Queue Roadmap: From Basics to Mastery

1. Basics of Queues

- Introduction to Queues (FIFO)

- Queue Operations: enqueue, dequeue, peek

- Implementation using Array and LinkedList in Java

2. Types of Queues

- Circular Queue

- Double-Ended Queue (Deque)

- Priority Queue

- Blocking Queue (for concurrency)

3. Queue in Java

- Using LinkedList as Queue

- ArrayDeque vs LinkedList

- PriorityQueue usage

- Queue interface methods

4. Problem Solving Easy Level

- Implement Queue using Stacks

- Implement Stack using Queues

- Design Circular Queue

- First Unique Character in a String

5. Problem Solving Medium Level

- Sliding Window Maximum

- Rotten Oranges

- First Non-Repeating Character in Stream

- Moving Average from Data Stream

Queue Roadmap: From Basics to Mastery

6. Problem Solving Advanced Level

- Course Schedule (Topological Sort - Kahns Algorithm)

- Shortest Path in Binary Matrix (0-1 BFS)

- LRU Cache (using Deque + HashMap)

- Jump Game with BFS

7. Queue + Graphs (BFS)

- Level Order Traversal

- Minimum Depth of Binary Tree

- Number of Islands (BFS)

- Word Ladder

8. Mastery and Applications

- Multithreading with BlockingQueue

- Message Queues in System Design

- Real-time Task Scheduling

- Producer-Consumer Problem