

Problems

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Job Fair **Good Subtrees**

185

**Medium**Accuracy: **69.2%**Submissions: **18K+**Points: **4**

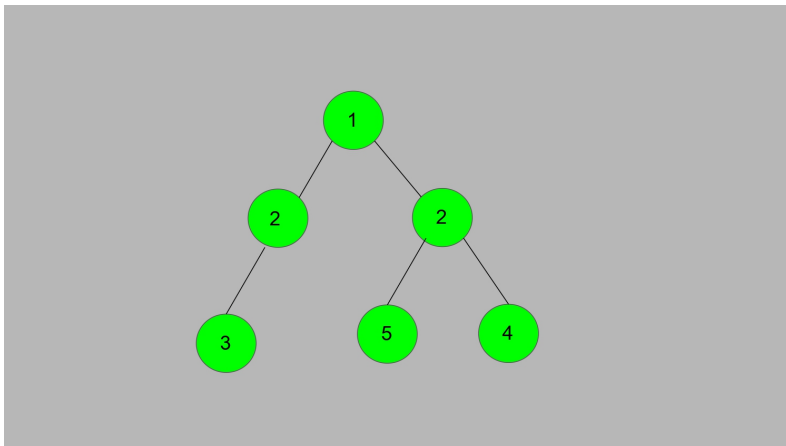
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POTD

You are given a **root** node of a binary Tree and each node of the binary tree is assigned a **value** and you are also given an integer **k** and you have to return the **count** of **Good subtrees** of this binary Tree . Good subtree is a subtree such that the **number** of **distinct values** in this subtree is less than or equal to k.

Note: Subtree of a node consists of that node and all nodes of the subtrees of left and right child of that node if they exist .

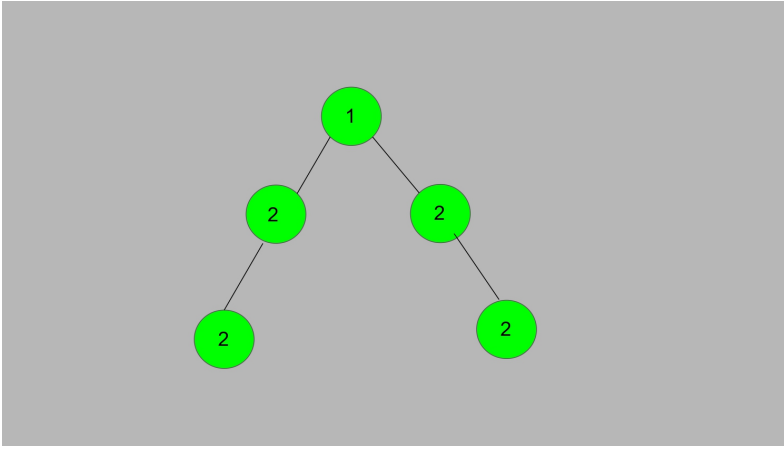
Example 1:**Input:****k=2****Output:** 4**Explanation:**

We can see all leaves **3,4,5** form good subtrees as number of distinct values in subtrees is 1 which is less than k which is given as **2**, now subtree which starts at 2 and has 3 as left node is also a good subtree because the **count** of distinct values is **2** which is equal to k so overall 4 good subtrees.

**Example 2:**

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Input:

k=1

Output: 4

Explanation:

we can see all leaves **2,2** form good subtrees as number of distinct values in subtrees is 1 which is equal to k which is given as 1, now both subtrees which starts at 2 and has 2 as child also forms a good subtree because **count** of distinct values is 1 which is equal to k so overall **4** good subtrees.

Your Task:

You don't need to read input or print anything. Your task is to complete the function **goodSubtrees()** which takes **root** of binary tree and an integer **k** respectively and you have to return the **count** of good subtrees .

Expected Time Complexity: $O(n \cdot k)$

Expected Space Complexity: $O(n + n \cdot k)$, where n is the size of recursion stack.

Constraints:

$1 \leq n \leq 10^5$ (Number of nodes in binary Tree)

$1 \leq \text{node.data} \leq 25$

$1 \leq k \leq 20$

The sum of n over all test cases won't exceed $5 \cdot 10^5$

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C++ (g++ 5.4) ▾

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```
87 unordered_map<int,int> help(Node* root,int k,int &ans){
88     unordered_map<int,int> mm,mm2,mm3;
89     if(root->left)
90         mm2=help(root->left,k,ans);
91     if(root->right)
92         mm3=help(root->right,k,ans);
93     if(mm2.size()>k)return mm2;
94     if(mm3.size()>k)return mm3;
95     mm[root->data]++;
96     for(auto x:mm2)mm[x.first]+=x.second;
97     for(auto x:mm3)mm[x.first]+=x.second;
98     if(mm.size()<=k)ans++;
99     return mm;
100 }
101
102 class Solution{
103 public:
104     int goodSubtrees(Node *root,int k){
105         // Code here
106         int ans=0;
107         help(root,k,ans);
108         return ans;
109     }
110 };
111  // } Driver Code Ends
```

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