

Домашняя работа по системам компьютерной алгебры №4

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Two Sum

Given an array of integers *nums* and an integer *target*, return indices of the two numbers such that they add up to *target*.

You may assume that each input would have **exactly one solution**, and you may not use the same element twice.

You can return the answer in any order.

1) алгоритм с вычислительной сложностью $O(N^2)$

```
1 class Solution(object):
2     def twoSum(self, nums, target):
3
4         for i in range(len(nums)):
5             for j in range(i+1, len(nums)):
6                 if nums[i] + nums[j] == target:
7                     return i, j
```

The screenshot shows the LeetCode interface for the 'Two Sum' problem. The code is in Python, and the submission is accepted. The interface includes a navigation bar, a problem description, a code editor, a test case runner, and a submission table.

Success Details >

Runtime: 2984 ms, faster than 30.78% of Python online submissions for Two Sum.

Memory Usage: 14.4 MB, less than 24.39% of Python online submissions for Two Sum.

Next challenges:

- 3Sum
- 4Sum
- Two Sum II - Input Array Is Sorted
- Two Sum III - Data structure design
- Subarray Sum Equals K
- Two Sum IV - Input is a BST
- Two Sum Less Than K
- Max Number of K-Sum Pairs
- Count Good Meals
- Count Number of Pairs With Absolute Difference K
- Number of Pairs of Strings With Concatenation Equal to Target
- Find All K-Distant Indices in an Array

Show off your acceptance: [f](#) [t](#) [in](#)

Time Submitted	Status	Runtime	Memory	Language
05/18/2022 23:23	Accepted	2984 ms	14.4 MB	python
05/18/2022 23:10	Accepted	2506 ms	14.4 MB	python

Console Use Example Testcases

Run Code Submit

2) алгоритм с вычислительной сложностью $O(N \ln N)$

```
1 class Solution(object):
2     def twoSum(self, nums, target):
3
4         #binary search
5
6         nums = sorted(enumerate(nums), key=lambda i: i[1])
7
8         a = 0
9         b = len(nums) - 1
10
11        while a < b:
12
13            s = nums[a][1] + nums[b][1]
14
15            if s > target:
16                b -= 1
17
18            if s < target:
19                a += 1
20
21            if s == target:
22                return nums[a][0], nums[b][0]
```

LeetCode

Explore

Problems

Interview

Contest

Discuss

Store

Success

Details

Runtime: 94 ms, faster than 54.35% of Python online submissions for Two Sum.

Memory Usage: 14.9 MB, less than 5.38% of Python online submissions for Two Sum.

Next challenges:

3Sum

4Sum

Two Sum II - Input Array Is Sorted

Two Sum III - Data structure design

Subarray Sum Equals K

Two Sum IV - Input is a BST

Two Sum Less Than K

Max Number of K-Sum Pairs

Count Good Meals

Count Number of Pairs With Absolute Difference K

Number of Pairs of Strings With Concatenation Equal to Target

Find All K-Distant Indices in an Array

Show off your acceptance:

f

t

in

Time Submitted	Status	Runtime	Memory	Language
05/19/2022 00:40	Accepted	94 ms	14.9 MB	python

Python

Autocomplete

```
1 class Solution(object):
2     def twoSum(self, nums, target):
3
4         #binary search
5
6         nums = sorted(enumerate(nums), key=lambda i: i[1])
7
8         a = 0
9         b = len(nums) - 1
10
11        while a < b:
12
13            s = nums[a][1] + nums[b][1]
14
15            if s > target:
16                b -= 1
17
18            if s < target:
19                a += 1
20
21            if s == target:
22                return nums[a][0], nums[b][0]
```

Your previous code was restored from your local storage. [Reset to default](#)

Testcase

Run Code Result

Debugger

Accepted

Runtime: 18 ms

Your input

[2,7,11,15]

9

Output

[0,1]

[1,2]

Diff

Expected

[0,1]

[1,2]

Активация Windows

3) алгоритм с вычислительной сложностью $O(N)$

1 ▾

2 ▾

3

4

5

6 ▾

7

8

9

10 ▾

11

12

13

```
class Solution(object):
    def twoSum(self, nums, target):

        set = {}

        for i, n in enumerate(nums):

            difference = target - n

            if difference in set:
                return set[difference], i

            set[n] = i
```

LeetCode

Explore

Problems

Interview

Contest

Discuss

Store

LeetCode is hiring! Apply NOW!

Premium

0

Description

Solution

Discuss (999+)

Submissions

Success

Details >

Runtime: 37 ms, faster than 98.15% of Python online submissions for Two Sum.

Memory Usage: 14.2 MB, less than 70.45% of Python online submissions for Two Sum.

Next challenges:

3Sum

4Sum

Two Sum II - Input Array Is Sorted

Two Sum III - Data structure design

Subarray Sum Equals K

Two Sum IV - Input is a BST

Two Sum Less Than K

Max Number of K-Sum Pairs

Count Good Meals

Count Number of Pairs With Absolute Difference K

Number of Pairs of Strings With Concatenation Equal to Target

Find All K-Distant Indices in an Array

Show off your acceptance:

f

t

in

Time Submitted	Status	Runtime	Memory	Language
05/19/2022 01:06	Accepted	37 ms	14.2 MB	python

i Python

Autocomplete

1 ▾

2 ▾

3

4

5

6 ▾

7

8

9

10 ▾

11

12

13

```
class Solution(object):
    def twoSum(self, nums, target):

        set = {}

        for i, n in enumerate(nums):

            difference = target - n

            if difference in set:
                return set[difference], i

            set[n] = i
```

Your previous code was restored from your local storage. [Reset to default](#)

Testcase

Run Code Result

Debugger

Accepted

Runtime: 21 ms

Your input

[2,7,11,15]

9

Output

[0,1]

[1,2]

[0,1]

Diff

Expected

[0,1]

[1,2]

Активация Windows