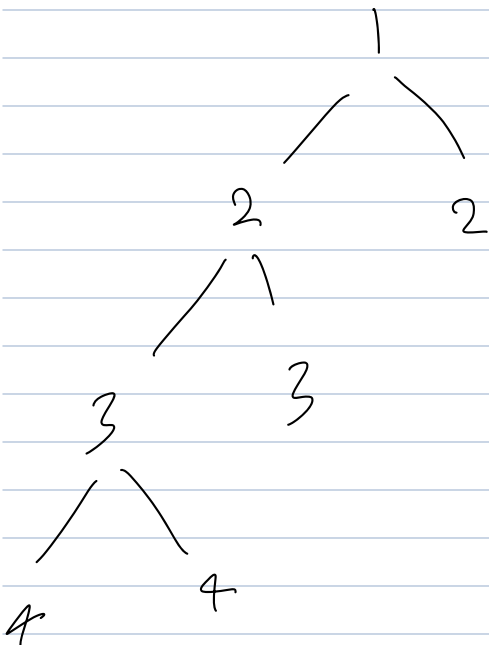
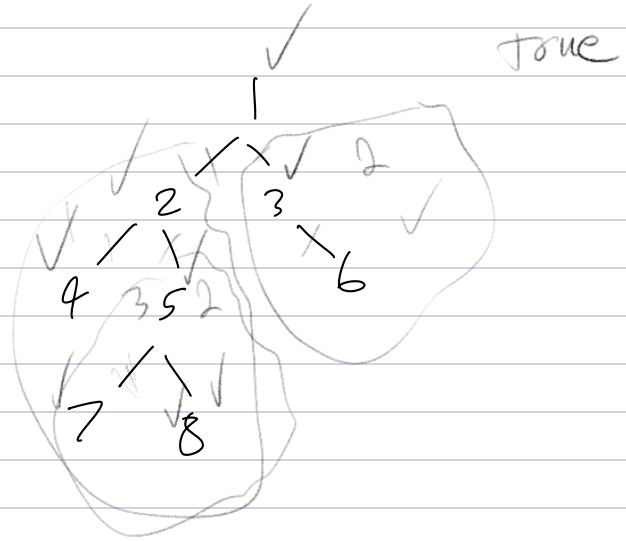
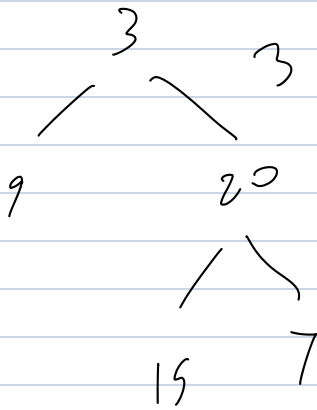


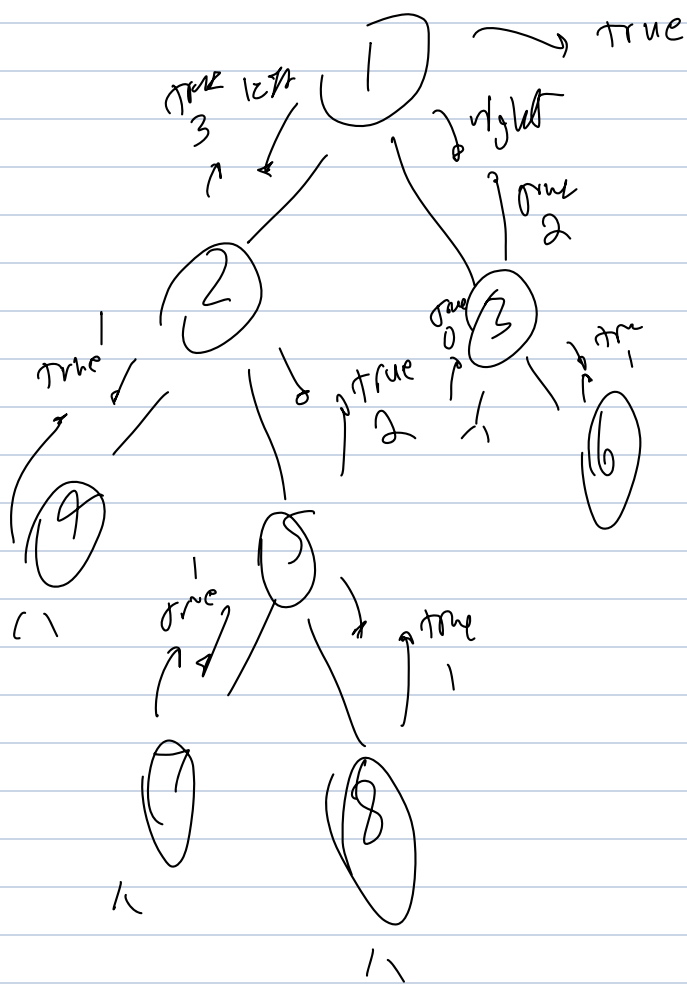
Given a Binary Tree Determine if it is height-balanced.

Height-Balanced Binary Tree: For each node in the tree the $h(\text{left}) - h(\text{right}) \leq 1$

Example:



Key fact: check height for every node \rightarrow recursion



$O(n)$ time

$O(\text{height})$ space

instead of starting from top ($O(n^2)$) start from bottom

recursion DFS

base case \rightarrow if node \equiv None \rightarrow return [True, 0]

left = DFS(node.left)

right = DFS(node.right) \rightarrow is it balanced? \rightarrow is it balanced?

isBalanced = left[0] and right[0] and

$\text{abs}(\text{left}[1] - \text{right}[1]) \leq 1 \rightarrow$ height condition

return (isBalanced, $\max(\text{right}[1], \text{left}[1]) + 1$) \rightarrow current node