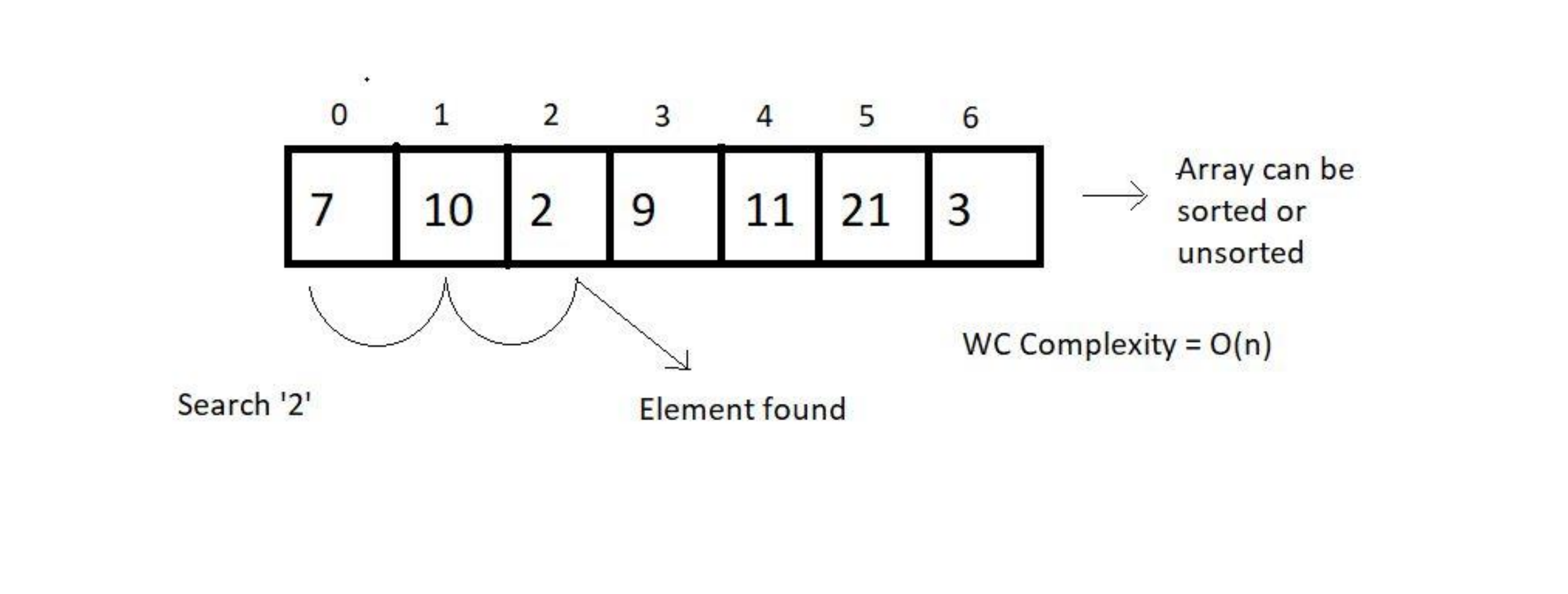
SEARCHING

LINEAR SEARCH

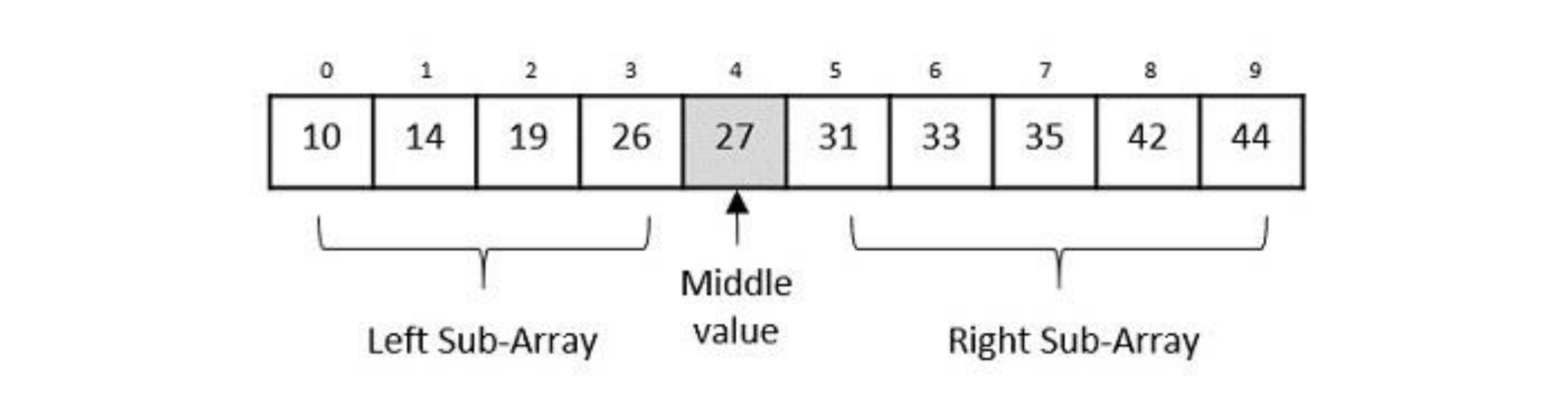
THIS SEARCH METHOD SEARCHES FOR AN ELEMENT BY VISITING ALL THE ELEMENTS SEQUENTIALLY UNTIL THE ELEMENT IS FOUND OR THE ARRAY FINISHES.



0	1	2	3	4	5	6
7	10	2	9	11	21	3

Binary Seach

- This search method searches for an element by breaking the search