算法题做法：  
1.看题目  
2.简单想想方法5min  
3.看答案5个  
4.写一个答案作为练习  
5.记录

## 101. Symmetric Tree

Given a binary tree, check whether it is a mirror of itself (ie, symmetric around its center).

For example, this binary tree [1,2,2,3,4,4,3] is symmetric:

1

/ \

2 2

/ \ / \

3 4 4 3

But the following [1,2,2,null,3,null,3] is not:

1

/ \

2 2

\ \

3 3

Note:  
Bonus points if you could solve it both recursively and iteratively.

思路：递归法就是找到两棵子树镜像对称的条件。迭代法即完全手动实现这个过程。递归法的分析过程需要注意，最好使用伪代码形式写出思路，光靠想很可能不容易找出递归的规律（即每层的相同性）。

## 102. Binary Tree Level Order Traversal

Given a binary tree, return the level order traversal of its nodes' values. (ie, from left to right, level by level).

For example:  
Given binary tree [3,9,20,null,null,15,7],

3

/ \

9 20

/ \

15 7

return its level order traversal as:

[

[3],

[9,20],

[15,7]

]

思路：简单的层次遍历，但是需要注意每一层需要独立成一个列表

## 103. Binary Tree Zigzag Level Order Traversal

Given a binary tree, return the zigzag level order traversal of its nodes' values. (ie, from left to right, then right to left for the next level and alternate between).

For example:  
Given binary tree [3,9,20,null,null,15,7],

3

/ \

9 20

/ \

15 7

return its zigzag level order traversal as:

[

[3],

[20,9],

[15,7]

]

思路：层次遍历，无需改变层次遍历顺序和队列，只是每一层输出列表时插入位置不同，一头一尾

## 104. Maximum Depth of Binary Tree

Given a binary tree, find its maximum depth.

The maximum depth is the number of nodes along the longest path from the root node down to the farthest leaf node.

For example:  
Given binary tree [3,9,20,null,null,15,7],

3

/ \

9 20

/ \

15 7

return its depth = 3.

思路：使用递归计数法代码比较容易

## 105. Construct Binary Tree from Preorder and Inorder Traversal

Given preorder and inorder traversal of a tree, construct the binary tree.

**Note:**  
You may assume that duplicates do not exist in the tree.

For example, given

preorder = [3,9,20,15,7]

inorder = [9,3,15,20,7]

Return the following binary tree:

3

/ \

9 20

/ \

15 7

思路：

## 106. Construct Binary Tree from Inorder and Postorder Traversal

Given inorder and postorder traversal of a tree, construct the binary tree.

**Note:**  
You may assume that duplicates do not exist in the tree.

For example, given

inorder = [9,3,15,20,7]

postorder = [9,15,7,20,3]

Return the following binary tree:

3

/ \

9 20

/ \

15 7

## 199. Binary Tree Right Side View

Given a binary tree, imagine yourself standing on the *right* side of it, return the values of the nodes you can see ordered from top to bottom.

For example:  
Given the following binary tree,

1 <---

/ \

2 3 <---

\ \

5 4 <---

You should return [1, 3, 4].

## 200. Number of Islands

Given a 2d grid map of '1's (land) and '0's (water), count the number of islands. An island is surrounded by water and is formed by connecting adjacent lands horizontally or vertically. You may assume all four edges of the grid are all surrounded by water.

***Example 1:***

11110  
11010  
11000  
00000

Answer: 1

***Example 2:***

11000  
11000  
00100  
00011

Answer: 3

思路：常规的方法是遍历所有格子，遇到1就启动DFS或BFS搜索，并将所有当前节点置0。高级方法是使用DSU不相交集合合并，将问题视为处理无向图的连通性问题。