Hospital Emergency Queue Management System

Student Name: Syed Soban Ahmed Shah

Roll No: 37

Problem Statement:

Design and implement a C++ program using a Doubly Linked List to manage patients in a hospital Emergency Room (ER).

The system should handle critical and normal patients, allowing addition, removal, and priority updates in real-time.

Proposed Solution:

- Implemented using Doubly Linked List for dynamic insertion and deletion.
- Supports four main operations:

1. Add patient at beginning (critical)
2. Add patient at end (normal)
3. Add patient at specific position
4. Remove patient from beginning (treated)

Graphical Representation After Each Step

insertAtEnd(101) → [101]
insertAtEnd(102) → [101] ⇄ [102]
insertAtBeginning(200) → [200] ⇄ [101] ⇄ [102]
insertAtPosition(150, 2) → [200] ⇄ [150] ⇄ [101] ⇄ [102]
deleteFromBeginning() → [150] ⇄ [101] ⇄ [102]
insertAtEnd(300) → [150] ⇄ [101] ⇄ [102] ⇄ [300]

Conclusion:

The Hospital Emergency Queue System efficiently manages ER patients using a doubly linked list.
It ensures quick updates for critical patients, smooth insertion and removal, and accurate tracking of patient priority in real-time.