

## Binary tree problems 50 in one line

ChatGPT said:

Here are **50 one-line Binary Tree problem statements** — perfect for interview or coding practice:

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1. Find the height of a binary tree.
2. Find the diameter of a binary tree.
3. Count the total number of nodes in a binary tree.
4. Count the number of leaf nodes in a binary tree.
5. Print the level order traversal of a binary tree.
6. Print the inorder traversal of a binary tree.
7. Print the preorder traversal of a binary tree.
8. Print the postorder traversal of a binary tree.
9. Check if two binary trees are identical.
10. Check if a binary tree is symmetric.
11. Find the maximum element in a binary tree.
12. Find the minimum element in a binary tree.
13. Find the sum of all nodes in a binary tree.
14. Print the left view of a binary tree.
15. Print the right view of a binary tree.
16. Print the top view of a binary tree.
17. Print the bottom view of a binary tree.
18. Find the lowest common ancestor (LCA) of two nodes.
19. Find the distance between two nodes in a binary tree.
20. Check if a binary tree is balanced (height-balanced).
21. Convert a binary tree into its mirror.
22. Print all nodes at distance K from a given node.
23. Find the path from root to a given node.
24. Print all root-to-leaf paths in a binary tree.
25. Find the maximum path sum between any two nodes.
26. Find the sum of all leaf nodes in a binary tree.
27. Count the number of full nodes in a binary tree.
28. Count the number of half nodes (nodes with one child).
29. Find the depth of the deepest odd-level leaf node.
30. Print all ancestors of a given node.
31. Check if a binary tree is a subtree of another binary tree.
32. Serialize and deserialize a binary tree.
33. Convert a binary tree into a doubly linked list.
34. Find the vertical order traversal of a binary tree.
35. Print the zigzag (spiral) order traversal of a binary tree.
36. Print boundary traversal of a binary tree.
37. Check if a given sequence is a root-to-leaf path.
38. Find the level with maximum sum in a binary tree.
39. Find the diameter using height recursion (optimized).
40. Print nodes at odd levels of a binary tree.
41. Convert a binary tree into a sum tree.

42. Check if a binary tree follows the children sum property.
  43. Find the maximum width of a binary tree.
  44. Find the vertical sum of a binary tree.
  45. Find the maximum root-to-leaf path sum.
  46. Print all nodes without siblings.
  47. Print all leaf nodes of the binary tree.
  48. Find the lowest common ancestor using parent pointers.
  49. Check if a binary tree is complete.
  50. Construct a binary tree from inorder and preorder traversals.
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Would you like me to add **constraints and input-output examples** (like Codeforces/LeetCode style) for each problem next?

**You said:**

BST

ChatGPT said:

## 50 one-line BST (Binary Search Tree) problem statements

1. Insert a value into a BST.
2. Delete a value from a BST.
3. Search for a value in a BST (iterative).
4. Search for a value in a BST (recursive).
5. Find the minimum value in a BST.
6. Find the maximum value in a BST.
7. Find the in-order successor of a given node in a BST.
8. Find the in-order predecessor of a given node in a BST.
9. Check if a binary tree is a valid BST.
10. Convert a sorted array to a balanced BST.
11. Convert a sorted linked list to a balanced BST.
12. Find the k-th smallest element in a BST.
13. Find the k-th largest element in a BST.
14. Find the floor (greatest  $\leq x$ ) value in a BST.
15. Find the ceil (smallest  $\geq x$ ) value in a BST.
16. Print keys in the range [L, R] in a BST.
17. Count nodes in a BST within a given range.
18. Find LCA (lowest common ancestor) of two nodes in a BST.
19. Trim a BST so that all its elements lie in [L, R].
20. Convert BST to a sorted doubly linked list (in-place).
21. Convert BST to a greater sum tree (each node becomes sum of greater nodes).
22. Merge two BSTs into a balanced BST.
23. Find pair with given sum in a BST (using  $O(n)$  time,  $O(h)$  space).
24. Find minimum absolute difference between values of any two nodes in a BST.
25. Check if there exists a root-to-leaf path with given sum in BST.

