CSE 521: Design and Analysis of Algorithms — Autumn 2006
Problem Set #4 — Instructor: Anna Karlin
Due on **November 28, 2006**

Turn-in: You can either bring the homework to class or email your homework to Roee or leave it in his mailbox on the first floor of the Allen Center (in the room with all the CSE grad student mailboxes).

Instructions: You are allowed to collaborate with fellow students taking the class in solving problem sets. You may also collaborate with one other classmate on writing up your solutions. If you do collaborate in any way, you must acknowledge for each problem the people you worked with on that problem.

The problems have been carefully chosen for their pedagogical value and hence might be similar or identical to those given out in past offerings of this course at UW, or similar courses at other schools. Using any pre-existing solutions from these sources, from the Web or other algorithms textbooks constitutes a violation of the academic integrity expected of you and is strictly prohibited.

Most of the problems require only one or two key ideas for their solution – spelling out these ideas should give you most of the credit for the problem even if you err in some finer details. So, make sure you clearly write down the main idea(s) behind your solution even if you could not figure out a complete solution.

A final **important** piece of advice: Begin work on the problem set early and don't wait till the deadline is only a few days away.

Readings: Kleinberg and Tardos, Chapter 8 and chapter on linear programming here:
`www.cse.ucsd.edu/users/dasgupta/mcgrawhill/chap7.pdf`

Each problem is worth 10 points unless noted otherwise. All problem numbers refer to the Kleinberg-Tardos textbook. On the NP-completeness proofs, you can use any NP-complete problem discussed in the chapter for your reductions.

1. Chapter 7, Problem 19
2. Chapter 7, Problem 36
3. Chapter 8, Problem 3
4. Chapter 8, Problem 17
5. **Extra Credit: Chapter 7, Problem 51**