416. Partition Equal Subset Sum

QuestionEditorial Solution

- Total Accepted: **5450**
- Total Submissions: **14721**
- Difficulty: **Medium**
- Contributors: **Admin**

Given a **non-empty** array containing **only positive integers**, find if the array can be partitioned into two subsets such that the sum of elements in both subsets is equal.

Note:

1. Each of the array element will not exceed 100.

2. The array size will not exceed 200.

Input: [1, 5, 11, 5]

Output: true

Explanation: The array can be partitioned as [1, 5, 5] and [11].
Input: [1, 2, 3, 5]

Output: false

Explanation: The array cannot be partitioned into equal sum subsets.

```cpp
class Solution {
public:
    bool canPartition(vector<int>& nums) {
        int sum = accumulate(nums.begin(), nums.end(), 0);
        if(sum%2!=0)
        {
            return false;
        }
        set<int> bad_sum;
        return backtrack(nums,bad_sum,0,sum/2);
    }

    bool backtrack(vector<int>& nums, set<int> &bad_sum, int start, int sum)
    {
        if(sum<=0) return sum==0;
        if(bad_sum.find(sum)!=bad_sum.end()) return false;
        for(int i=start;i<=nums.size();++i)
        {
            if(backtrack(nums,bad_sum,i+1,sum-nums[i]))
            return true;
        }
```

```
            bad_sum.insert(sum);
            return false;
        }

    };
```