail pointer points to the head pointer or start of the linked list. And every new node is added after the last node but before the first node. Keeping these concepts in mind, solve the lab tasks.

**Lab Tasks**

You are required to upload the lab tasks on LMS and the name of that tasks must be in this format YourFullName\_reg#.cpp

Remember to comment your code properly. Inappropriate or no comments will result in deduction of marks.

**Tasks**

1. Create a circular doubly linked list with operations required.

1. Convert the above list into ordered linked list i.e. arrange the nodes of the linked list with respect to ascending values of the data member of that node.
2. Take the average of the data values stored in the list and add the node containing that value in the above list. Remember to insert that node in proper position in that list. For instance, consider a list L1 having value 3, 6, 7, 12, 15. The average of the values is 8.6. Round off the value, consider it 9 and add it in above list. Your list will become L1: 3, 6, 7, 9, 12, and 15.

**Deliverable**

Students are required to upload the lab task on LMS before the deadline.