Tree

Dec 28, 2018 12:06 AM, if — twice, just black it

Finish these two page, 23 probelms on 28. Fighting.

Pre-order

~~99~~ Recover Binary Search Tree (/prob ch-tree)

```
Input: [3,1,4,null,null,2]

  3
 / \
1   4
   /
  2

Output: [2,1,4,null,null,3]

  2
 / \
1   4
   /
  3
```

constant space one pass solution

def recoverTree(self, root):
Two possibilities:
1. Two 错位
2. One 错位, as the example, 1 3 2 4

6, 3, 4, 5, 2

dislocation

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```
if cur.val < prev.val:
    if first == None:
        first = prev
    if first != None:
        second = cur
```

105 Construct Binary Tree from Preorder and Inorder Traversal

The solution didn't use recursion,

106 Construct Binary Tree from Inorder and Postorder Traversal (/problems/construct-binary-tree-from-inorder-and-postorder-traversal)

✔ ~~111~~ Minimum Depth of Binary Tree

```
  3
 / \
9  20
  /  \
 15   7
```

return 2, BFS 遇到叶节点立即返回的做法

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```
if cur.left == None and cur.right == None:
    return height + 1
```

✔ ~~114~~ Flatten Binary Tree to Linked List

```
self.flatten(root.right)
self.flatten(root.left)
root.right = self.prev
root.left = None
self.prev = root
```

✔ ~~117~~ Populating Next Right Pointers in Each Node II (/ ng right-pointers-in-each-node-ii)

```
     1 -> NULL
    /  \
   2 -> 3 -> NULL
  / \     \
4-> 5 -> 7 -> NULL
```

```
for i in range(size):
    cur = dq.popleft()
    if cur.left != None:
        dq.append(cur.left)
    if cur.right != None:
        dq.append(cur.right)

for i in range(len(dq) - 1):
    dq[i].next = dq[i+1]
```

✔ ~~124~~ Binary Tree Maximum Path Sum

```
Input: [1,2,3]

      1
     / \
    2   3

Output: 6
```

```
Input: [-10,9,20,null,null,15,7]

   -10
   / \
  9  20
    /  \
   15   7

Output: 42
```

```
Input: [1,2,3,null,5,null,4]
Output: [1, 3, 4]
Explanation:

   1            <---
 /   \
2     3         <---
 \     \
  5     4       <---
```

173 Binary Search Tree Iterator (/problems/binar or)

~~199~~ ~~Binary Tree Right Side View~~ (/problems/binary-tree-right-side-view)

```
Input:
    1
   / \
  2   3
 / \  /
4  5 6

Output: 6
```

222 Count Complete Tree Nodes (/problems/count-complete-tree-nodes)

In a complete binary tree every level, except possibly the last, is completely filled, and all nodes in the last level are as far left as possible. It can have between 1 and 2h nodes inclusive at the last level h.

✔ 250 Count Univalue Subtrees (/problems/count-univalue-subtree

```
Input:  root = [5,1,5,5,5,null,5]

              5
             / \
            1   5
           / \   \
          5   5   5

Output: 4
```

~~255~~ Verify Preorder Sequence in Binary Search Tree (/problems/verify-preorder-sequence-in-binary-search-tree)

```
Input: [5,2,1,3,6]
Output: true
```

```
if len(preorder) == 0:
    return True
from collections import deque

dq = deque()
dq.append(preorder[0])
min_ = float('-inf')

for i in range(1, len(preorder)):
    if preorder[i] < min_:
        return False

    while len(dq) > 0 and dq[-1] < preorder[i]:
        min_ = dq[-1]
        dq.pop()
    dq.append(preorder[i])
return True
```

✔ 272 Closest Binary Search Tree Value II (/problems/closest-binary-search-tree-value-ii)

```
    4
   / \
  2   5
 / \
1   3

target = 3.71428
Output: 4
```

✔ 298 Binary Tree Longest Consecutive Sequence (/problems/binary-tree-longest-consecutive-sequence)

```
Input: [10,5,15,1,8,null,7]

   10
   / \
  5  15
 / \   \
1   8   7

Output: 3
```

333 Largest BST Subtree (/problems/largest-bst-subtree)

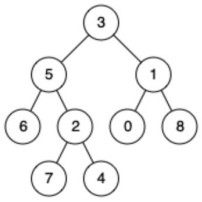
```
    5
   / \
  1   4
     / \
    3   6
Output: false
```

98 ~~Validate Binary Search Tree (/problems/validate-binary-search-tree)~~

156 Binary Tree Upside Down (/problems/binary-tree-upside-down)

```
Input: [1,2,3,4,5]

    1
   / \
  2   3
 / \
4   5

Output: return the r

   4
  / \
 5   2
    / \
   3   1
```

```
Input:

   1
 /   \
2     3
 \
  5

Output: ["1->2->5", "1->3"]
```



✔ 257 Binary Tree Paths (/problems/binary-tree-paths)

✔ 236 Lowest Common Ancestor of a Binary Tree (/problems/lowest-common-ancestor-of-a-binary-tree)

✔ 116 Populating Next Right Pointers in Each Node (/problems/populating-next-right-pointers-in-each-node)

```
      1 -> NULL
    /   \
   2 -> 3 -> NULL
  / \  / \
4->5->6->7 -> NULL
```

```
Input: root = [5,3,6,2,4,null,null,1], k = 3
       5
      / \
     3   6
    / \
   2   4
  /
 1
Output: 3
```

