# 103. Binary Tree Zigzag Level Order Traversal

link

## 尝试用一个栈或者双向队列, 但是顺序每次都会变, 控制不了, 这里把两次看作一个流程, 用两个栈处理, 注意最后不要加空集合.

```
public List<List<Integer>> zigzagLevelOrder(TreeNode root) {
    List<List<Integer>> res = new ArrayList();
    if(root == null) return res;
    Stack<TreeNode> leftToRight = new Stack();
    Stack<TreeNode> rightToLeft = new Stack();
    leftToRight.push(root);
    while(!leftToRight.isEmpty()){
        List<Integer> sub1 = new ArrayList();
        while(!leftToRight.isEmpty()){
            TreeNode even = leftToRight.pop();
            sub1.add(even.val);
            if(even.left != null){
                rightToLeft.push(even.left);
            }
            if(even.right != null){
                rightToLeft.push(even.right);
            }

        }
        if(sub1.size() > 0)
            res.add(sub1);
        List<Integer> sub2 = new ArrayList();
        while(!rightToLeft.isEmpty()){
            TreeNode odd = rightToLeft.pop();
            sub2.add(odd.val);
            if(odd.right != null){
                leftToRight.push(odd.right);
            }
            if(odd.left != null)
                leftToRight.push(odd.left);
        }
        if(sub2.size() > 0)
            res.add(sub2);
    }
    return res;
}
```