7.7 Merge Sort in Data Structure | Sorting Algorithms| DSA Full Course

What is the Merge sort algorithm?

The Merge sort algorithm is a divide and conquer algorithm which sorts an array or list by dividing it into two halves, sorting them separately and then merging them back together.

What is the main component of the Merge sort algorithm?

The main component of the Merge sort algorithm is the merge function. It takes two subarrays and merges them into a sorted array.

What is the logic of the merge function?

The logic of the merge function is as follows:
1. Initially, we set two pointers i and j to the beginning of each subarray and a pointer k to the beginning of the merged array.
2. Compare the values of a[i] and a[j]. If a[i] is less than or equal to a[j], then put a[i] in the merged array and increment i. Otherwise, put a[j] in the merged array and increment j.
3. Repeat step 2 until we have i less than or equal to mid and j less than or equal to upper bound.
4. If j is greater than the upper bound, then put all the remaining elements of the second subarray into the merged array.
5. If i is greater than the mid then put all the remaining elements of the first subarray into the merged array.

What is the time complexity of Merge sort?

The time complexity of Merge sort is O(nlogn) in both the worst and best cases.

What is merge sort?

Merge sort is a sorting algorithm where the given list is divided into two halves recursively until one or zero elements are left in the sublists. Then, the sorted sublists are merged to form a new sorted list. This process is repeated until the entire list is sorted.

How does merge sort work?

In merge sort, the given list is divided into two halves recursively, sorted individually, and then merged to form a new sorted list. The merging process involves comparing the first elements of the sublists, taking the smaller element, and adding it to the new sublist. Pointers are used to keep track of the progress in each sublist until one sublist is completely added. The remaining elements of the other sublist are then added to the new sublist.