

# HOSPITAL EMERGENCY QUEUE SYSTEM

## Midterm Exam Problem – Doubly Linked List Implementation

### Student Info:

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### PROBLEM STATEMENT

- Manage ER patients with changing priorities.
- Use a Doubly Linked List (patientID, prev, next).
- Operations:
  1. Add at beginning (critical).
  2. Add at end (walk-in).
  3. Add at specific position.
  4. Remove from beginning (treated).



### PROPOSED SOLUTION

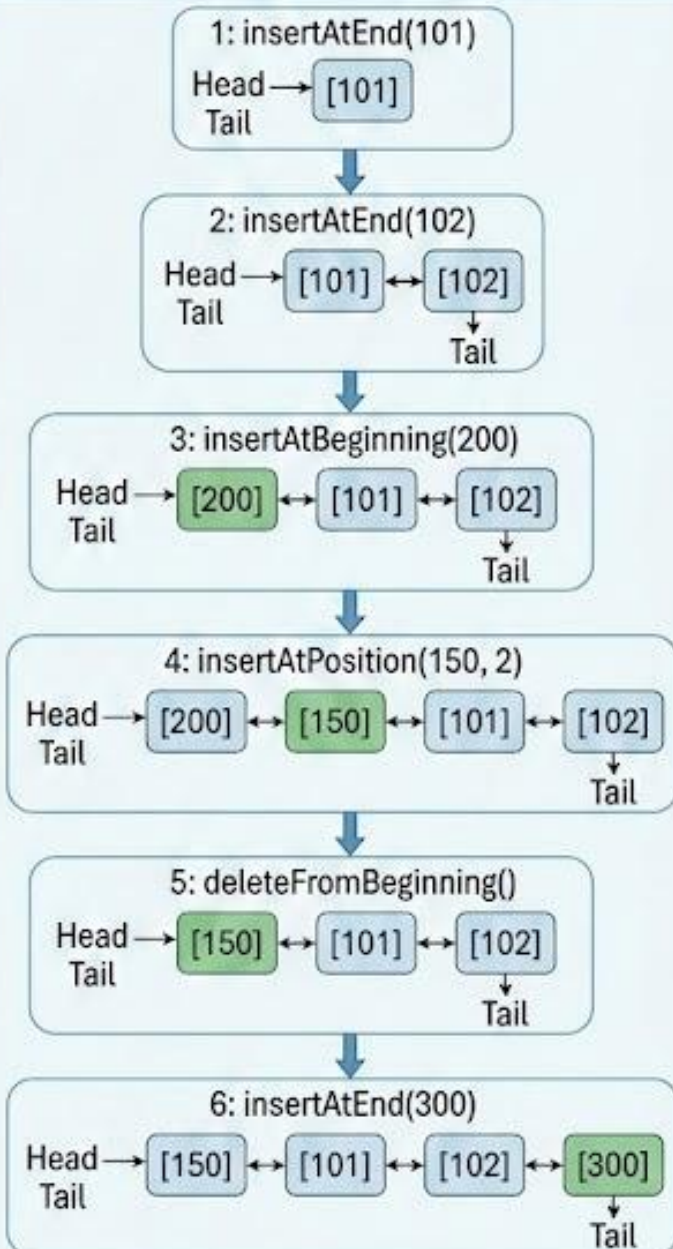
Implement a Doubly Linked List with "head" and "tail" pointers.

Efficient insertion/deletion at both ends and positions.

Handles edge cases: empty list, single node, position 1, beyond length.



### GRAPHICAL REPRESENTATION (DRY RUN TRACE)



- a) Head: 150
- b) Tail: 300
- c) Forward: 150, 101, 102, 300
- d) Backward: 300, 102, 101, 150