

Find Count of Single Valued Subtrees

Given a binary tree, write a program to count the number of Single Valued Subtrees. A Single Valued Subtree is one in which all the nodes have same value. Expected time complexity is $O(n)$.

Example:

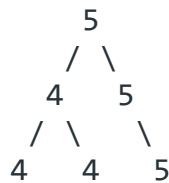
Input: root of below tree



Output: 4

There are 4 subtrees with single values.

Input: root of below tree



Output: 5

There are five subtrees with single values.

Sample Input 1:

1 1 1 -1 -1 -1 -1

Sample Output 1:

3

Sample Input 2:

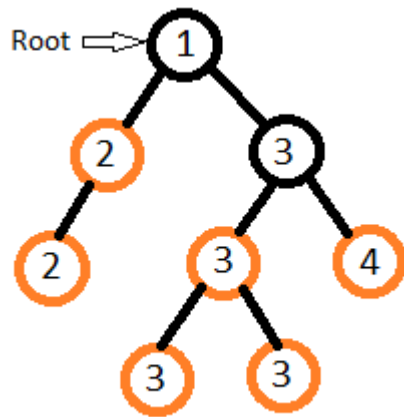
1 2 3 2 -1 3 4 -1 -1 3 3 -1 -1 -1 -1 -1

Sample Output 2:

6

Explanation To Sample Input 2:

The input binary tree will be represented as



In the above diagram, the orange marked nodes are the root nodes of the unival sub-trees for the given binary tree.