

CMPS 101

Winter 2009

hw8 (Review only, do not turn in)

1. 12.2-1

Suppose that we have numbers between 1 and 1000 in a binary search tree and want to search for the number 363. Which of the following sequences could not be the sequence of nodes examined?

- a. 2, 252, 401, 398, 330, 344, 397, 363.
- b. 924, 220, 911, 244, 898, 258, 362, 363.
- c. 925, 202, 911, 240, 912, 245, 363.
- d. 2, 399, 387, 219, 266, 382, 381, 278, 363.
- e. 935, 278, 347, 621, 299, 392, 358, 363.

2. Insert the following keys (in order) into an initially empty Binary Search Tree, and draw the BST structure that results: 26, 41, 47, 17, 14, 30, 10, 38, 28, 21, 19, 12, 16, 39, 23, 20, 15, 7, 35, 3. Determine an assignment of colors Red and Black to the nodes in this tree so as to satisfy the Red-Black Tree properties.

3. 13.1-5

Show that the longest simple path from a node x_0 in a red-black tree to a descendant leaf has length at most twice that of the shortest simple path from node x to a descendant leaf.