Week 4

Decrease-and-Conquer + Divide-and-Conquer - I

L4. 1) Write a program to sort a set of numbers using insertion sort and analyze its time efficiency.

L4. 2) Write a program to sort given set of integers using Quick sort and analyze its efficiency.

L4. 3) Write a program to sort given set of integers using Merge sort and analyze its efficiency.

L4. 4) Write a program to determine the Topological sort of a given graph using:
   i) Depth-First technique
   ii) Source removal technique

Additional Questions:

L4. a) Write a program to implement binary-search using divide and conquer strategy.

L4. b) Write a program to find a^n where $n > 0$ using divide and conquer strategy.

L4. c) A student management system should be developed by a software company. There are certain dependent and independent modules that must be developed by K teams. The unit testing and integration testing is done before the deployment of the product. Design an algorithm using decrease and conquer technique such that it gives a schedule of tasks in the order in which it must be executed.