

Chapter-4: Learning and Understanding

The concepts in chapter-4 that you should know after learning and understanding the material are:

Concept & Definition:

What are the different variations (kinds) of decrease-and-conquer? You should be able to give an example for each case and explain.

Section 4.1

1. Insertion Sort- Algorithms, Computation of basic number of operations, recurrence relations and Order. What kind of decrease-and-conquer algorithm is this? Why?

Section 4.2

1. Topological Sorting- Algorithms, Computation of basic number of operations and Order. In this section, there are two algorithms- DFS traversal and source removal algorithm. You are expected to know both the algorithms.

Section 4.4

1. Binary Search- Algorithms, Computation of basic number of operations, recurrence relation and Order. What kind of decrease-and-conquer algorithm is this? Why? Best/Worst case.
2. Fake Coin Problem- Algorithm, Recurrence relation, number of operations, order.

Section 4.5

1. Computing a Median and the selection Problem- Lomuto Partition, Quickselect algorithm, order, recurrence relation and Best/Worst case.

The examples, practice problems and the problems in the assignments are expected to support learning.