Second Homework Assignment for Math 448

Due: Thursday, February 7th.

All section references are to the text.

Problems to hand in for Math 448 and 748:

Chapter 4, exercises 4.6, 4.14, 4.24, 4.26.
Chapter 5, exercises 5.2, 5.6, 5.22.

Additional problems to hand in for Math 748:

Chapter 4, exercise 4.46.
Chapter 5, exercise 5.44.

Math 448 students are also welcome to try these problems.

Some other problems you might try:

The textbook continues to provide enough questions to entertain even the most industrious students. Note that a solution manual to all the odd numbered is available online at:

`http://web.mit.edu/jorlin/www/SolutionManual/SolutionManual.html`

Orlin's home page also has a collection of errata for the textbook and lecture notes for a course based on the text. This is a very useful resource. In particular, he includes several animations of key algorithms covered in this course, these can really help you to understand them quickly.

Reading for this week:

If you haven't already, please read up to Section 4.6.
For Thursday, January 31st, Sections 5.1–5.6 and 5.8.
For Tuesday, February 5th, Sections 6.1–6.3.
For Thursday, February 7th, Sections 6.4–6.5.

Presentations:

Math 748 students should talk to me this week about their presentations (which will take place March 26th to April 3rd). I would like to finalize the choices of time slots and papers by Thursday, February 7th.

The ideal situation would be to choose papers that are relevant to your own research. If you have, or are considering, an advisor, I recommend consulting with them.

Examples of some suitable papers are on the back of this page, but I am quite flexible on what you present.

References

[GK07] Naveen Garg and Jochen Könemann, *Faster and simpler algorithms for multicommodity flow and other fractional packing problems*, SIAM J. Comput. **37** (2007), no. 2, 630–652 (electronic).

[Gue01] Bertrand Guenin, *A characterization of weakly bipartite graphs*, J. Combin. Theory Ser. B **83** (2001), no. 1, 112–168.

[Iwa08] Satoru Iwata, *Submodular function minimization*, Math. Program. **112** (2008), no. 1, Ser. B, 45–64.

[Jai01] Kamal Jain, *A factor 2 approximation algorithm for the generalized Steiner network problem*, Combinatorica **21** (2001), no. 1, 39–60.

[Sku02] Martin Skutella, *Approximating the single source unsplittable min-cost flow problem*, Math. Program. **91** (2002), no. 3, Ser. B, 493–514, ISMP 2000, Part 1 (Atlanta, GA).

[Tar85] Éva Tardos, *A strongly polynomial minimum cost circulation algorithm*, Combinatorica **5** (1985), no. 3, 247–255.