

Homework 12

Due Friday, November 30 at the beginning of class

Reading. Sections 13.1, 13.2, 13.3, 13.4

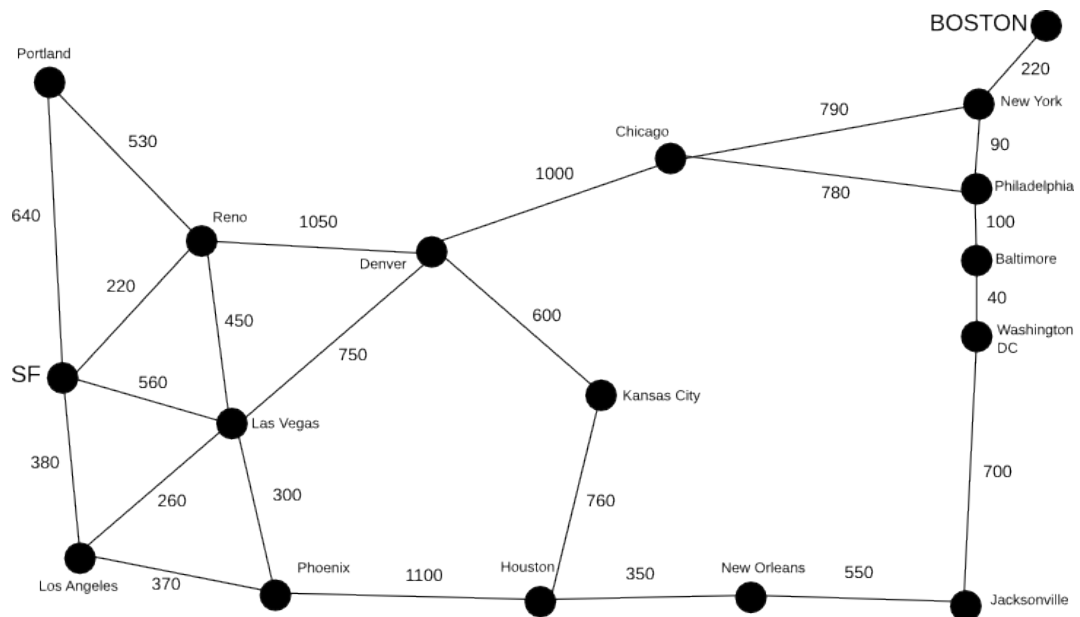
Remark. Make grammatically correct sentences by adding in just a few English words.

Problems.

1. Is the given code a valid Prüfer code? If so, draw the corresponding tree. If not, explain why not (don't just say "it doesn't make a tree" — say how you could have known in advance just by looking at the code).

- (a) 2585902
- (b) 2585202
- (c) 1138307

2. Find a minimal spanning tree on the weighted graph drawn below. What is the name of the algorithm you used?



3. (a) Draw a connected weighted graph that has at least two different minimal spanning trees.

- (b) Draw a connected weighted graph which has a unique minimal spanning tree, but in which at least two edges have the same weight.
4. Let G be a connected weighted graph in which all edge weights are positive. Show that the cost of a minimal spanning tree is strictly smaller than the cost of an optimal tour (i.e., a tour solving the Traveling Salesperson Problem).