leetcode.com /problems/gas-station/description/

Unknown Title

Description

Description

Note

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Code

Code

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Testcase

Testcase

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Test Result

Test Result

134. Gas Station

Medium

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There are `n` gas stations along a circular route, where the amount of gas at the `i`$^{\text{th}}$ station is `gas[i]`.

You have a car with an unlimited gas tank and it costs `cost[i]` of gas to travel from the `i`$^{\text{th}}$ station to its next `(i + 1)`$^{\text{th}}$ station. You begin the journey with an empty tank at one of the gas stations.

Given two integer arrays `gas` and `cost`, return *the starting gas station's index if you can travel around the circuit once in the clockwise direction, otherwise return* `-1`. If there exists a solution, it is **guaranteed** to be **unique**.

Example 1:

```
Input: gas = [1,2,3,4,5], cost = [3,4,5,1,2]
Output: 3
Explanation:
Start at station 3 (index 3) and fill up with 4 unit of gas. