

National University of Computer and Emerging Sciences



Laboratory Manual 04

for

Data Structures Lab

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Section	BCS-3B
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Objectives:

In this lab, students will practice:

1. Single Linked List
2. Doubly Linked List
3. Circular Doubly Linked List

Question 1

Implement a Singly linked list using template and friend classes which supports the following operations:

- a. Insert in sorted order `void insertSorted(T const element);`
- b. Print `void print();`
- c. Print data of Nth node `void printNth(int index)`
- d. Delete at Start `void deleteAtStart ();`
- e. Delete at End `void deleteAtTail();`
- f. Destructor

Now create a main function to test all the operations

Question 2

Implement a Doubly linked list using template and friend classes which supports the following operations:

- a. Insert at start `void insertAtHead(T const element);`
- b. Insert at end `void insertAtTail (T const element);`
- c. Print `void print() const;`
- d. Print the linked list in reverse order `void printReverse() const;`
- e. Delete at Start `void deleteAtStart ();`
- f. Delete at End `void deleteAtTail();`
- g. Destructor

Create a main function to test all the operations

Question 3

1. Create a circular doubly linked list which supports following operations:

- a. Insert at start `void insertAtHead(T const element);`
- b. Insert at end `void insertAtTail (T const element);`
- c. Print `void print() const;`
- d. Check if linked list is circular `bool isCircular()`
- e. Delete at Start `void deleteAtStart ();`
- f. Delete at End `void deleteAtTail();`
- g. Destructor