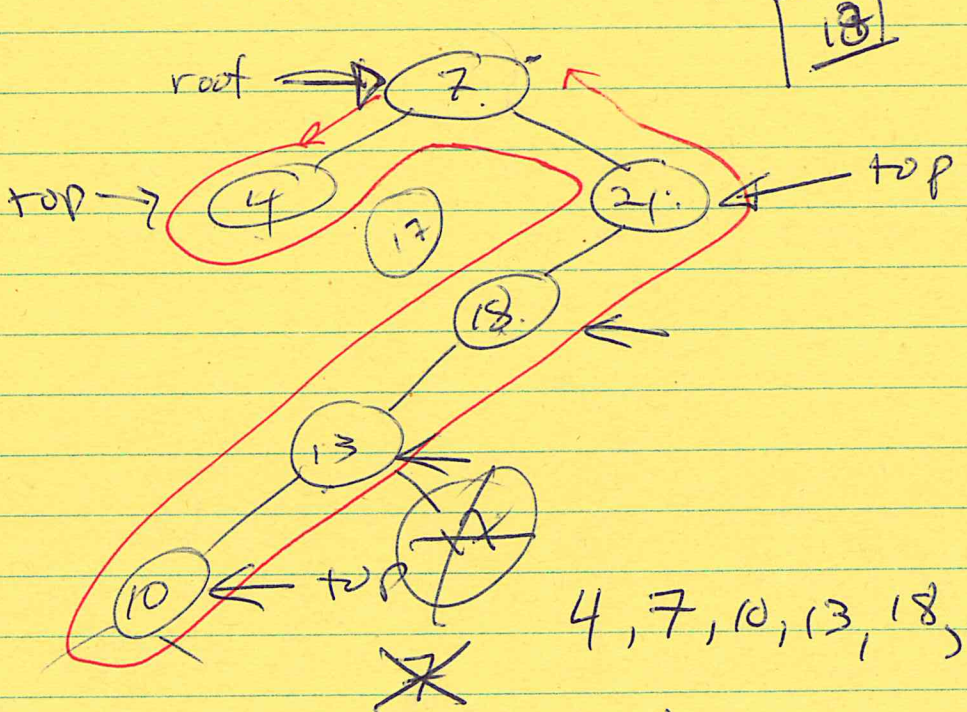
Given a list of numbers, sort using a BST

1. ~~Take~~ for all the numbers
   - insert into the BST

2. Output these numbers using an in-order traversal of the BST.

Example:

