**National University of Computer and Emerging Sciences**



Laboratory Manual

for

Data Structures Lab

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**Question No. 01:**

Create a template class **DoublyNode** class that has:

1. T data
2. **DoublyNode** \* Next
3. **DoublyNode** \* Prev

Now create a template doubly linked list class that has data members:

1. **DoublyNode** \* Head
2. **DoublyNode** \* Tail

Following members functions are required to be implemented in this class:

1. Constructors and Destructors
2. InsertAtHead(const T element)
3. InsertAtTail (const T element)
4. DeleteAtTail
5. InsertBefore(T element v1, T element v2)
6. DeleteAllOccurances ( T element)

**Question No. 02:**

Using a template class **Node** containing:

1. T data
2. **Node** \* Next

Implement a template class “Singly Circular Linked List” that has the following data members:

1. **Node** \* head
2. **Node** \* tail

The class should have the following member functions:

1. Constructor
2. Destructor
3. InsertAtHead (T element)
4. DeleteAtHead
5. DeleteAtTail
6. DeleteAllOccurances ( T element)
7. PrintList

**Question No. 03:**

Create a suitable main to test all of the above functions.

* Make sure there is no memory leak and all the boundary cases are catered.
* Your code should be properly commented and well intented.