

Now we will learn about the Second application of Array data structure that is SORTING

## Sorting Algorithm

[<sup>0</sup>20, <sup>1</sup>10, <sup>2</sup>12, <sup>3</sup>17, <sup>4</sup>27, <sup>5</sup>42, <sup>6</sup>39]  $n=7$

(Sorting algorithm)

Sorted Array → [10, 12, 17, 20, 27, 39, 42]

Whenever anyone asks to tell different sorting algorithm you know then don't start telling bubble sort, insertion sort etc. Instead tell that the sorting algorithm is broadly classified into 2 categories: Comparison and Non-comparison based sorting.

Comparison based sorting: Here elements are internally compared with each other to return the sorted resultant list.

Non-comparison based sorting: Here elements are internally not compared with each other to return the sorted resultant list.

## Sorting algorithms

Comparison based

Selection Sort,  
Bubble Sort,  
Insertion Sort,

QuickSort,  
MergeSort,  
HeapSort

Non-comparison based

Count Sort,  
Radix Sort,  
Bucket Sort

Applications of  
Divide &  
Conquer

1) Approach

2) Scenarios

↳ optimized

{ Time complexity      space complexity }

Based on the scenario one will decide which sorting algo to apply