Binary Tree Mock Interview Notes Template

Use this template to record your approaches, patterns, and key insights during practice.

Traversals

Recursive Traversals

Key Pattern Insight: Preorder, Inorder, Postorder – change print position.

Your Approach / Algorithm	
Time Complexity	
Space Complexity	
Edge Cases / Pitfalls	
Key Learnings / Mistakes to Avoid	

Iterative Traversals

Key Pattern Insight: Stack-based simulation of recursion.

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Level Order / BFS

Key Pattern Insight: Queue with level tracking.

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Morris Traversals

Key Pattern Insight: Threaded traversal, O(1) space.

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Depth & Structure

Maximum Depth

Key Pattern Insight: Return max(left, right) + 1.

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Balanced Tree

Key Pattern Insight: Height + balance check bottom-up.

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Symmetric Tree

Key Pattern Insight: Mirror comparison of left/right.

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Identical Trees

Key Pattern Insight: Check structure and value recursively.

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Diameter

Key Pattern Insight: Max path through a node = left height + right height.

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Path & Sum Problems

Max Path Sum

Key Pattern Insight: Global max of left_gain + right_gain + node.val.

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Root to Leaf Sum

Key Pattern Insight: DFS/backtrack if path sum matches target.

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Path Sum II

Key Pattern Insight: Store all paths with DFS + backtrack.

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Path Sum III

Key Pattern Insight: Prefix-sum with hashmap for path counts.

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Construction & Serialization

Build from Traversals

Key Pattern Insight: Use preorder/inorder or postorder/inorder splits.

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Serialize/Deserialize

Key Pattern Insight: Preorder or BFS with null markers.

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Views & Width Problems

Left/Right View

Key Pattern Insight: First/last node per level.

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Top/Bottom View

Key Pattern Insight: Map by horizontal distance; top keeps first, bottom overwrites.

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Vertical Order

Key Pattern Insight: Group by horizontal distance + level.

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Zigzag Level Order

Key Pattern Insight: Alternate insertion per level.

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Boundary Traversal

Key Pattern Insight: Left boundary, leaves, right boundary reversed.

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Ancestors, Distances & Counts

Lowest Common Ancestor

Key Pattern Insight: Recurse down; if both sides return non-null, current is LCA.

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Nodes at Distance K

Key Pattern Insight: Map parents, BFS from target K levels outward.

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Burn Tree (Min Time to Infect)

Key Pattern Insight: Multi-source BFS expanding from target.

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Count Nodes (Complete Tree)

Key Pattern Insight: If left height == right height, use 2^h - 1 formula.

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Maximum Width

Key Pattern Insight: Track indices per level like heap positions.

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