IEOR E4004: Introduction to Operations Research: Deterministic Models

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HW 6

Problems not written out explicitly are from the text: *Applied Mathematical Programming*, by Bradley, Hax and Magnanti.

1. Consider the network shown in Chapter 11, Problem 13 of the text. Ignore the signs in the arc labels so that all the numbers associated with the arcs are non-negative.

   - Interpret the numbers on arcs as distances, find the shortest path tree from node 1 to every other node in the network using Dijkstra's algorithm.
   - Interpret the numbers on arcs as distances, find the shortest path tree from node 1 to every other node in the network using the "dynamic programming" algorithm discussed in lecture.
   - Interpret the numbers on arcs as capacities, find the maximum flow from node 1 to node 6 in that network, using the Ford-Fulkerson algorithm. Show that what you find is indeed a maximum flow by exhibiting a minimum-cut whose capacity is the same as the value of the flow you found.

2. Problem 8.5 of text