**SHEET- 13**

Greedy Algorithm Approach

1. Given weights and values of n items, we need to put these items in a knapsack of capacity W to get the maximum total value in the knapsack.

Use Greedy Algorithm.

1. You are given n activities with their start and finish times. Select the maximum number of activities that can be performed by a single person, assuming that a person can only work on a single activity at a time.
2. Given an array of jobs where every job has a deadline and associated profit if the job is finished before the deadline. It is also given that every job takes a single unit of time, so the minimum possible deadline for any job is 1. How to maximize total profit if only one job can be scheduled at a time.  
     
   *Note:A minimum spanning tree (MST) or minimum weight spanning tree for a weighted, connected, undirected graph is a spanning tree with a weight less than or equal to the weight of every other spanning tree.*
3. Find *minimum spanning tree (MST)*of given graph G using Kruskal’s Algorithm.
4. Find *minimum spanning tree (MST)*of given graph G using Prim’s Algorithm.

# Given a graph and a source vertex in the graph, find the shortest paths from the source to all vertices in the given graph. Use Dijkstra’s shortest path algorithm.

1. Write a program to implement Huffman Coding using Greedy approach.  
   Input is an array of unique characters along with their frequency of occurrences and output is Huffman Tree.
2. Given an array a, we have to find the minimum product possible with the subset of elements present in the array. The minimum product can be a single element also.
3. Given a value V, if we want to make a change for V Rs, and we have an infinite supply of each of the denominations in Indian currency, i.e., we have an infinite supply of { 1, 2, 5, 10, 20, 50, 100, 500, 1000} valued coins/notes, what is the minimum number of coins and/or notes needed to make the change?
4. Given length of wall w and shelves of two lengths m and n, find the number of each type of shelf to be used and the remaining empty space in the optimal solution so that the empty space is minimum. The larger of the two shelves is cheaper so it is preferred. However cost is secondary and first priority is to minimize empty space on wall.