space into half each time it finds the wrong element. This method is limited to a sorted array. The search continues towards either side of the mid, based on whether the element to be searched is lesser or greater than the mid element of the current search space.



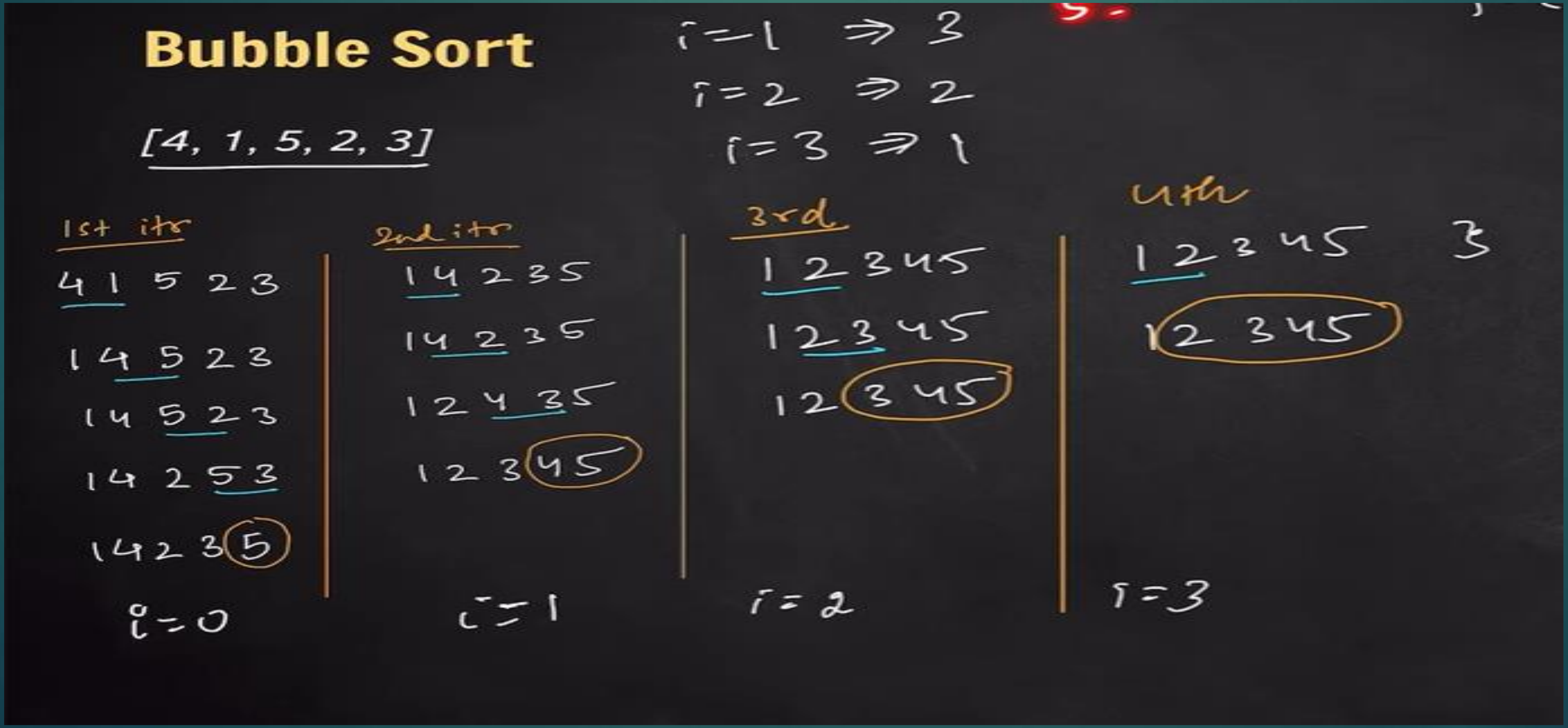
0	1	2	3	4	5	6	7	8	9
10	14	19	26	27	31	33	35	42	44

