

9) CONVERTING THE BINARY TREE INTO BINARY SEARCH TREE (BST).

NOTES:

LINK OF EXPLANATION:

<https://www.youtube.com/watch?v=8AnntMKIWlQ>

TRICK:

The Main crux of the question is to take the array of size N and copy the inorder traversal of the binary tree into that array.

Then sort the array which takes the complexity of $(N \log N)$.

Then we again start inorder traversal of the tree and copy the sorted array elements into the tree.

MAIN FUNCTIONS:

```
class Solution{
public:
    // The given root is the root of the Binary Tree
    // Return the root of the generated BST
    void InOrderTraversal(Node *root,vector<int> &v){
        if(root!=NULL){
            InOrderTraversal(root->left,v);
            v.push_back(root->data);
            InOrderTraversal(root->right,v);
        }
    }
    void BST(Node *root,vector<int> &v,int &index){
        if(root!=NULL){
            BST(root->left,v,index);
            root->data=v[index];
            index++;
            BST(root->right,v,index);
        }
    }
    Node *binaryTreeToBST (Node *root)
    {
        vector<int> v;
        InOrderTraversal(root,v);
        sort(v.begin(),v.end());
        int index=0;
        BST(root,v,index);
        return root;
    }
};
```