416. Partition Equal Subset Sum
Medium

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].

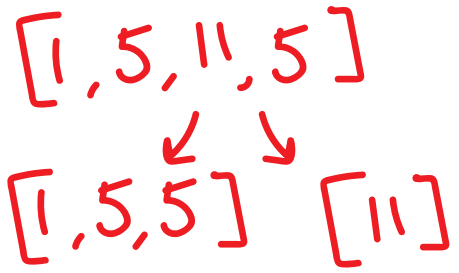
Example 2:

Input: nums = [1,2,3,5]
Output: false
Explanation: The array cannot be partitioned into equal sum subsets.

Constraints:

```
1 <= nums.length <= 200
1 <= nums[i] <= 100
```

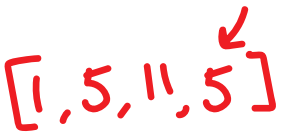
```python
from typing import List

class Solution:
    def canPartition(self, nums: List[int]) -> bool:
        if sum(nums) % 2 != 0:
            return False

        target = sum(nums) // 2
        check = set()
        check.add(0)

        for i in range(len(nums) - 1, -1, -1):
            next_check = set()
            for t in check:
                if (t + nums[i]) == target:
                    return True
                next_check.add(t + nums[i])
                next_check.add(t)
            check = next_check
        return False
```



target = 11

check = set()

check → set(0)




```
for i in range(len(nums) - 1, -1, -1):
```

next_check = set()

for t in check:

if t + nums(i) == target

return True

next_check.add(t + nums[i])

next_check.add(t)

check = next_check

1. Loop through the nums list
2. The 'check' set() holds the possible combination of numbers that have been previously seen that could sum up to the target.
3. The 'next_check' set() holds new combinations of sums
4. As the values in 'check', t, are iterated over, check to see if nums[i] + t is equal to target. If so, return True (otherwise, if the loop completes, return False)