Fast and Slow Pointers

Matrix Pattern Problems

Two Pointers Problems

tree based top 15 problem commonly asked in interview questions. give input and output of the problem. list 5 easy, 5 medium, 5 hard difficulty problems.

< 4/4 >

Here's a list of 15 commonly asked tree-based problems in interviews, categorized by difficulty. I've included input and output examples for each.

Easy

ChatGPT ~

1. Maximum Depth of Binary Tree

• Problem: Find the maximum depth (or height) of a binary tree.



Output: `3`

2. Minimum Depth of Binary Tree

• Problem: Find the minimum depth of a binary tree.

Input:



• Output: `2`

3. Invert Binary Tree

• Problem: Flip a binary tree upside down (invert it).

Input:



/\/ 1369



/ 72 /\/ 9631

f) Copy code

4. Symmetric Tree

- Problem: Check if a binary tree is symmetric (mirror image of itself).
- Input:



/\/ 3443



5. Path Sum

- Problem: Check if a path from root to leaf equals a given sum.
- · Input:

```
① Copy code

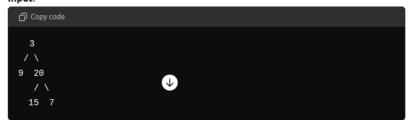
5
/ \
4 8
```

```
//
11 13 4
/\
72 1
```

Medium

1. Binary Tree Level Order Traversal

- Problem: Return the level order traversal of a binary tree's nodes' values.
- Input:



• Output: `[[3], [9, 20], [15, 7]]`

2. Validate Binary Search Tree

- **Problem**: Determine if a binary tree is a valid binary search tree.
- Input:



• Output: `true`

3. Lowest Common Ancestor of a Binary Search Tree

Problem: Find the lowest common ancestor of two nodes in a binary search tree.

```
• Input:

6
/\
2 8
```

/\/ 0479

4. Binary Tree Zigzag Level Order Traversal

- Problem: Return the zigzag level order traversal of a binary tree's nodes' values.
- · Input:



• Output: `[[3], [20, 9], [15, 7]]`

5. Sum of Left Leaves

- Problem: Find the sum of all left leaves in a binary tree.
- Input:

```
© Copy code

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

• Output: `24` (Only leaf node 9 is a \(\frac{1}{2}\); leaf)

Hard

1. Serialize and Deserialize Binary Tree

- Problem: Implement methods to serialize and deserialize a binary tree.
- Input (Serialize):

• Output (Deserialize): `["1", "2", "3", "null", "null", "4", "5"]`

2. Construct Binary Tree from Preorder and Inorder Traversal

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

```
    Input:
    Preorder: `[3, 9, 20, 15, 7]`
```

• Inorder: `[9, 3, 15, 20, 7]`

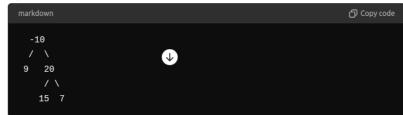
• Output:

ලා Copy code



3. Binary Tree Maximum Path Sum

- Problem: Find the maximum path sum in a binary tree.
- · Input:



• Output: `42` (Maximum path sum: 15 -> 20 -> 7)

4. Recover Binary Search Tree

- Problem: Given a binary search tree where two nodes are swapped, recover the tree.
- Input:



Output:



5. Count Univalue Subtrees

- Problem: Count the number of univalue subtrees (all nodes in the subtree have the same value).
- Input:



• Output: `4` (The subtrees rooted at each 5 node are univalue)

These problems cover a broad spectrum of difficulty levels and concepts in tree-based algorithms, often appearing in coding interviews.

