CS 410 Summer 2000
Clarifications for Homework 4

1. **OneWayList**
   (a) `item removeRight` removes and returns the first item in the right string (generally considered to be the "current" item in a list).
   (b) You won't need all the operations; they were included to make the problem complete, and to hopefully get you thinking.
2. (a) You should do part (d) independent of part (c), that is, insert 17 into a list which has not had 68 deleted. If you have already written up your solution inserting 17 to a list without 68, that's fine if you are confident you did not make a mistake in the deletion.
   (b) Insertion and deletion should be done in a way that can be implemented in constant time.
3. The instruction
   Items are not copied directly into the hashtable; instead we maintain a link to the item implies that data items are not stored in the linked-list chains, that each node in these linked lists consists of a pointer to a data item and a pointer to the next node in the list. If you have already written your answer assuming that each data item could be extended to include a "next" pointer (and thus be the linked-list nodes for chaining), that's OK, but you **must** include a note near the beginning of this problem that this is what you assumed.
4. **Do not** draw all the trees. One way to compute the answer is to write a recursive formula involving the number of BSTs with 4 of the vowels, 3 of the vowels, etc.
5. Note that this is not necessarily true if the node does not have two children. In particular, if the node has a left child then its predecessor has no right child, and if the node has a right child then its successor has no left child.
6.
7. (a) Trees with the same structure but different color schemes are considered to be different.
   (b) You do not need to justify your answer for this one.
8. Note that you cannot prove something is always true by proving it in a particular case.
9. To "incorporate children with its own" implies (at a minimum) adding additional keys to the node.
10. Use $t = 2$ or $t = 3$. Clearly indicate your choice.
11. (a) Recall the height is measured from the bottom of the tree, i.e., distance from a leaf. When does the height of a node change?

(b) Recall that the reason we always inserted a new key at a leaf was because if we added a key to an internal node, it would necessitate a new child for that node, as well.