

No collaboration on this assignment. If you use material from other sources, sources must be cited.

1) You are given a graph G , and you find a shortest path P from s to t in G . Prove or disprove; if G' is formed by adding 5 to the cost of all edges in G , then P is always a shortest path from s to t in G'

2) You are given a graph G , and you find a minimum spanning tree T for G . If G' is formed by adding 5 to the weights of all edges in G , will T necessarily be a minimum spanning tree for G' ?

3) Design an $O(k(n+m))$ algorithm to find a minimum if all edges have integer weights in the range $1..k$

4) You are managing a trucking company, and you have trucks of various heights at your warehouse. You are given a graph of highways and intersections, where each highway segment has a maximum allowable height for that segment of road. Design and analyze an algorithm which finds the largest height truck which can be sent to all possible destinations.