

572. Subtree of Another Tree

We will use recursion to solve this question. We will preOrder traverse our tree and if root's values are the same, then we will compare these two subtrees. TC is $O(ST)$

class Solution:

```
def isSubtree(self, s: TreeNode, t: TreeNode) -> bool:
```

```
    stack = [s]
```

```
    while stack:
```

```
        level = []
```

```
        for node in stack:
```

```
            if node.val == t.val:
```

```
                if self.compareTree(node, t):
```

```
                    return True
```

```
            if node.left:
```

```
                level.append(node.left)
```

```
            if node.right:
```

```
                level.append(node.right)
```

```
        stack = level
```

```
    return False
```

```
def compareTree(self, s, t):
```

```
    if not s or not t:
```

```
        return s == t
```

```
    return s.val == t.val and self.compareTree(s.left, t.left) and self.compareTree(s.right, t.right)
```

965. Univalued Binary Tree

Use recursion, straightforward.

class Solution:

```
def isUnivalTree(self, root: TreeNode) -> bool:
```

```
    self.pre = None
```

```
    def traverse(node):
```

```
        if not node:
```

```
            return True
```

```
        if not traverse(node.left):
```

```
            return False
```

```
        if node.val == self.pre or self.pre is None:
```

```
            self.pre = node.val
```

```
        else:
```

```
            return False
```

```
        if not traverse(node.right):
```

```
            return False
```

```
        return True
```

```
    return traverse(root)
```

102. Binary Tree Level Order Traversal

Use level traversal.

class Solution:

```
def levelOrder(self, root: TreeNode) -> List[List[int]]:
    result = []
    if not root:
        return result

    stack = [root]
    while stack:
        next_level = []
        cur_level = []
        for node in stack:
            cur_level.append(node.val)
            if node.left:
                next_level.append(node.left)
            if node.right:
                next_level.append(node.right)
        result.append(cur_level)
        stack = next_level
    return result
```

107. Binary Tree Level Order Traversal II

Same, using level traversal and return reversed(result)

class Solution:

```
def levelOrderBottom(self, root: TreeNode) -> List[List[int]]:
    result = []
    if not root:
        return result

    stack = [root]
    while stack:
        next_level = []
        cur_level = []
        for node in stack:
            cur_level.append(node.val)
            if node.left:
                next_level.append(node.left)
            if node.right:
                next_level.append(node.right)
        result.append(cur_level)
        stack = next_level
    return reversed(result)
```

429. N-ary Tree Level Order Traversal

Same as the previous one. Use level traversal. TC is $O(n)$.

class Solution:

```
def levelOrder(self, root: 'Node') -> List[List[int]]:
```

```
    result = []
```

```
    if not root:
```

```
        return result
```

```
    stack = [root]
```

```
    while stack:
```

```
        next_level = []
```

```
        cur_level = []
```

```
        for node in stack:
```

```
            cur_level.append(node.val)
```

```
            next_level.extend(node.children)
```

```
        result.append(cur_level)
```

```
        stack = next_level
```

```
    return result
```