**o f C o m p u t e r & E m e r g i n g S c i e n c e s - F a i s a l a b a d**

**CL-218**

**Data Structures Lab**

**Instructor: Mr. Shahrose Khan**

**Section: A**

**Objective:**

* **Doubly Linked List**

**Guidelines:**

* Plagiarism is strictly prohibited. In case of any plagiarism Zeromark will be awarded.
* Variables and functions names should be **meaningful.**
* Make a word file of your lab. Also add source code and screenshot of a program. Without screenshots, no marks will be awarded.
* There will be a deduction of marks for messy and confusing code.
* Every guideline have its own weightage.
* Submit your file on Google Classroom.
* The naming convention of your file should be **Roll Number\_Section\_Lab #**
* Late submissions are not allowed.No late submission will be acceptable.
* No more extension in time will be given.

**Problem 1:** Write a menu driven C++ program to implement the following functions on a doubly linked

1. **:insert()**
2. **:delete()**
3. **:is\_empty()**
4. **:is\_full()**

**Problem 2:** Write a C++ program to remove every duplicate from a doubly linked list.

**Input:**

1->2->2->3->4->4->5->NULL

**Output:**

1->2->3->4->5->NULL

**Problem 3:** Write a C++ function to calculate the product of a **Prime node number** of a doubly linked list.

**Problem 4:** Write a C++ program to sort doubly linked list by swapping there links not the data.

**Problem 5:** Write a C++ program to combine all consecutive number in a doubly linked list without swapping data, without sorting.

**Input:**

1->2->3->11->7->5->12->8->NULL

**Output:**

1->2->3->11->12->7->8->5->NULL

**Problem 6:** Write a C++ program to implement a sorted Doubly Linked list that insert every new node according to its sorted position.

**Problem 7:** Write a C++ function to combine/merge one doubly linked list with other.

**Problem 8:** Write a C++ functions for doubly linked list similar to implemented for singly linked list.

1. insertAt(int index, int value);
2. insertAfter(int requeted\_value, int new\_value);

**Problem 9:** Write a C++ functions for doubly linked list similar to implemented for singly linked list.

1. deleteAt(int index);
2. deleteAfter(int requeted\_value);

**Problem 10:** Write a C++ function for doubly linked to reverse the order of nodes.

**Problem 11:** Write a C++ program to implement a circular doubly linked.

**You are done with your assignment. Submit on Google Classroom.**

**Happy Coding ☺**