What is Quick Sort? 

- Quick Sort is a divide and conquer sorting algorithm
- It selects a pivot element and rearranges the array around it
- Elements smaller than pivot go to the left, larger to the right

Why do we use Quick Sort? 🚀

- Very fast for large datasets
- Performs better than Bubble, Selection, and Insertion Sort
- Uses in-place sorting (no extra arrays)
- Widely used in real-world systems

How Quick Sort Works 🔁

- Choose a pivot element
- Partition the array around the pivot
- Recursively apply Quick Sort on left sub-array
- Recursively apply Quick Sort on right sub-array
- Stop when sub-array size becomes 0 or 1

What is Pivot? 🎯

- Pivot is the element used to divide the array
- Common pivot choices:
- Last element (most common)
- First element
- Random element

Partition Process 🧩

- Reorders the array so that:
- Elements smaller than pivot are placed before it
- Elements greater than pivot are placed after it
- Pivot is placed at its correct sorted position

Divide & Conquer Concept 🧠

- **Divide:** Split array using pivot
- **Conquer:** Recursively sort left and right parts
- **Combine:** No extra work needed (array is already sorted)

⚡ Quick Sort

👉 Concept

- Pick a pivot.
- Rearrange elements: smaller on left, larger on right.
- Recursively sort left and right parts.

👉 Real-Life Example

- Partitioning guests at a dinner by age around one person (pivot):
- People younger on one side, older on the other → then split and sort each side.