

Due: Monday, February 6th (in class)

Reading

For Wednesday, January 25th, Sections 5.1–5.3.

For Monday, January 30th, Sections 5.4–5.6 and 5.8.

For Wednesday, February 1st, Sections 6.1–6.3.

For Monday, February 6th, Sections 6.4–6.5.

Assignment exercises to hand in for Math 448 and 748

Chapter 4, exercises 4.14, 4.15, 4.24.

Chapter 5, exercises 5.2, 5.4, 5.30.

Additional problems to hand in for Math 748

Chapter 4, exercise 4.6.

Chapter 5, exercise 5.34.

Math 448 students are also welcome to try these problems.

Some other exercises you should 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://jorlin.scripts.mit.edu/docs/SolutionManual>

These solutions may only be sketches, when I assign odd-numbered problems more detailed solutions than those in Orlin's notes will be required.

Orlin's home page also has a collection of errata for the textbook. Detailed lecture notes, assignments and several animations of key algorithms from Orlin's latest offering of the class are available through MIT's OpenCourseWare:

<http://ocw.mit.edu/courses/sloan-school-of-management/15-082j-network-optimization-fall-2010/>

Presentations

Math 748 students should talk to me this week about their presentations (which will take place March 26th to April 11th). I would like to finalize the choices of time slots and papers by Friday, February 3rd.

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

Examples of some suitable papers are on the back of this page.

References

- [Ald08] David J. Aldous, *Cost-volume relationship for flows through a disordered network*, *Math. Oper. Res.* **33** (2008), no. 4, 769–786.
- [FS07] Lisa Fleischer and Martin Skutella, *Quickest flows over time*, *SIAM J. Comput.* **36** (2007), no. 6, 1600–1630 (electronic).
- [GJ99] Donald Goldfarb and Zhiying Jin, *A new scaling algorithm for the minimum cost network flow problem*, *Oper. Res. Lett.* **25** (1999), no. 5, 205–211.
- [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.
- [Kle00] Jon Kleinberg, *The small-world phenomenon: an algorithm perspective*, *Proceedings of the Thirty-Second Annual ACM Symposium on Theory of Computing (New York)*, ACM, 2000, pp. 163–170 (electronic).
- [RV93] Mauricio G. C. Resende and Geraldo Veiga, *An implementation of the dual affine scaling algorithm for minimum-cost flow on bipartite uncapacitated networks*, *SIAM J. Optim.* **3** (1993), no. 3, 516–537.
- [RW09] Mateo Restrepo and David P. Williamson, *A simple GAP-canceling algorithm for the generalized maximum flow problem*, *Math. Program.* **118** (2009), no. 1, Ser. A, 47–74. MR MR2470885
- [Tar85] Éva Tardos, *A strongly polynomial minimum cost circulation algorithm*, *Combinatorica* **5** (1985), no. 3, 247–255.