CS 180: Data Structures, Fall 2013
Homework 7

Due by the start of class on Friday, Nov. 1

1. (a) Suppose we start with an initially empty max heap, and the following elements are inserted: 34, 11, 21, 42, 15, 9, 37, 19, 12, 51, 26

   Draw the exact heap that results after these operations **in this order**. While I don't require you to show your work, I do encourage you to show your work (or at least the intermediate heaps during insertion) for the purposes of partial credit and to check your work.

   (b) Now draw the max heap that results after removeMax is called on your heap from part a. Again, I encourage you to show your work.

2. (a) Your classmate claims that the order in which a set of elements is inserted into a binary search tree does not matter - the same search tree results each time. Give a (small) example to show they are wrong.

   (b) Now this same classmate claims that a preorder traversal of a heap will list its keys in sorted order. Give a (small) example of a head that proves he is still wrong.

3. Consider the following two tree traversal outputs:

   Preorder: ILOVECOMPUTERS

   Inorder: OLEVIOCTUPMRES

   Draw the binary tree which results in these two outputs for the specied traversals.

4. (a) Draw the binary search tree that results after the following elements are inserted into an initially empty binary search tree **in this order**: 23, 11, 5, 37, 12, 62, 29, 51, 42, 24

   (b) Now draw the BST from part (a) after remove(11) is called.

   (c) Now draw the BST from part (b) after remove(23) is called.