CS 112: Fall 2016

BST/AVL

Review

1. The worst case search time in a BST with n nodes is:

A. O(n)

B. O(1)

C. O(n^2)

D. O(log n)

2. The best case search time in a BST with n nodes is:

A. O(n)

B. O(1)

C. O(n^2)

D. O(log n)

3. A BST holds n integers. The running time to print all the items from the BST in reverse sorted order is:

A. O(1)

B. O(n)

C. O(n^2)

D. O(log n)

4. The following integers are added to a BST one at a time:

5, 10, 15, 20, 25, 30, 35

Which of the following SEQUENCE of inserts into the BST will result in a tree of height greater than 3? (At least 4 branches from root to farthest leaf):

A. 20, 10, 5, 15, 30, 25, 35

B. 25, 35, 30, 15, 10, 5, 20

C. 15, 5, 10, 35, 20, 25, 30

D. None of the above

5. The following SEQUENCE of integers are added to an AVL tree one at a time:

5, 10, 15, 20, 25, 30, 35

What is the height of the resulting AVL tree (height is number of branches from root to farthest leaf):

A. 2

B. 3

C. 4

D. 5

6. A BST starts out with n items. The items are then deleted from the BST, one at a time, until the BST is empty. What is the worst case running time of this process?

A. O(n)

B. O(nlogn)

C. O(n^2)

D. O(log n)

7. An item is inserted into an AVL tree. Going back toward the root, a node X is encountered with balance factor '-' (equal high). Is there a situation in which this node could be unbalanced, and would need to be fixed with one or two rotations?

A. Yes

B. No

C. Depends

D. None of the above

8. A BST is to be built out of a sorted array of n items. What would be the running time of the fastest algorithm that can do this?

A. O(1)

B. O(log n)

C. O(n)

D. O(n log n)