1. 請說明以下的資料結構特性並用任一種程式語言定義之
   
   (A) Stack.
   (B) Queue.
   (C) Linking List.
   (D) Threaded binary tree.

2. (A) 何謂 Minimum spanning tree (MST)?
   (B) 請寫出找 MST 的演算法。
   (C) 分析你的演算法的時間複雜度。
   (D) 一步一步寫出右圖找出 MST 的過程。

3. 在二元樹的追跡演算法中
   
   (a) 何謂 preorder traversal, inorder traversal, postorder traversal?
   (b) Construct the binary tree whose inorder traveling sequence is (2,3,1,5,4,7,8,6,9) and preorder traveling sequence is (1,2,3,4,5,6,7,8,9).

4. Let G be a graph. The edges of G are undirected. Each edge in G has a nonnegative length.
   (a) Write a program (by any programming language or pseudo code) to determine the length of the shortest paths from the vertex v to the remaining vertices of G.
   (b) Analysis the Time complexity O(big oh) for your program.

5. Heap sort requires only fixed amount of additional storage and at the same time has as its worst-case and average-case computing time O(n log n).
   (a) Please use heap sort algorithm to sort the data sequence is 37, 25, 93, 24, 16, 7, 72, 88 step by step.
   (b) What data structure should be used in the algorithm.
   (c) Write the algorithm.