Mergesort

Merge sort is a sorting algorithm that follows the **divide-and-conquer** approach. It works by recursively dividing the input array into smaller subarrays and sorting those subarrays then merging them back together to obtain the sorted array.

In simple terms, we can say that the process of **merge sort** is to divide the array into two halves, sort each half, and then merge the sorted halves back together. This process is repeated until the entire array is sorted.

- *[38, 27, 43, 10] is divided into [38, 27] and [43, 10].*
- *[38, 27] is divided into [38] and [27].*
- *[43, 10] is divided into [43] and [10].*

Conquer:
- *[38] is already sorted.*
- *[27] is already sorted.*
- *[43] is already sorted.*
- *[10] is already sorted.*

Merge:
- *Merge [38] and [27] to get [27, 38].*
- *Merge [43] and [10] to get [10,43].*
- *Merge [27, 38] and [10,43] to get the final sorted list [10, 27, 38, 43]*

Therefore, the sorted list is [10, 27, 38, 43].