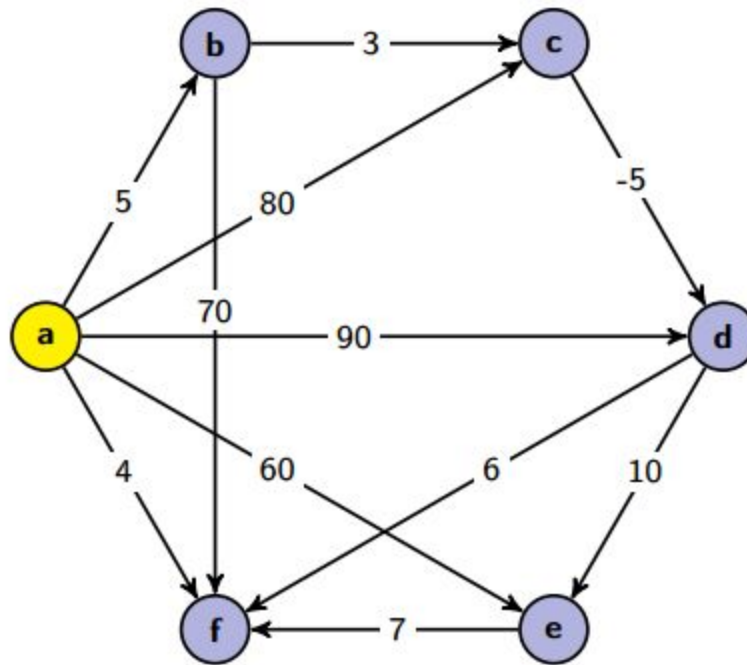


CSE 373 Section Handout #8: More Graphs

Dijkstra's Algorithm:

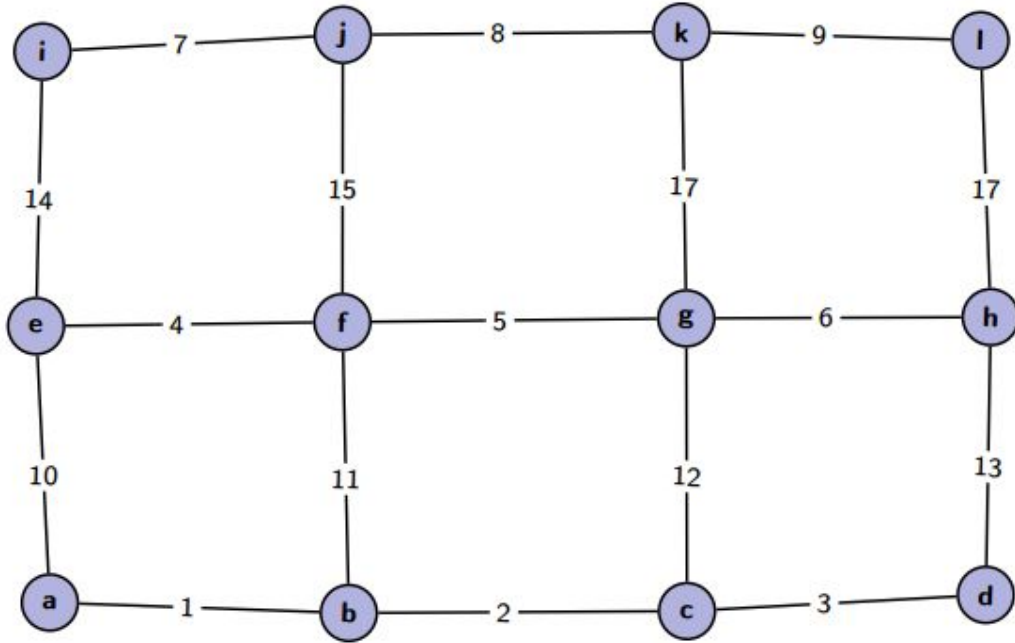
1. Consider the following graph:



- Use Dijkstra's algorithm to find the costs of the shortest paths from **A** to each of the other vertices. Show your work at every step.
- Are any of the costs you computed using Dijkstra's algorithm in part (a) incorrect? Why or why not?
- Explain how you can use Dijkstra's algorithm to recover the actual paths from **A** to each of the vertices (rather than just the costs).

Minimum Spanning Trees:

2. Consider the following graph:



a. Find an MST of this graph using Prim's algorithm. Show your work.

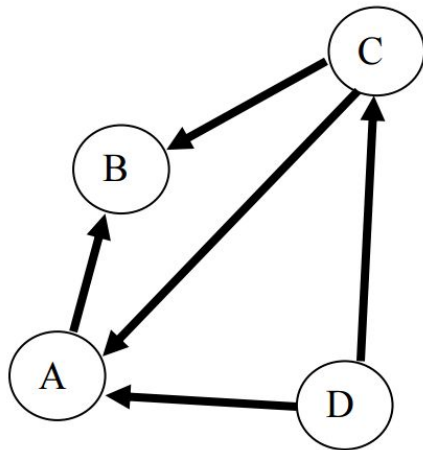
b. Find an MST of this graph using Kruskal's algorithm. Show your work.

c. Does this graph have multiple MSTs? Why or why not?

d. What are the asymptotic runtimes of Prim's and Kruskal's algorithms?

3. Draw an undirected graph with at least 5 nodes and 6 edges that has exactly three Minimum Spanning Trees

4. Consider the following graph:



- a. Draw the adjacency list representation of this graph.
- b. Write pseudocode for deleting an edge on a directed graph implemented using an adjacency list.
- c. What is the asymptotic runtime of your pseudocode?