Lab – 07
02/03/2025

Queue ADT - Array and List Implementation

Note:

1. Use only Visual Studio code type your program and run your code.
2. Always follow industry coding best practices.

A. Write a separate C++ menu-driven program to implement Queue ADT using an integer array of size 5. Maintain proper boundary conditions and follow good coding practices. The Queue ADT has the following operations,

1. Enqueue
2. Dequeue
3. Peek
4. Exit

What is the time complexity of each of the operations? **(K4)**

B. Write a separate C++ menu-driven program to implement Circular Queue ADT using an integer array of size 5. Maintain proper boundary conditions and follow good coding practices. The Circular Queue ADT has the following operations,

1. Enqueue
2. Dequeue
3. Peek
4. Exit

What is the time complexity of each of the operations? **(K4)**

C. Write a separate C++ menu-driven program to implement Queue ADT using an integer-linked list. Maintain proper boundary conditions and follow good coding practices. The Queue ADT has the following operations,

1. Enqueue
2. Dequeue
3. Peek
4. Exit

What is the time complexity of each of the operations? **(K4)**

D. Take a string from the user that consists of the '+' symbol. Process the string such that the final string does not include the '+' symbol and the immediate left non-'+' symbol. Select and choose the optimal ADT. Implement the program by including the appropriate header file.

Eg:
Input: 45fgd+++ab+c
Output: 45ac

What is the time complexity of each solution, and what ADT, and data structure will you use? What is the **optimal** solution? Justify your answer