

Normal BST to Balanced BST

Given a Binary Search Tree, modify the given BST such that it is balanced and has minimum possible height. Return the balanced BST.

Example1:

Input :

```
      30
     /
    20
   /
  10
```

Output :

```
      20
     /  \
    10   30
```

Example2:

Input :

```
      4
     /
    3
   /
  2
 /
1
```

Output :

```
      3          3          2
     /  \      /  \      /  \
    1    4    2    4    1    3
     \          /          \
      2        1          4
```

Your Task:

The task is to complete the function **buildBalancedTree()** which takes root as the input argument and returns the root of tree after converting the given BST into a balanced BST with minimum possible height. The driver code will print the height of the updated tree in output itself.

Expected Time Complexity: $O(N)$

Expected Auxiliary Space: $O(N)$

Here N denotes total number of nodes in given BST.

Constraints:

$1 \leq N \leq 10^5$

$1 \leq \text{Node data} \leq 10^9$