

- Check if a tree is a binary search tree =

Given the root of a binary tree. Check whether it is a Binary Search Tree or not. A Binary Search Tree (BST) is a node-based binary tree data structure with the following properties..

- All keys in the left subtree are smaller than the root and all keys in the right subtree are greater.
- Both the left and right subtrees must also be binary search trees.
- Each key must be distinct.

Using specified range of Min and Max Values

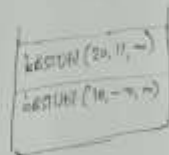
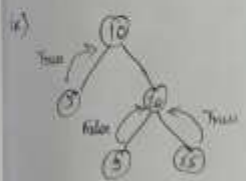
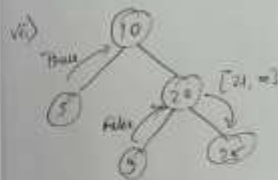
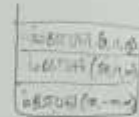
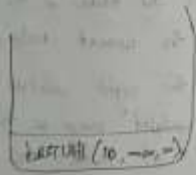
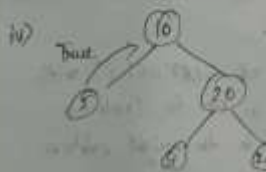
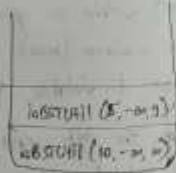
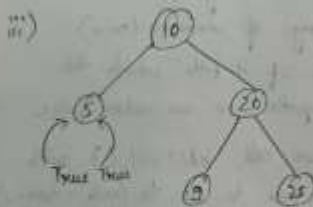
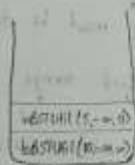
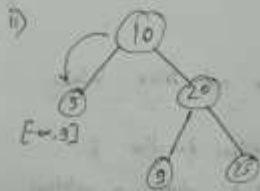
Here we use a recursive helper function,  $\text{isBSTUtil}(\text{node}, \text{min}, \text{max})$  to check whether a subtree (rooted at a given node) is a binary search tree (BST) within a specified range of minimum (min) and maximum (max) values. If it falls outside this range, it violates BST properties, so we return false.

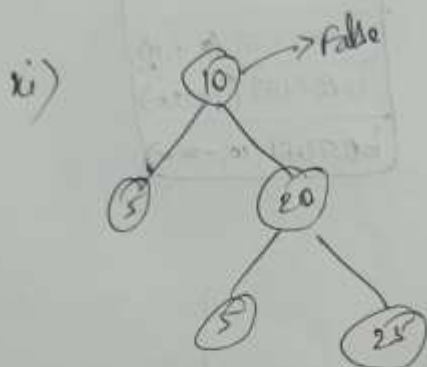
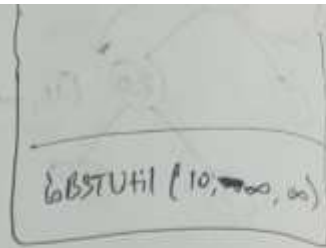
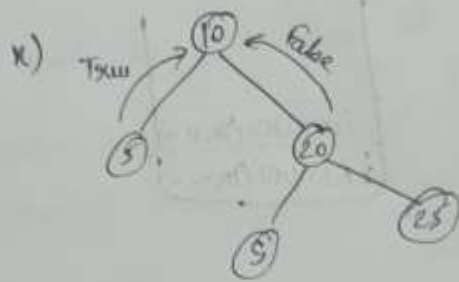
- For the left subtree, we call  $\text{isBSTUtil}()$  with the updated range as the max is set to  $(\text{node} \rightarrow \text{data} - 1)$  because all values in the left subtree must be smaller than the current node's value.
- For the right subtree, we call  $\text{isBSTUtil}()$  with the updated range as the min is set to  $(\text{node} \rightarrow \text{data} + 1)$  because all values in the right subtree

must be greater than the current node's value.  
Both recursive calls must return true for the entire  
subtree to be a valid BST.



isBSTUtil(Node, min, max)





The ~~the~~ Finally root will return false, indicating that the tree is not a binary search tree.

