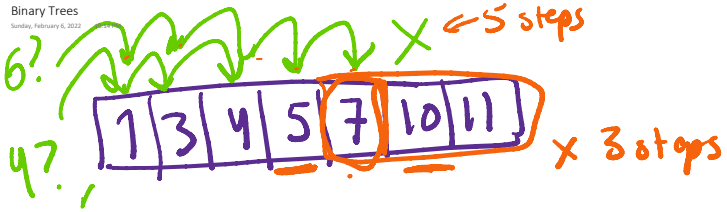
Binary Trees

Sunday, February 6, 2022



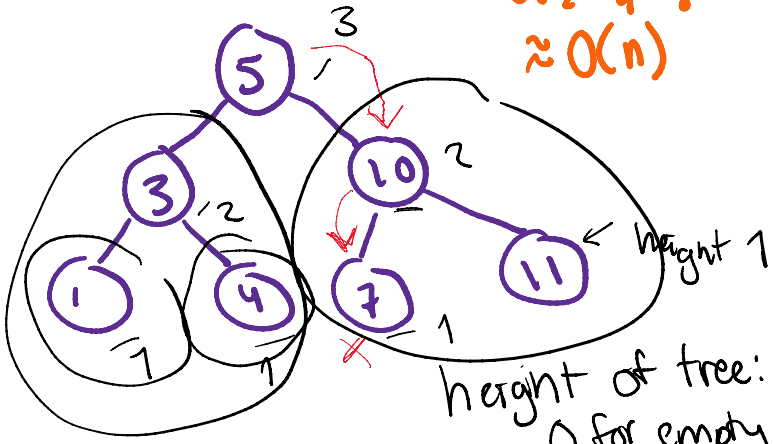
How would you go about determining if a given value is in the list?

What is the worst-case runtime, in broad strokes?
What is the worst value we can ask for?

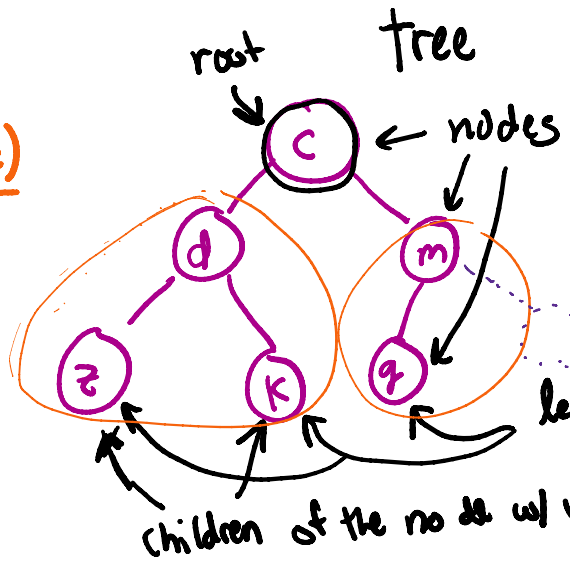
Do you have to go through the list one-by-one?

lst.get(n/2)
runtime O(n/2)

$O(\frac{n}{2} + \frac{n}{4} + \frac{n}{8} + \dots)$
$\approx O(n)$



height of tree:
0 for empty tree
1+ max height of its left- and right- subtrees/children



Binary tree:
each node has ≤2 children ("left child", "right child")

Note that each child is the root of its own subtree

Binary Search Tree (BST):
for each node, every value in its left subtree is less than the node value, and every value in its right subtree is greater than the node value