✔ 297 Serialize and Deserialize Binary Tree (/problems/serialize-and-deserialize-binary-tree) The way use count

✔ 230 Kth Smallest Element in a BST (/problems/kth-smallest-element-in-a-bst)

✔ 108 Convert Sorted Array to Binary Search Tree (/problems/convert-sorted-array-to-binary-search-tree)

```
Given the sorted array: [-10,-3,0,5,9],

One possible answer is: [0,-3,9,-10,nul

      0
     / \
   -3   9
   /   /
 -10  5
```

✔ 285 Inorder Successor in BST (/problems/inorder-successor-in-bst) 🔓

✔ ~~366 Find Leaves of Binary Tree (/problems/find-leaves-of-binary-tree)~~ 🔓

404 Sum of Left Leaves (/problems/sum-of-left-leaves)

437 Path Sum III (/problems/path-sum-iii)

449 Serialize and Deserialize BST (/problems/serialize-and-deserialize-bst)

450 Delete Node in a BST (/problems/delete-node-in-a-bst)

501 Find Mode in Binary Search Tree (/problems/find-mode-in-binary-search-tree)

508 Most Frequent Subtree Sum (/problems/most-frequent-subtree-sum)

513 Find Bottom Left Tree Value (/problems/find-bottom-left-tree-value)

515 Find Largest Value in Each Tree Row (/problems/find-largest-value-in-each-tree-row)

536 Construct Binary Tree from String (/problems/construct-binary-tree-from-string) 🔓

✔ 543 Diameter of Binary Tree (/problems/diameter-of-binary-tree)

538 Convert BST to Greater Tree (/problems/convert-bst-to-greater-tree)

545 Boundary of Binary Tree (/problems/boundary-of-binary-tree) 🔓

549 Binary Tree Longest Consecutive Sequence II (/problems/binary-tree-longest-consecutive-sequence-ii) 🔓

563 Binary Tree Tilt (/problems/binary-tree-tilt)

572 Subtree of Another Tree (/problems/subtree-of-another-tree)

582 Kill Process (/problems/kill-process) 🔓

606 Construct String from Binary Tree (/problems/construct-string-from-binary-tree)

✔ 617 Merge Two Binary Trees (/problems/merge-two-binary-trees)

623 Add One Row to Tree (/problems/add-one-row-to-tree)

637 Average of Levels in Binary Tree (/problems/average-of-levels-in-binary-tree)

652 Find Duplicate Subtrees (/problems/find-duplicate-subtrees)

653 Two Sum IV - Input is a BST (/problems/two-sum-iv-input-is-a-bst)

654 Maximum Binary Tree (/problems/maximum-binary-tree)

655 Print Binary Tree (/problems/print-binary-tree)

662 Maximum Width of Binary Tree (/problems/maximum-width-of-binary-tree)

663 Equal Tree Partition (/problems/equal-tree-partition) 🔓

666 Path Sum IV (/problems/path-sum-iv) 🔓

✔ 669 Trim a Binary Search Tree (/problems/trim-a-binary-search-tree)

671 Second Minimum Node In a Binary Tree (/problems/second-minimum-node-in-a-binary-tree)

684 Redundant Connection (/problems/redundant-connection)

685 Redundant Connection II (/problems/redundant-connection-ii)

687 Longest Univalue Path (/problems/longest-univalue-path)

742 Closest Leaf in a Binary Tree (/problems/closest-leaf-in-a-binary-tree) 🔓

814 Binary Tree Pruning (/problems/binary-tree-pruning)

834 Sum of Distances in Tree (/problems/sum-of-distances-in-tree)

863 All Nodes Distance K in Binary Tree (/problems/all-nodes-distance-k-in-binary-tree)

865 Smallest Subtree with all the Deepest Nodes (/problems/smallest-subtree-with-all-the-deepest-nodes)

426 Convert Binary Search Tree to Sorted Doubly Linked List (/problems/convert-binary-search-tree-to-sorted-doubly-linked-list) 🔓

701 Insert into a Binary Search Tree (/problems/insert-into-a-binary-search-tree)

700 Search in a Binary Search Tree (/problems/search-in-a-binary-search-tree)

590 N-ary Tree Postorder Traversal (/problems/n-ary-tree-postorder-traversal)

589 N-ary Tree Preorder Traversal (/problems/n-ary-tree-preorder-traversal)

429 N-ary Tree Level Order Traversal (/problems/n-ary-tree-level-order-traversal)

559 Maximum Depth of N-ary Tree (/problems/maximum-depth-of-n-ary-tree)

431 Encode N-ary Tree to Binary Tree (/problems/encode-n-ary-tree-to-binary-tree) 🔓

428 Serialize and Deserialize N-ary Tree (/problems/serialize-and-deserialize-n-ary-tree) [?]

872 Leaf-Similar Trees (/problems/leaf-similar-trees)

889 Construct Binary Tree from Preorder and Postorder Traversal (/problems/construct-binary-tree-from-preorder-and-postorder-traversal)

894 All Possible Full Binary Trees (/problems/all-possible-full-binary-trees)

897 Increasing Order Search Tree (/problems/increasing-order-search-tree)

919 Complete Binary Tree Inserter (/problems/complete-binary-tree-inserter)

951 Flip Equivalent Binary Trees (/problems/flip-equivalent-binary-trees)

958 Check Completeness of a Binary Tree (/problems/check-completeness-of-a-binary-tree)