**2. Queue (FIFO - First In, First Out)**

**Implementation**

* Implement Queue using **Array**
* Implement Queue using **Linked List**
* Implement Queue using **Stack**
* Implement **Circular Queue**
* Implement **Deque (Double-Ended Queue)**
* Implement **Priority Queue (Min Heap, Max Heap)**
* Implement **LRU Cache using Queue + HashMap**
* Implement **LFU Cache using Priority Queue + HashMap**

**Queue Problems**

✅ **Basic Problems:**

1. **Enqueue, Dequeue, Peek Operations**
2. **Reverse a Queue using Recursion**
3. **Interleave First and Second Half of Queue**
4. **First Non-Repeating Character in a Stream**
5. **Generate Binary Numbers using Queue (n binary numbers from 1 to n)**
6. **Sort a Queue without using Extra Space**
7. **Implement Stack using 2 Queues**
8. **Implement Queue using 2 Stacks**
9. **Reverse First K Elements of a Queue**
10. **Find Circular Tour in Petrol Pump Problem**
11. **Number of People Alive in a Given Year (Queue Application)**
12. **Job Scheduling using Priority Queue**
13. **Snake and Ladder Problem using BFS**
14. **Sliding Window Maximum (Using Deque)**
15. **Minimum Sum of Squares of Characters in a String (Greedy + Priority Queue)**

✅ **Advanced Problems:** 16. **Find Median in a Data Stream (Using 2 Heaps)** 17. **Process Management (Queue with Priority)** 18. **Shortest Path in a Grid with Obstacles using BFS** 19. **Kth Largest Element in a Stream** 20. **Time-Based Key-Value Store using TreeMap + Queue** 21. **Dijkstra's Algorithm (Using Priority Queue)** 22. **Topological Sorting (Using BFS + Queue)** 23. **Find Maximum in a Sliding Window** 24. **Number of Islands (Using BFS & Queue)** 25. **Flood Fill Algorithm (Using BFS)** 26. **Rotten Oranges Problem** 27. **Design Twitter (Using Priority Queue)** 28. **Find K Closest Elements to Target** 29. **Design a Task Scheduler** 30. **Jump Game II (BFS + Queue)**

**3. Deque (Double-Ended Queue)**

✅ **Implementation & Problems:**

1. **Implement Deque using Array**
2. **Implement Deque using Linked List**
3. **Sliding Window Maximum (Deque)**
4. **LRU Cache using Deque**
5. **Palindrome Checker using Deque**
6. **Maximum of All Subarrays of Size K (Using Deque)**
7. **Find First Negative Number in Every Window of Size K**
8. **Find Maximum and Minimum in Every Window of Size K**
9. **Deque as Priority Queue**
10. **Design a Data Structure that Supports Insert, Delete, GetMin in O(1)**

**4. Additional Topics**

* **Monotonic Stack & Monotonic Queue** (Used in Histogram, Water Trapping)
* **Two Stacks in One Array**
* **K Stacks in One Array**
* **Heap and Priority Queue-based Problems**
* **Graph Traversals (BFS using Queue)**
* **Trie and BFS for Autocomplete**
* **Implement Multilevel Queue (OS Concept)**