**National University of Computer and Emerging Sciences**



Laboratory Manual 06

for

Data Structures Lab

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| Section | BSE-3B |
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**Objectives:**

In this lab, students will practice:

1. Queues using Linked List

# Queues

**Task 1:**

Implement a template-based queue using **Linked List**. The required member methods are:

1. **void enqueue()**: Adds an element to queue
2. **void dequeue()**: Removes an element from queue
3. **bool isFull():** return true if queue is full else false.
4. **int size()**: returns the count of total element stored in the stack.
5. **bool isEmpty()**: returns true if the stack is empty else false.
6. **int front()**: returns the element on Front of queue
7. **int rear()**: return the element on Rear of queue

**Task 2:**

Given a Queue of integers (Based on **Linked List**). The task is to check if the elements in the queue are consecutive triples after every ‘k’ element. The queue will not be change after calling this function.

**Example:**

**Input: 1 2 3 5 7 11 12 13 k = 2**

**Output:** Yes

**Input: 1 2 3 4 5 12 14 15 k = 2**

**Output:** No

**Task 3:**

Given a **Queue**(Based on **Linked List**) of integers of even length. Your task is to arrange the second half elements of queue to the first half in alternative manner.

You can use only one extra queue to complete this task

**Example:**

**Input: 3 2 5 6 7 9 8 4**

**Output: 3 7 2 9 5 8 6 4**

**Note:** You are required to find time complexity of every function mentioned above and mention in comments with the respective function.