

416. Partition Equal Subset Sum

Solved

Medium Topics Companies

Given an integer array `nums`, return `true` if you can partition the array into two subsets such that the sum of the elements in both subsets is equal or `false` otherwise.

Example 1:

Input: `nums = [1,5,11,5]`

Output: `true`

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

Example 2:

Input: `nums = [1,2,3,5]`

Output: `false`

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

Python3 Auto

```
1 class Solution:
2     def canPartition(self, nums: List[int]) -> bool:
3         s = sum(nums)
4         if s % 2 == 1:
5             return False
6
7         t = s // 2
8         n = len(nums)
9         dp = [False] * (t+1) #dp[i] stands for whether i is achievable in nums
10        dp[0] = True
11
12        for num in nums:
13            for j in range(t, num-1, -1):
14                if dp[j-num]:
15                    dp[j] = True
16
17        return dp[t]
18
```

Eg. `[4, 5, 3, 3, 3]`

$S = 18$

$t = 9$

$n = 5$

$dp = [T, F, F, F, F, F, F, F, F, F]$

for num in nums:

for j in range(t, num-1, -1):

(num, j):

(4, 9) $dp[5] = F$

(4, 8) F

(4, 7) F

\vdots

(4, 4) $\longrightarrow T$ $dp[4] = T$

(5, 9) $\longrightarrow T$ $dp[9] = T$ ✓

\vdots