Tutorial 3

CS 213: Data Structures and Algorithms
Autumn 2021

1. Given the elements $[1, 2, \ldots, 7]$ and the complete binary tree T with 7 nodes, label the nodes so that the preorder, inorder and postorder traversals produce the sequence $1, 2, \ldots, 7$ in that order.

2. Consider a binary tree with labels such that the postorder traversal of the tree lists the elements in increasing order. Let us call such a tree a post-order search tree. Describe how you will do search, min, max, insert and delete on this tree. Please write pseudo-code.

3. Construct the BST T whose post-order traversal is $1, 3, 5, 4, 2, 7, 8, 6$. For this tree delete the element 4 in two ways; by using its predecessor and its successor. Display these trees.

4. Given a BST T and an element a, the task is to delete all elements b such that $b < a$ from T. Write pseudocode to do this. How much time does your algorithm take?