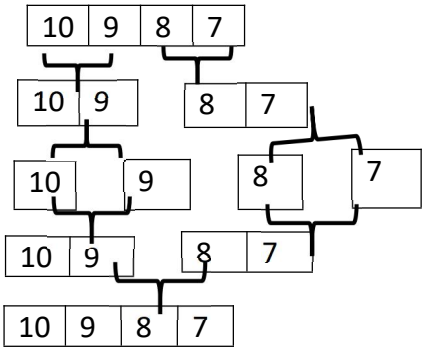
Tutorial 13

1) Define insertion sort

This is a simple sorting algorithm that works simple sorting algorithm that works by dividing the array into two parts -a sorted portion and an unsorted portion. It iterates through the unsorted portion, taking each element and placing it in its correct position within the sorted portion. This process continues until all elements are sorted.

2) Explain how it work



3) Explain the concept of merge sort

Merge sort is a divide and conquer algorithm used to an array. It divides the array into two halves, recursively sorts each half, and then merges the sorted halves to obtain the final sorted array. The key steps in merge sort are as follows:

- ✓ **Divide:** The array is divided into two equal halves (or approximately equal if the number of elements is odd)
- ✓ **Conquer:** Each half is recursively sorted using merge sort until individual elements are considered sorted
- ✓ **Merge:** The sorted halves are merged together, placing elements in their correct order to create the final sorted array

4) How it divides and conquers to sort an array

Divide by equal halves. If the array is having odd no of elements then divide by two and make it a pair with a less no of elements is and the rest of the elements.

5) Which scenarios is insertion sort preferred over merge sort

- ✓ When the size of the array is small
- ✓ When the array is nearly sorted