Binary Search Tree

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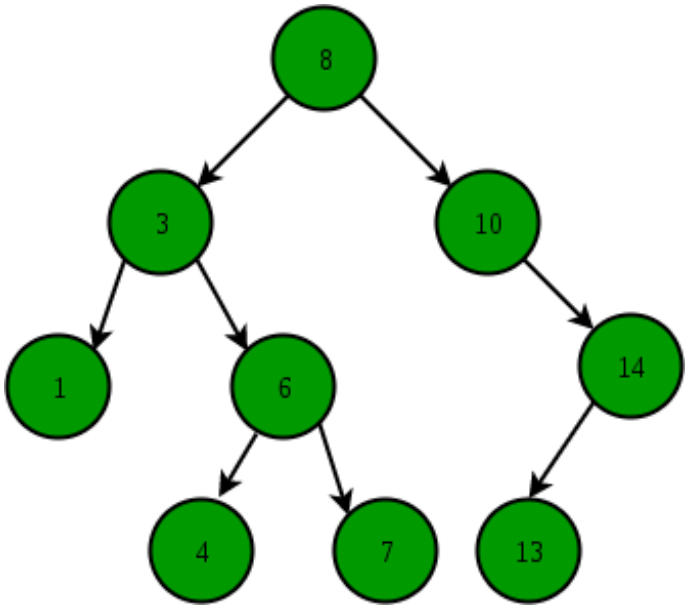
Data Structure and Algorithms Course

Practice Problems on Binary Search Tree !

Recent Articles on Binary Search Tree !

Binary Search Tree is a node-based binary tree data structure which has the following properties:

- The left subtree of a node contains only nodes with keys lesser than the node's key.
- The right subtree of a node contains only nodes with keys greater than the node's key.
- The left and right subtree each must also be a binary search tree.



Topic :

- Basic
- Construction and Conversion
- Check and Smallest/Largest Element
- Red Black Tree and Threaded Binary Tree
- Balanced Binary Search Tree
- Misc

Basic :

1. Binary Search Tree | Set 1 (Search and Insertion)
2. Binary Search Tree | Set 2 (Delete)
3. Advantages of BST over Hash Table

Construction and Conversion :

1. Construct BST from given preorder traversal | Set 1
2. Construct BST from given preorder traversal | Set 2
3. Binary Tree to Binary Search Tree Conversion
4. Sorted Linked List to Balanced BST
5. Sorted Array to Balanced BST
6. Transform a BST to greater sum tree
7. Construct all possible BSTs for keys 1 to N
8. Convert a BST to a Binary Tree such that sum of all greater keys is added to every key
9. BST to a Tree with sum of all smaller keys
10. In-place Convert BST into a Min-Heap
11. Convert BST to Min Heap
12. Construct BST from its given level order traversal
13. Reverse a path in BST using queue
14. Binary Tree to Binary Search Tree Conversion using STL set
15. Check given array of size n can represent BST of n levels or not
16. Convert a normal BST to Balanced BST
17. Merge Two Balanced Binary Search Trees
18. Merge two BSTs with limited extra space

Checking and Searching :

1. Find the node with minimum value in a Binary Search Tree
2. Check if the given array can represent Level Order Traversal of Binary Search Tree
3. Check if a given array can represent Preorder Traversal of Binary Search Tree

6. Find k-th smallest element in BST (Order Statistics in BST)
7. Check if each internal node of a BST has exactly one child
8. Check for Identical BSTs without building the trees
9. K'th Largest Element in BST when modification to BST is not allowed
10. K'th Largest element in BST using constant extra space
11. Second largest element in BST
12. K'th smallest element in BST using O(1) Extra Space
13. Check if given sorted sub-sequence exists in binary search tree
14. Simple Recursive solution to check whether BST contains dead end
15. Check if an array represents Inorder of Binary Search tree or not
16. Check if two BSTs contain same set of elements
17. Largest number in BST which is less than or equal to N
18. Maximum Unique Element in every subarray of size K
19. Iterative searching in Binary Search Tree
20. Find distance between two nodes of a Binary Search Tree
21. Count pairs from two BSTs whose sum is equal to a given value x
22. Find median of BST in O(n) time and O(1) space
23. Largest BST in a Binary Tree | Set 2
24. Remove BST keys outside the given range
25. Print BST keys in the given range
26. Print BST keys in given Range | O(1) Space
27. Count BST nodes that lie in a given range
28. Count BST subtrees that lie in given range
29. Remove all leaf nodes from the binary search tree
30. Sum of k smallest elements in BST
31. Inorder Successor in Binary Search Tree
32. Inorder predecessor and successor for a given key in BST
33. Inorder predecessor and successor for a given key in BST | Iterative Approach
34. Find if there is a triplet in a Balanced BST that adds to zero
35. Find a pair with given sum in a Balanced BST
36. Find a pair with given sum in BST
37. Maximum element between two nodes of BST
38. Find pairs with given sum such that pair elements lie in different BSTs
39. Find the closest element in Binary Search Tree
40. Find the largest BST subtree in a given Binary Tree
41. Replace every element with the least greater element on its right

Red Black Tree and Threaded Binary Tree :

1. C Program for Red Black Tree Insertion
2. Left Leaning Red Black Tree (Insertion)
3. Threaded Binary Tree
4. Threaded Binary Tree | Insertion
5. Threaded Binary Search Tree | Deletion
6. Convert a Binary Tree to Threaded binary tree | Set 1 (Using Queue)
7. Convert a Binary Tree to Threaded binary tree | Set 2 (Efficient)
8. Inorder Non-threaded Binary Tree Traversal without Recursion or Stack

Balanced Binary Search Tree :

1. Convert a normal BST to Balanced BST
2. Sorted Array to Balanced BST
3. Sorted Linked List to Balanced BST
4. How to determine if a binary tree is height-balanced?
5. AVL Tree | Set 1 (Insertion)
6. AVL Tree | Set 2 (Deletion)
7. Find a pair with given sum in a Balanced BST
8. Merge Two Balanced Binary Search Trees
9. Minimum number of nodes in an AVL Tree with given height

Misc :

1. Sorted order printing of a given array that represents a BST
2. Two nodes of a BST are swapped, correct the BST
3. Floor and Ceil from a BST
4. Given n appointments, find all conflicting appointments
5. How to handle duplicates in Binary Search Tree?
6. Data Structure for a single resource reservations
7. How to implement decrease key or change key in Binary Search Tree?
8. Print Common Nodes in Two Binary Search Trees
9. Count inversions in an array | Set 2 (Using Self-Balancing BST)
10. Leaf nodes from Preorder of a Binary Search Tree
11. Leaf nodes from Preorder of a Binary Search Tree (Using Recursion)
12. Binary Search Tree insert with Parent Pointer
13. Minimum Possible value of |ai + aj – k| for given array and k.

Quick Links :

- 'Practice Problems' on Binary Search Tree
- 'Quizzes' on Binary Search Tree
- 'Quizzes' on Balanced Binary Search Trees
- Videos

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