7, 21, 18, 4, 13, 10, 5



4, 7, 10, 13, 18, 21

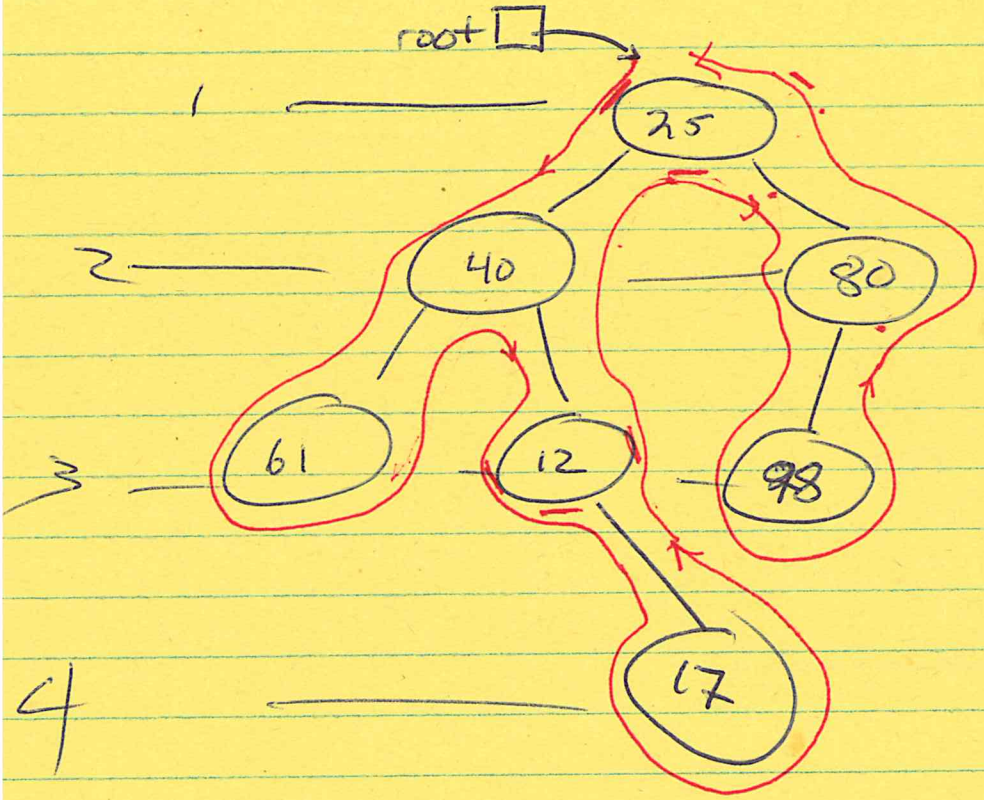
Running time? $N * O(\log N) + O(N)$

Part 1 + Part 2

if Balanced (High Probability) $= O(N \log N)$

height of tree is $\log_2 N$ at most.

Trees!