26. Recover a BST where two nodes are swapped by mistake.
27. Construct BST from its level-order traversal.
28. Find the height of a BST.
29. Find the maximum width of a BST.
30. Print the in-order traversal of a BST (iterative).
31. Print the pre-order traversal of a BST (iterative).
32. Print the post-order traversal of a BST (iterative).
33. Count leaf nodes in a BST.
34. Count nodes having exactly one child in a BST.
35. Check if two BSTs are identical.
36. Find the closest value to target in a BST.
37. Print all root-to-leaf paths in a BST.
38. Build a balanced BST from given unordered array (by sorting first).
39. Split a BST into two BSTs with keys  $\leq V$  and  $> V$ .
40. Find sum of values of all nodes within a given range in a BST.
41. Check if BST contains a pair that sums to target using two-pointer on iterator.
42. Convert preorder traversal to BST (construct the unique BST).
43. Serialize and deserialize a BST efficiently.
44. Insert duplicate values into BST while maintaining a count (multiset BST).
45. Find vertical order traversal of a BST.
46. Find whether BST is height-balanced (AVL check).
47. Convert BST to a sorted array.
48. Print boundary traversal of a BST.
49. Count nodes greater than X in a BST.
50. Generate all unique BST structures for values 1..n (Catalan / DP).

Would you like code (iterative/recursive) or input-output examples for any specific problem(s)?

**You said:**

segment tree

**ChatGPT said:**

Here are **50 one-line Segment Tree problem statements** — covering basic, intermediate, and advanced types (sum, min, max, lazy propagation, merge queries, etc.):

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1. Build a Segment Tree for range sum queries.
  2. Build a Segment Tree for range minimum queries (RMQ).
  3. Build a Segment Tree for range maximum queries.
  4. Perform range sum query and point update on an array using Segment Tree.
  5. Perform range minimum query and point update.
  6. Perform range maximum query and point update.
  7. Perform range sum query and range update (Lazy Propagation).
  8. Perform range minimum query and range update (Lazy Propagation).
  9. Find prefix sum using Segment Tree.
  10. Find the index of the first element greater than a given value using Segment Tree.
  11. Count number of elements greater than k in a given range.

12. Find the number of odd/even numbers in a range using Segment Tree.
13. Build a Segment Tree to support XOR of range queries.
14. Build a Segment Tree to support GCD of range queries.
15. Build a Segment Tree to support LCM of range queries.
16. Build a Segment Tree to support product of range queries (mod M).
17. Find the sum of squares in a range with updates.
18. Find the maximum subarray sum in a range using Segment Tree.
19. Build a Segment Tree that stores count of primes in a range.
20. Build a Segment Tree to find frequency of a number in range.
21. Count the number of elements less than k in a given range.
22. Build a Segment Tree for range bitwise AND queries.
23. Build a Segment Tree for range bitwise OR queries.
24. Implement a Segment Tree with range addition and range minimum queries.
25. Implement a Segment Tree that supports range increment and range sum queries.
26. Find the longest prefix whose sum  $\leq X$  using Segment Tree.
27. Merge two Segment Trees (for offline queries).
28. Implement a persistent Segment Tree for range sum queries.
29. Implement a Segment Tree with rollback (undo) feature.
30. Build a Segment Tree for 2D range sum queries (2D Segment Tree).
31. Build a Segment Tree for 2D range minimum queries.
32. Implement a Segment Tree for string character frequencies.
33. Implement a Segment Tree for range palindrome checking in string.
34. Count number of distinct elements in a range using merge-sort tree.
35. Implement a Segment Tree to find range mode (most frequent element).
36. Build a Segment Tree for range maximum subarray sum.
37. Find the Kth smallest element in a subarray using Segment Tree.
38. Count inversions using Segment Tree.
39. Build a Segment Tree for polynomial range evaluation.
40. Implement a Segment Tree that supports range assignment and sum queries.
41. Find the first index with value  $\geq X$  using binary search on Segment Tree.
42. Perform circular range sum query using Segment Tree.
43. Maintain minimum difference between adjacent elements in a range.
44. Build a Segment Tree that stores pairs (sum, max) for multi-query support.
45. Build a Segment Tree that supports merge and split operations.
46. Implement Segment Tree Beats for range chmin/chmax queries.
47. Find the index of maximum element in a range.
48. Find sum of elements in the range  $[L, R]$  where each value  $\geq K$ .
49. Count subarrays with sum  $\leq K$  using Segment Tree (offline).
50. Build a lazy Segment Tree supporting both addition and assignment updates.

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Would you like me to include **constraints and sample input/output** (like Codeforces/LeetCode style) for these 50 problems next?