

Programming Assignment 4: Queues Using Double-Linked Linear Lists

Node Class Report

IQueue Class: Implements the queue operations and contains methods for managing the queue's state.

Enqueue: Adds an element at the end of the queue. If the queue is empty, both head and tail point to the new node.

Dequeue: Removes the element at the front of the queue and returns its value, adjusting the head pointer accordingly. If the queue becomes empty as a result, the tail is also set to nullptr.

HeadElem: Returns the value of the front element without removing it, providing a peek functionality.

IsEmpty: Checks if the queue is empty, which is essential before performing operations that require the queue to have elements.

GetSize: Calculates and returns the number of elements in the queue, traversing from head to tail.

GetHead and GetTail: Returns pointers to the first and last elements, respectively, useful for debugging and testing.

PrintHeadToTail: Displays all elements from front to back, useful for demonstration and debugging.