

## Homework Assignment 4

CS 430 Introduction to Algorithms  
Fall Semester, 2010

**Due: Wednesday, October 20**

1. Exercise 13-2 on pages 332–333, with the following modifications: For part (a), use Theorem 14.1 (page 346). Add a part (g), to design *and analyze* an algorithm for RB-SPLIT which takes a lexicographic red-black tree and a value  $x$  and splits the tree into two lexicographic red-black tree, one with all the elements less than or equal to  $x$  and the other with the elements greater than  $x$ . RB-SPLIT can be done in time proportional to the height of the original tree.
2. Exercise 15-2 on page 405.
3. Exercise 16.1-5 on page 422.
4. Exercise 17.4-3 on page 471.
5. Exercise 17-4 parts (b), (c), (d) and (e) on pages 474-475. For extra credit, do parts (f), (g), and (h).