Faculty of Information Technology
University of Moratuwa
B.Sc. Hons in Information Technology & Management
IN2121- Data Structures and Algorithm 1

Level 2 **Lab Sheet 04**

Objectives

-Queue based implementation using

- Array

- Single Linked Lists

Queue Operations.

-Traversal, Insertion, Deletion, Print

Follow the instructions given below.

01 .Write a **C program** to implement a **queue** using **a fixed array**. Your program should include the following functions:

- **enQueue(int)**: Add an element to the queue.
- **deQueue()**: Remove the front element from the queue.
- **peekQueue()**: Show the front element without removing it.
- **displayQueue()**: Print all elements in the queue.
- **getSummation()**: Print the sum of all elements in the queue.
- **GetAverage()**: Print the average of all elements in the queue.

write a **main() function to**:Add at least 3 elements using enQueue and call and test all the above functions.

Take Home assignment Question 1

Write a **menu-driven main function** to test your linear queue operations.

02 . Write a **C program to** implement a **Queue using pointers. Hint :** The program should have following functionalities:

- **Enqueue** the values 10, 20, and 30.
- Display the contents of the queue.
- Display the front element of the queue.
- Dequeue one element from the queue.
- Display the queue after deletion.
- Display the **current size** of the queue.

Take Home assignment Question 2

Write a C program to implement **Circular Queue Using Linked List**

Implement a circular queue using pointers. Ensure the rear node links back to the front node, and handle enqueue/dequeue operations carefully.

Hint: After the last node, point it to the front again.