

A DEVELOPER: SYED ADNAN

Doubly Linked List

Advanced Patient Queue Management | Emergency Ward System

PROBLEM STATEMENT

Emergency ward patient queuing inefficiency creates **critical delays** in treatment delivery. Traditional static queue systems fail to dynamically handle **priority insertions** (emergency cases) and standard removals without expensive data shuffling, directly compromising patient outcomes and operational efficiency.

§ SOLUTION ARCHITECTURE

Doubly Linked List (DLL) implementation provides O(1) priority insertions, efficient bidirectional traversal, and O(1) front/back operations—completely eliminating array-based data shifting overhead in critical emergency scenarios.

CORE OPERATIONS





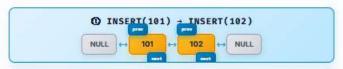


MODE IMPLEMENTATION

class Node {
 data: PatientID
 next: Node*
 prev: Node*

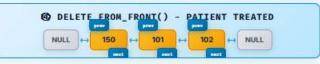
*** KEY ADVANTAGES**

✓ Bidirectional Access	√ O(1) Operations
✓ No Data Shifting	✓ Dynamic Memory
√ Flexible Insertion	√ Dual Pointers









Time Complexity Analysis

Front Insertion: 0(1)
Position Insert: 0(n)
Bidirectional Traversal: 0(n)