112. Path Sum

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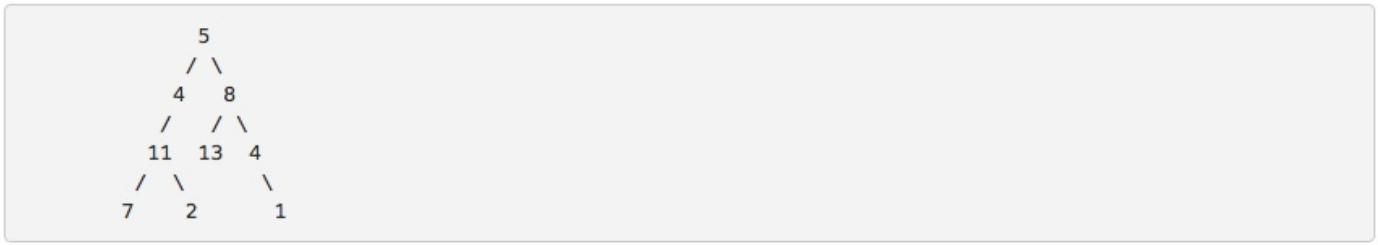
- **Depth-first Search** + Tree

Description

Given a binary tree and a sum, determine if the tree has a root-to-leaf path such that adding up all the values along the path equals the given sum.

For example:
Given the below binary tree and `sum = 22`,



1. Thought line

2. Depth-first Search + Tree

```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode(int x) : val(x), left(NULL), right(NULL) {}
 * };
 */
class Solution {
private:
    bool DFS_Sum(TreeNode* node, int tempSum, int sum){
        if (node == nullptr) return false;
        tempSum = tempSum + node->val;
        if (node != nullptr && node->left == nullptr && node->right == nullptr && tempSum == sum) return true;
        return DFS_Sum(node->left, tempSum, sum) || DFS_Sum(node->right, tempSum, sum);
    }
public:
    bool hasPathSum(TreeNode* root, int sum) {
        int tempSum = 0;
        return DFS_Sum(root, tempSum, sum);
    }
};
```