Algorithms
Fall 2014

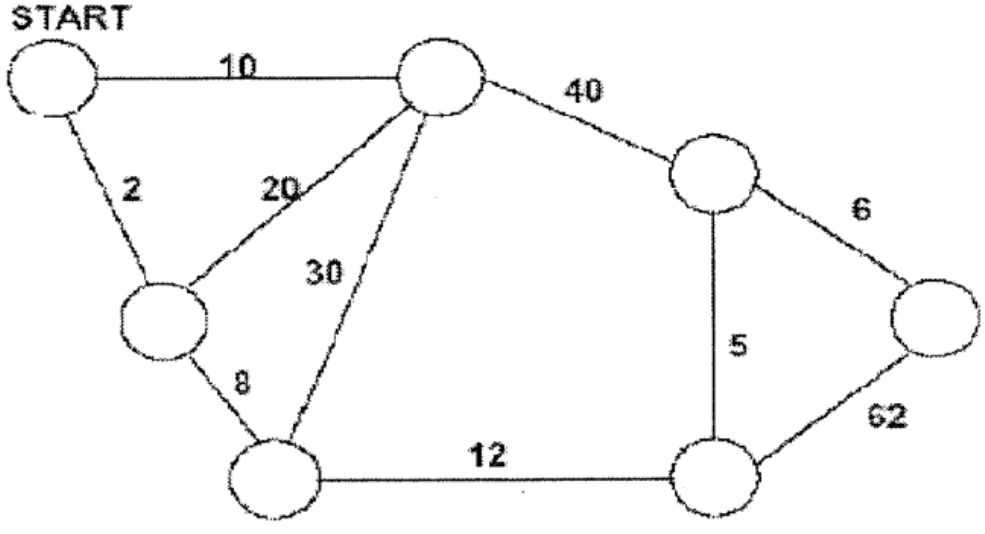
Problem#1

Execute Prim's minimal spanning tree algorithm on the graph given below using the vertex START as the source.

a. Provide an explanation of this execution for the first three iterations.

b. Show the final minimal spanning tree.

c. Finally, argue that the minimal spanning tree found is unique for this graph. (For arbitrary graphs, minimal spanning trees are usually not unique.)



Problem#2

Suppose that all edge weights in a graph are integers in the range from 1 to |V|. How fast can you make Kruskal's algorithm run? What if the edge weights are integers in the range from 1 to W for some constant W?

Problem#3

Suppose that all edge weights in a graph are integers in the range from 1 to |V|. How fast can you make Prim's algorithm run? What if the edge weights are integers in the range from 1 to W for some constant W?