Bubble sort &Merge sort

Merge Sort:

- Merge sort is a divide-and-conquer algorithm that recursively divides the input array into smaller halves until the base case is reached.
- It then merges the smaller sorted arrays back together to produce a fully sorted array.
- The time complexity of merge sort is O (n log n) in the average and worst-case scenarios.
- It requires additional space for merging the sub-arrays, making it less memory efficient than some other sorting algorithms.

Bubble Sort:

- Bubble sort is a simple comparison-based algorithm that repeatedly compares adjacent elements and swaps them if they are in the wrong order.
- It continues this process until the entire array is sorted.
- The time complexity of bubble sort is O(n^2) in the average and worst-case scenarios.
- Bubble sort is an in-place sorting algorithm, meaning it does not require additional memory beyond the input array.

In summary, merge sort is generally more efficient and faster than bubble sort, especially for larger data sets. Merge sort's time complexity is better, and it is considered a stable sorting algorithm. On the other hand, bubble sort is a simple algorithm with a higher time complexity and is generally less efficient. It is mainly used for educational purposes or for sorting small lists with a limited number of elements.

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