Difference between Linear and Binary Search

	Linear Search	Binary Search
1.	1. Works on both sorted and unsorted arrays	Works only on sorted arrays
2.	Equality operations	Inequality operations
3.	O(n) WC Complexity	O(log n) WC Complexity

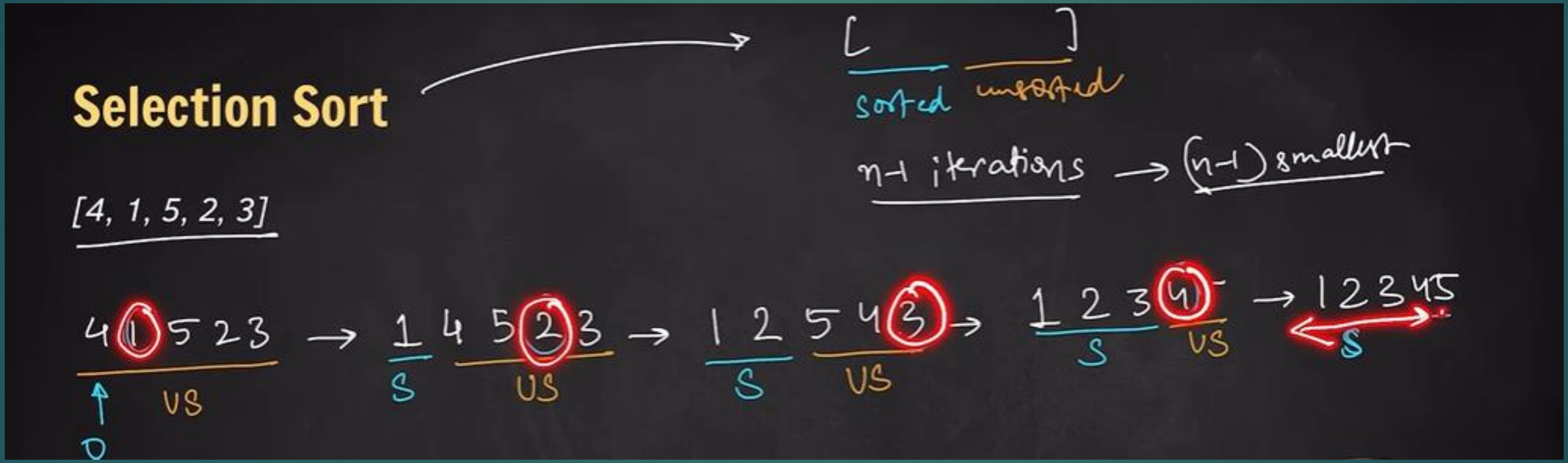
SORTING

Bubble Sort: Repeatedly compares adjacent elements and swaps them if they are in the wrong order; simple but inefficient for large lists.



