Hospital Emergency Queue System using Doubly Linked List

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Problem Statement

To design an Emergency Room (ER) patient queue using a Doubly Linked List that allows adding, removing, and positioning patients according to priority.

Proposed Solution

The ER queue is implemented using nodes that contain patient ID, and two pointers (prev, next) . This allows insertion and deletion from both ends efficiently, making it ideal for emergency handling.

Graphical Representation (Step by Step)

1 ☐ insertAtEnd(101) → [101]
2 ☐ insertAtEnd(102) → [101] ⇄ [102]
3 ☐ insertAtBeginning(200) → [200] ⇄ [101] ⇄ [102]
4 ☐ insertAtPosition(150, 2) → [200] ⇄ [150] ⇄ [101] ⇄ [102]
5 ☐ deleteFromBeginning() → [150] ⇄ [101] ⇄ [102]
6 ☐ insertAtEnd(300) → [150] ⇄ [101] ⇄ [102] ⇄ [300]

Final ER Queue:

Head → 150 ⇄ 101 ⇄ 102 ⇄ 300 ← Tail