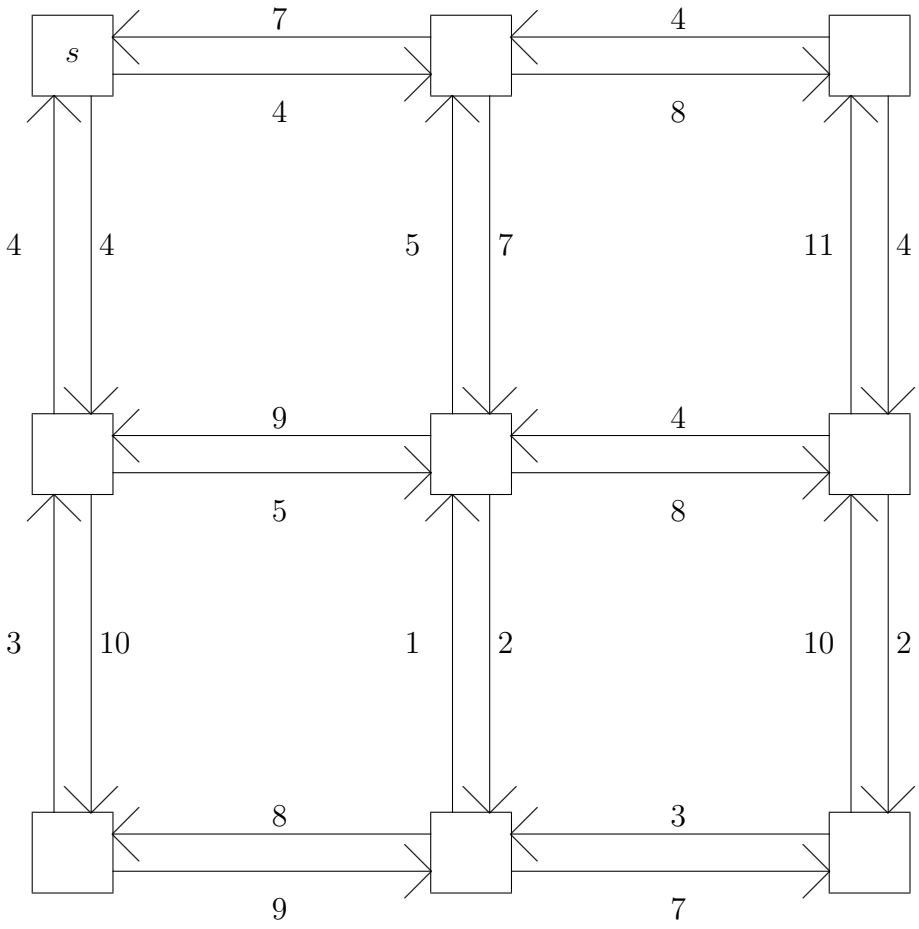
CSCI-665 Foundations of Algorithms

Homework 6

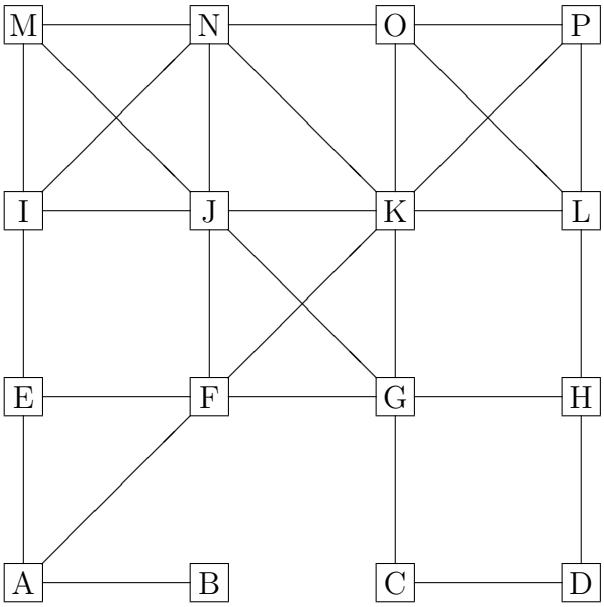
due Thursday, April 20, 2017

Reading Chapters 22, 24

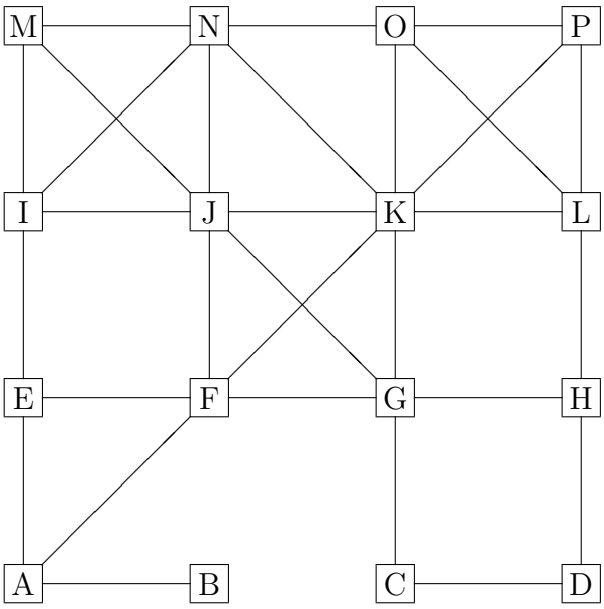
1. For the graph on this page find the distances from the vertex s (top-left) to all other vertices using Dijkstra's algorithm. Highlight (on the picture of the graph) the shortest path tree that you find, and number the vertices in the order in which they were found.



2. Draw a breadth-first search tree for the following undirected graph. Start at vertex J and assume that the graph is given by adjacency lists where the neighbors of each vertex are listed in alphabetical order. For each vertex mark the distance from J.



3. Draw a depth-first search tree for the following undirected graph. Start at vertex J and assume that the graph is given by adjacency lists where the neighbors of each vertex are listed in alphabetical order.



4. Compute the ordering of vertices produced by topological sort when it is run on the DAG in Figure 22.8, page 615 CLRS, starting at vertex p. Mark the discovery and finishing times of each vertex.

5. Solve exercise 24.3.2, page 663.