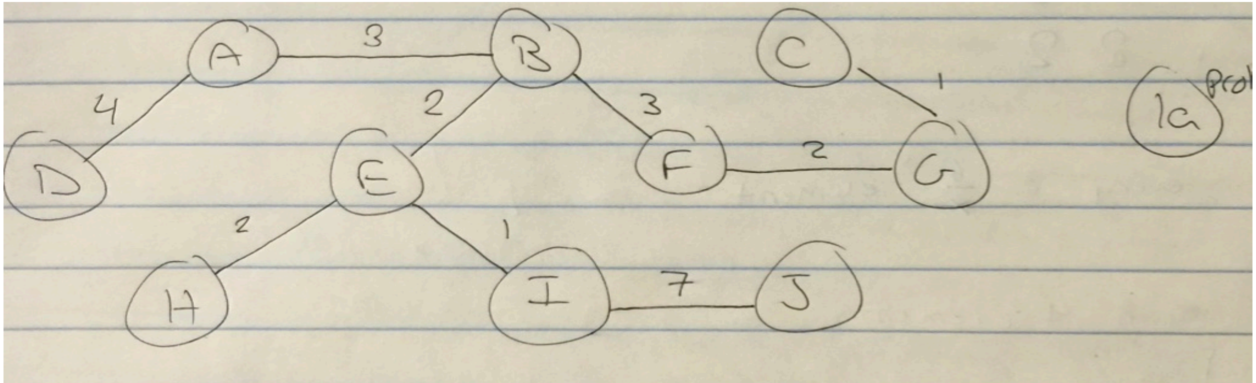
Matthew Barlow, Homework 6

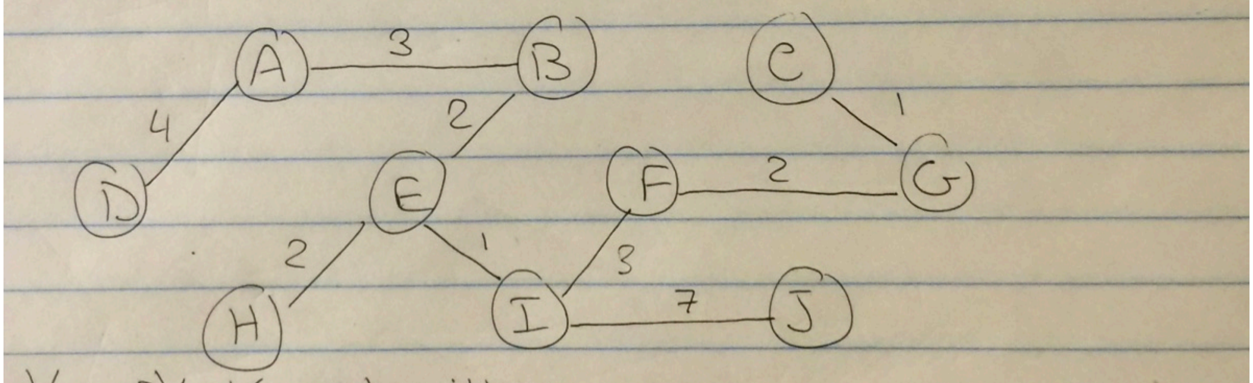
Problem 1

Neither of these algorithms are necessarily unique if there are multiple paths with the same weight. They are unique if all paths are weighted differently however. In this particular case, they are not unique.



Prim's Algorithm

Starting at node A I traced a line to my closest neighbor [B]. Then traced a line to the closest neighbor of A or B which did not yet have a line connected to it. This continued until they were all connected



Kruskal's algorithm

Began by picking the smallest edge. continued to pick the smallest edges in the tree which connected nodes not previously connected one at a time.

Problem 2

a.

Make an undirected tree where every actor is a vertex and edges connect all actors who have been in the same movie. All edges have a weight of 1. The shortest path between some actor and Kevin bacon is that actor's bacon number.

You can use an algorithm like the one in doDjisktra (Homework 5) to find these paths.

b.

Find the shortest paths from every actor to Kevin bacon. Scan over all such paths and compute their respective lengths. The path(s) with the highest number leads to the actor(s) with the highest bacon number.

OR just take a video of yourself and put it on YouTube. If you've never been in a video with anybody else you have an uncountable bacon number. (Just kidding).

c.

Similar to the method in part (a), but simply start your search with one of the two actors of interest instead of Kevin Bacon.