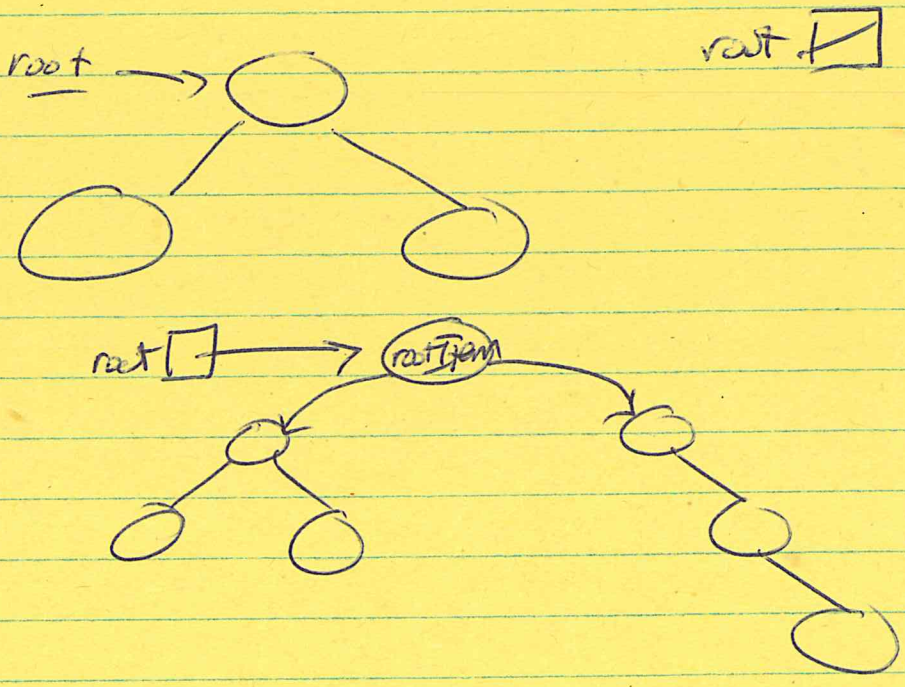


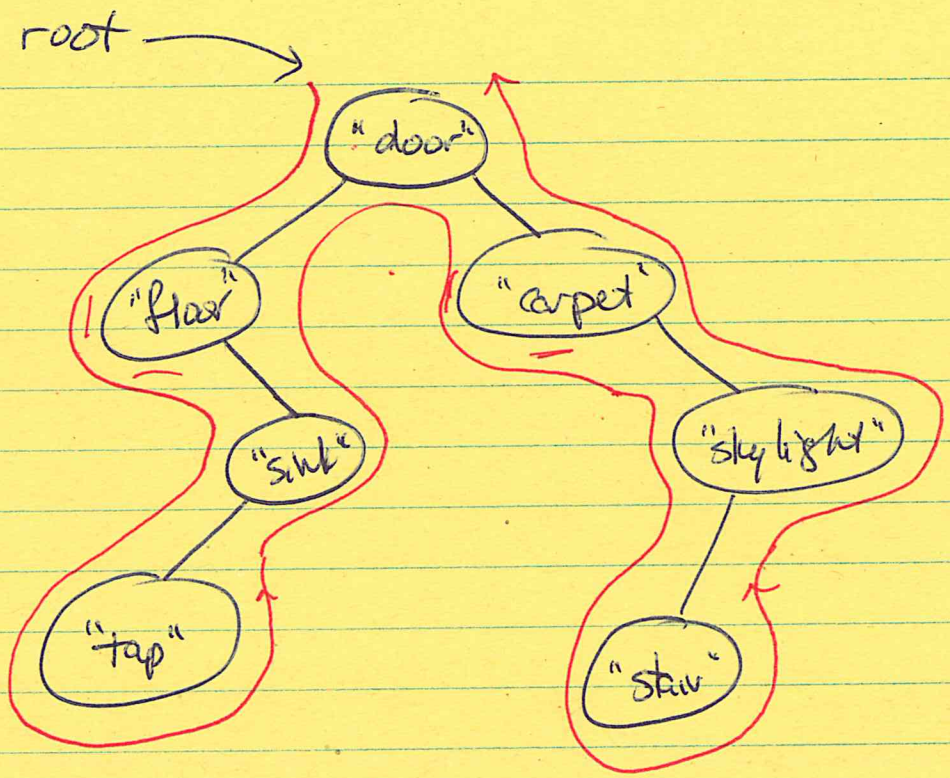
Traversals

Pre-Order : 25, 40, 61, 12, 17, 80, 98

Post-Order : 61, 17, 12, 40, 98, 80, 25

In-Order : 61, 40, 12, 17, 25, 98, 80

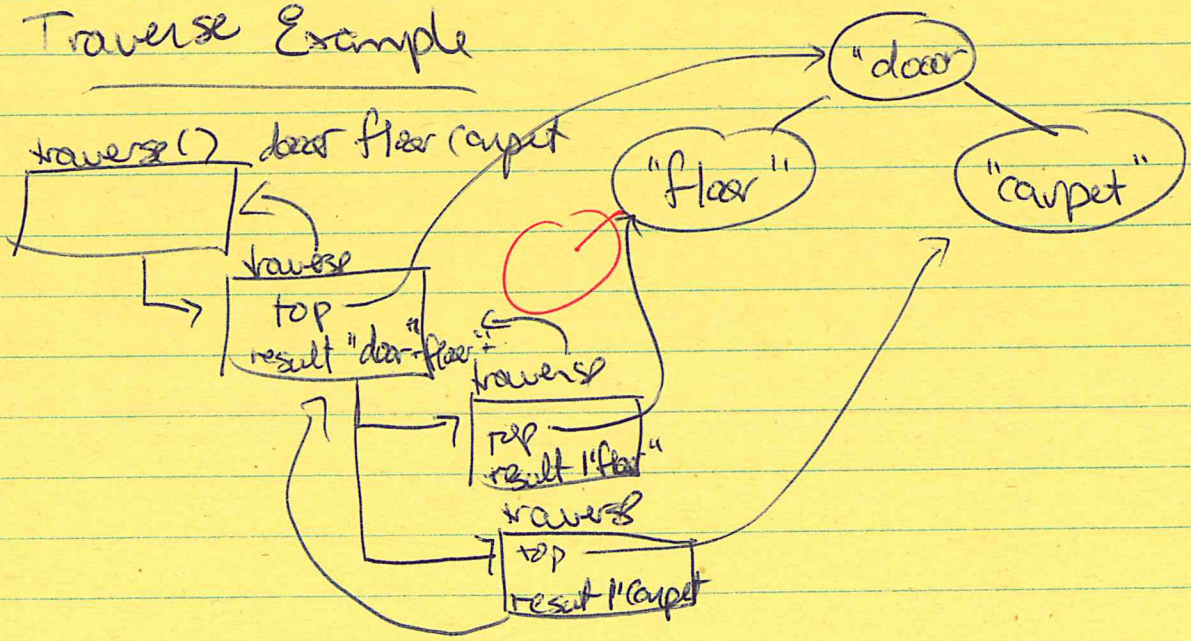




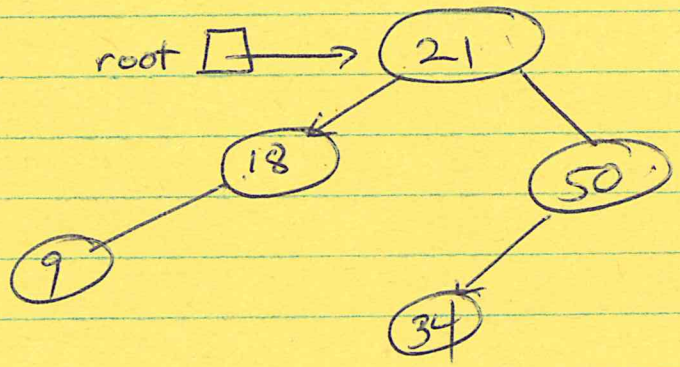
In-order - a node is considered "visited" after its left-subtree, but before its right-subtree...

"floor", "tap", "sink", "door", "carpet", "stair", "skylight"

Traverse Example



21, 18, 9, 50, 34



9, 18, 21, 34, 50