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834. Sum of Distances in Tree

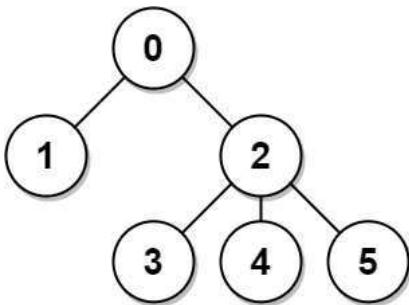
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There is an undirected connected tree with n nodes labeled from 0 to $n - 1$ and $n - 1$ edges.

You are given the integer n and the array `edges` where `edges[i] = [ai, bi]` indicates that there is an edge between nodes a_i and b_i in the tree.

Return an array `answer` of length n where `answer[i]` is the sum of the distances between the i^{th} node in the tree and all other nodes.

Example 1:



Input: $n = 6$, `edges = [[0,1],[0,2],[2,3],[2,4],[2,5]]`

Output: `[8,12,6,10,10,10]`

Explanation: The tree is shown above.

We can see that $\text{dist}(0,1) + \text{dist}(0,2) + \text{dist}(0,3) + \text{dist}(0,4) + \text{dist}(0,5)$ equals $1 + 1 + 2 + 2 + 2 = 8$.

Hence, `answer[0] = 8`, and so on.

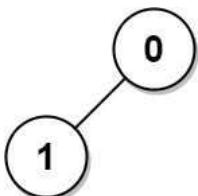
Example 2:



Input: $n = 1$, `edges = []`

Output: `[0]`

Example 3:



Input: $n = 2$, `edges = [[1,0]]`

Output: `[1,1]`

Constraints:

- $1 \leq n \leq 3 * 10^4$
- $\text{edges.length} == n - 1$
- $\text{edges}[i].length == 2$

```

i C++ ▾ Auto
vector<unordered_set<int>>& tree,
7
8 for(const vector<int>& edge: edges){
9     const int u = edge[0];
10    const int v = edge[1];
11    tree[u].insert(v);
12    tree[v].insert(u);
13 }
14 postorder(tree, 0, -1, count, ans);
15 preorder(tree, 0, -1, count, ans);
16 return ans;
17 }
18 private:
19 void postorder(const vector<unordered_set<int>>& tree,
20 vector<int>& count, vector<int>& ans){
21     for(const int child: tree[node]){
22         if(child == parent)
23             continue;
24         postorder(tree, child, node, count, ans);
25         count[node] += count[child];
26         ans[node] += ans[child] + count[child];
27     }
28 }
29 void preorder(const vector<unordered_set<int>>& tree,
30 vector<int>& count, vector<int>& ans){
31     for(const int child: tree[node]){
32         if(child == parent)
33             continue;
34         ans[child] = ans[node] - count[child] + (tree.s
35     }
}
  
```

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