Assignment 2

Design And Analysis of Algorithms

Practical 4:

1. Solve the following sequence using the Heap sort algorithm. Show each line tracing.
   {5,25,9,96,26,35,18,28,65,14}
2. Solve the following sequence using the Counting sort algorithm. Show each line tracing.
   {1,2,5,4,2,5,3,6,2,1,3,4,6,2,4,1,5,3,6,4,3,2,2,1,4,5,6,2,4,1}

Practical 5:

1. Solve the following recurrence using substitution method
   a. T(n) = 2T(n-1)+c1 , (n>1)
      T(1)=1 , (n=1)
   b. T(n) = T(n-1) +1
      T(1)=1 , (n=1)
   c. T(n) = T(n) = 5T(n/4) + 4n , n>2
      T(1)=1 , n=2

2. Solve the following recurrence using recurrence tree method
   a. T(n) = 3T(n/2) + n^2
   b. T(n) = 2T(n/2) + cn
   c. T(n) = 25T(n/5) + n^$_2$
3. Solve the following recurrence using master's theorem method
   a. T(n) = 8T(n/2) + 1000n^2
   b. T(n) = 4T(n/2) + n^2 + n
   c. T(n) = 7T(n/3) + n^2
   d. T(n) = 25T(n/5) + n^$_2$

Practical 6:

1. What is the Principle of optimality? Explain in brief.
2. Solve the following problem using the 0/1 Knapsack problem.

Objects	1	2	3	4	5	6	7
Profit	10	5	15	7	6	18	3
Weight	2	3	5	7	1	4	1

3. Solve the following problem using the All pair shortest path algorithm.