🎯 What is a Priority Queue?

- A Priority Queue is a special type of queue
- Each element has an associated priority
- Element with higher priority is served first
- Order is based on priority, not arrival time
- If priorities are same, FIFO rule is followed
- Commonly implemented using a Heap data structure

❓ Why Priority Queue is Important?

- Executes important tasks first
- Improves performance & decision making
- Used in real-time systems
- Essential for system scheduling
- Core concept in DSA & interviews
- Helps manage limited resources efficiently

🧩 Types of Priority Queue

🔼 Max Priority Queue

- Highest priority element is removed first
- Maximum value = highest priority
- Implemented using Max Heap

🔽 Min Priority Queue

- Lowest priority element is removed first
- Minimum value = highest priority
- Implemented using Min Heap

Time Complexity of Priority Queue

(Heap Based)

- Insert: O(log n)
- Delete (Remove Highest/Lowest): O(log n)
- Peek (Get top element): O(1)
- Search: O(n)

⚠️ Priority Queue Using Array or Linked List *(Why Inefficient?)*

✅ Why Heap is Best Choice for Priority Queue?

Real Life Use Cases of Priority Queue