

CSE 326 DATA STRUCTURES HOMEWORK 7 - The Final Homework!

Due: **Wednesday, March 7, 2007** at the beginning of class in the lecture section you are registered in
Please put your quiz section (AA,AB,BA,BB) in addition to your name at the top of your homework

Problem 1. When Dijkstra's Algorithm Fails

As stated in the book, Dijkstra's algorithm does not work when there are negative edge weights. Given an example of a graph where Dijkstra's algorithm gives the wrong answer in the presence of a negative edge weight, but no negative cost cycle (a negative cost cycle is a cycle on the graph whose total cost is negative.) Please explain why Dijkstra's algorithm will fail on the particular counterexample you provide.

Problem 2. Planar Graphs

A planar graph (directed or undirected) is a graph that can be drawn in a plane without any two edges intersecting. Prove that in a planar graph (assume that it is undirected), there must exist some vertex which is connected to no more than five nodes (degree no more than five.)

Problem 3. Prim's and Kruskal's Algorithms

Do Weiss problem 9.15 parts a and b.