CSc 437
Homework 2 (100 pts.)
Due: 10/10/11

Instructions. All assignments are to be completed on separate paper. Use only one side of the paper. Assignments will be due at the beginning of class, or via email. To receive full credit, you must show all of your work. You can email the homework to the grader.

All questions are taken from the textbook, unless otherwise specified.

1. 3.1

2. 3.3

3. 3.6

4. 3.10 (start by computing the convex hull, and split the resulting polygon into sub-polygons)

5. 3.14. The running time should be $O(n \log n)$

6. Assume $h_1 \ldots h_n$ are halfplanes in 2D, given in increasing slopes of their bounding lines. Compute $h_1 \cap h_2 \cap \ldots h_n$ in $O(n)$ time.

7. It is known that the union of n axis-parallel squares in the plane has complexity $O(n)$. Show how to compute their union in time $O(n \log^2 n)$ (use divide and conquer). The union can be expressed, for example, as a DCEL data structure.