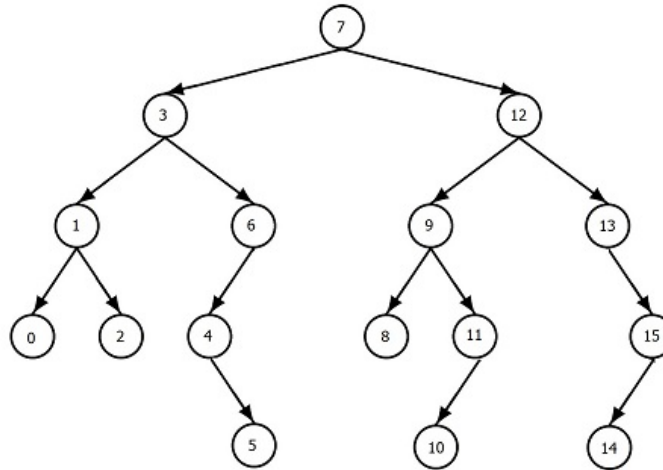# Assignment 2

CS 213: Data Structures and Algorithms

1. Given a BST T and an element a, the task is to delete all elements $b < a$ from T. Write a function `del_less(T,a)` in pseudo-code to perform this. What is the time complexity of your algorithm? Execute your algorithm for $a = 11$ on the following tree and show function calls with their input arguments.

2. We say that an AVL tree is deeply imbalanced if, at every internal node x, the left subtree T_L and the right subtree T_R are of different heights. Combining this with the AVL condition, the following holds at every internal node having subtrees T_L and T_R:

$$|ht(T_L) - ht(T_R)| = 1$$

   (a) List all deeply imbalanced AVL tree structures of heights 1, 2, and 3.
   (b) Is there a recurrence relation on the number of deeply imbalanced AVL trees having height h? If so, state and prove this relation. See if $h = 1, 2, 3$ satisfy it, and compute this number for $h = 4$.