**Programs for DAA Lab Assessment**

**Design, implement and test the programs for the following problems in any programming language of your choice:**

1. Sort the given list of elements using Mergesort technique.
2. Find the kth smallest element using DAC.
3. Calculate the optimal profit of a Knapsack using Greedy method.
4. Construct minimum cost spanning tree for the given graph. (Prim’s / Kruskal’s algorithm)
5. Determine the path length from a source vertex to the other vertices in a given graph. The edges in the graph have positive weights. (Dijkstra’s algorithm).

1. You are given an integer array “coins” representing coins of different denominations and an integer amount representing a total amount of money. Return the fewest number of coins that you need to make up that amount. If that amount of money cannot be made up by any combination of the coins, return -1. You may assume that you have an infinite number of each kind of coin
2. Determine the shortest path from source vertex to the other vertices in a given graph. The graph may have negative weight edges. (Bellman-Ford Algorithm)
3. Find shortest path from any node to any other node (All pairs Shortest path) within a graph.
4. Find the non attacking positions of Queens in a given chess board using backtracking Technique.
5. Find an exact match of a pattern string in a text using KMP algorithm.