1530. Number of Good Leaf Nodes Pairs

Updating distances while DFSing (hashmap)

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/*
   Updating distances while DFSing (array)
   Time complexity ≤  O(n×(4^(h+1)−1)/3)  where  h  is the height of the tree,
  h=log_2(n+1)−1
   Extra space complexity: O(n)
*/
class Solution {
   public:
      int ans;
   public:
     std::unordered_map<int,int> dfs(TreeNode* node,int& dist){
         if(!node) return {};

         std::unordered_map<int,int> m;m[1]=1;
         if(!node->left&&!node->right) return m;

         std::unordered_map<int,int> left=dfs(node->left,dist);
         std::unordered_map<int,int> right=dfs(node->right,dist);

         for(auto& [l,lf]: left){
            for(auto& [r,rf]: right){
               if(l+r<=dist) ans+=(lf*rf);
            }
         }

         std::unordered_map<int,int> parent;

         for(auto& [l,f]: left){
            if(l+1<=dist) parent[l+1]+=f;;
         }

         for(auto& [r,f]: right){
            if(r+1<=dist) parent[r+1]+=f;
         }
```

```
        return parent;
    }

    int countPairs(TreeNode* root, int distance) {
        ans=0;
        dfs(root,distance);
        return ans;
    }
};
```