

Homework Assignment 8

CS 535 Design and Analysis of Algorithms
Fall Semester, 2015

Rules for Homework

Remember, the rules listed on the first homework assignment apply to all assignments.

Due: Thursday, October 22, 2015

1. Prove the claim in the footnote on page 725: If the capacities are rational, the Ford-Fulkerson algorithm does not fail. Give an example in which it does fail (clearly you will need to have irrational capacities).
Extra credit: Give an example in which it fails *and does not converge to the maximum flow*.
2. Problem 26.2-10 on page 731. The hint given means that you are to prove the *existence* of the sequence of augmentations, not that they could be found before you have already found the max flow.
3. **Extra credit:** Problem 26.3-3 on page 735.
4. Prove Lemma 26.19 (bottom of page 743) by induction on the number of push/relabel steps.
5. Problem 26.4-3 on page 747.