Homework 2 is due Monday, June 13 in class.

Read chapters 13-14. Turn in

1. Exercise 13.3-5, page 322 (Ex. 13.3-5, page 322 in 2nd edition)
3. Would it be possible to maintain efficiently a new field $b_{des}(x)$ in a red-black tree which for a node $x$ in the tree contains the number of black descendants of $x$? What about a new field $b_{anc}(x)$ which contains the number of black ancestors of $x$? Justify your answers.
5. Suppose you want to maintain a set of dynamic intervals (i.e. there are insertions into and deletions from the set) in order to be able to query efficiently whether a given interval contains any of the intervals in the set. What data structure would you want to use and what information would need to be stored? Describe an algorithm for implementing the query in sufficient detail so that you can analyze the time required to respond to the query. Show that the extra information you need can be maintained during the insertions and deletions.