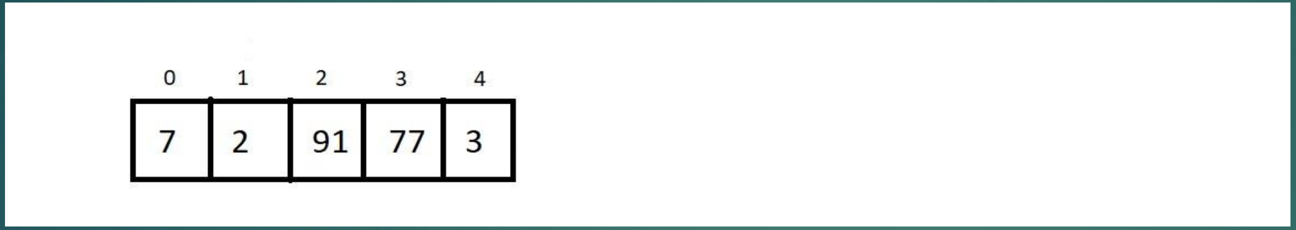
Selection Sort

Selection Sort: Finds the minimum element from the unsorted part and places it at the beginning, repeating the process for all elements.

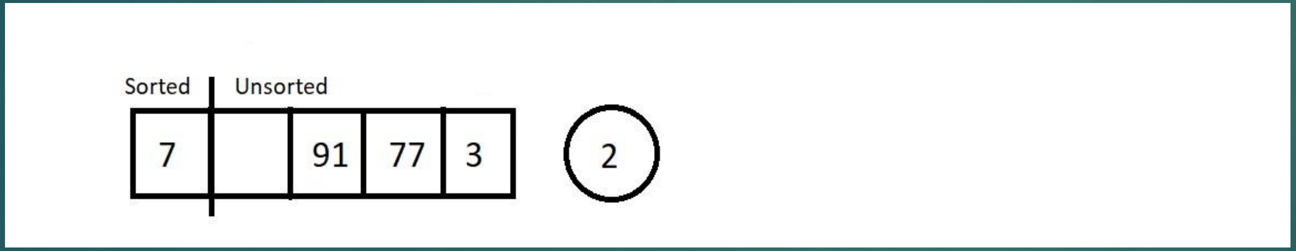


Insertion Sort

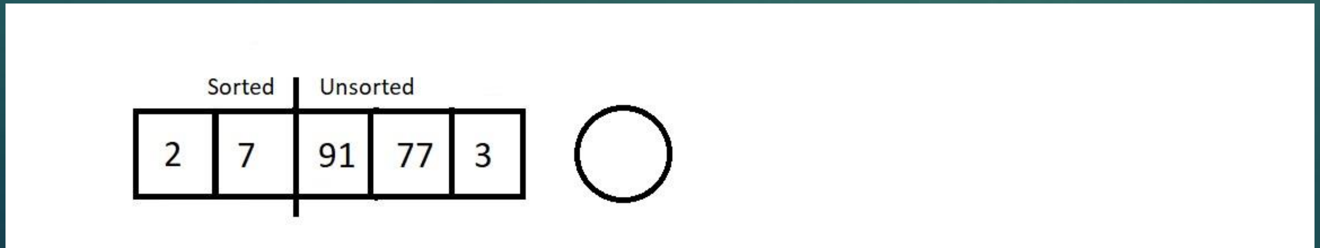
- Insertion Sort: Builds the sorted array one element at a time by inserting each new element into its correct position in the already sorted part.



0	1	2	3	4
7	2	91	77	3



7		91	77	3



2	7	91	77	3