

Indian Institute of Technology (Indian School of Mines) Dhanbad
Data Structures Lab (NCSC104)
B.Tech (CSE)

Assignment- 10 (BST) [2+2+3+3]

1. Write a program to check whether BST contains a Dead End or not.
Hint: A BST that contains positive integer values greater than 0. The task is to check whether the BST contains a dead end or not. Here Dead End means we cannot insert any element after that node.
2. Write a program that you have given a **BST**, and transform it into a greater sum tree where each node contains the sum of all nodes **greater** than that node.
3. Write a program that when the user gives input n, the task is to find the total number of **unique BSTs** that can be made using values from **1 to n**.

Hint: Input: n = 3

Output: 5

Explanation: For n = 3, the preorder traversal of Unique BSTs is:

1 2 3

1 3 2

2 1 3

3 1 2

3 2 1

4. Write a program that is given a Binary tree and the number of nodes in the tree, the task is to find the number of pairs violating the BST property.

Input:

```
      50
     /  \
    30   60
   / \  / \
  20 25 10 40
```

Output: 7

For the above binary tree, pairs (20, 10),
(25, 10), (30, 25), (30, 10), (50, 10),
(50, 40), (60, 40) violate the BST property.
Thus, count of pairs violating BST property
is 7.