# 113. Path Sum II

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• Depth-first Search + Tree

#### **Description**

Given a binary tree and a sum, find all root-to-leaf paths where each path's sum equals the given sum.

For example:

Given the below binary tree and sum = 22,

```
5
/\
4 8
/ /\
11 13 4
/\ /\
7 2 5 1
```

return

```
[
    [5,4,11,2],
    [5,8,4,5]
]
```

#### 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:
    void dfsSum(vector<vector<int>>& res, vector<int> temp, TreeNode* node, int sum, int tempSum){
    if (node == nullptr) return;
    tempSum += node->val;
    temp.push_back(node->val);
    if (!node->left && !node->right && tempSum == sum){
        res.push_back(temp);
        return;
    }
    dfsSum(res, temp, node->left, sum, tempSum);
```

```
dfsSum(res, temp, node->right, sum, tempSum);
}
public:
    vector<vector<int>> pathSum(TreeNode* root, int sum) {
        vector<vector<int>> res(0);
        dfsSum(res, {}, root, sum, 0);
        return res;
    }
};
```