**Sorting Algorithms**

1. **Bubble Sort**

Bubble sort is an easy-to-understand algorithm. It goes through a list multiple times, comparing each pair of adjacent numbers and moves the bigger one to the right. It keeps doing this until all elements are in order.

Even though it looks simply, it’s not very efficient because it takes more time, especially for bigger lists.

**Big-O Notation**

Worst Case: O (n^2) => Array is the largest

Average Case: O (n^2) => Random array

Best Case: O (n) => Array is already in order

**metin, yazı tipi, ekran görüntüsü, çizgi içeren bir resim

Yapay zeka tarafından oluşturulan içerik yanlış olabilir.**

1. **Insertion Sort**

Insertion sort scans the array from left to right and insert each value into correct position. Each new value is compered with the previous value and inserted into correct position.

Its better than bubble sort. But its not efficient for big list like bubble sort.

**Big-O Notation**

Worst Case: O (n^2) => Array is the largest

Average Case: O (n^2) => Random array

Best Case: O (n) => Array is already in order

metin, ekran görüntüsü, yazı tipi içeren bir resim

Yapay zeka tarafından oluşturulan içerik yanlış olabilir.

1. **Merge Sort**

Merge sort is a divide and conquer algorithm. It works dividing to array into smaller parts and then merging them. It splits to array into two halves, after that recursively sorts to halves. Finally, it merges the sorted halves to single sorted array.

It can be used for large dataset. But not for small datasets. Because requires to extra space for all time.

**Big-O Notation**

Worst Case: O (n log n) => Array is the largest

Average Case: O (n log n) => Random array

Best Case: O (n log n) => Array is already in order