In21-S2-CS2023 - Data Structures and Algorithms

Learning outcomes

After successfully studying contents covered in this lecture, students should be able to,

- explain what an algorithm is and express an algorithm using a pseudo code
- explain the major factors considered for analyzing algorithms
- explain the insertion sort, bubble sort & optimized versions of bubble sort
- analyze the time complexity of a simple algorithm including insertion sort and bubble sort

Topics Covered in Class:

- Introduction
- pseudo code
- Insertion Sort
- Bubble Sort

- Properties of sorting:

1. **Comparison / Non Comparison - In non-comparison based sorting, elements of array are not compared with each other to find the sorted array.**
2. **In-place/Outplace technique –** A sorting technique is inplace if it does not use any extra memory to sort the array.
3. **Online/Offline technique –** A sorting technique is considered Online if it can accept new data while the procedure is ongoing i.e. complete data is not required to start the sorting operation.
4. **Stable/Unstable technique –** A sorting technique is stable if it does not change the order of elements with the same value.

Reading Assignments:

- Introduction: Chapter 1 of IA
- Insertion Sort: Sections 2.1 & 2.2 of IA

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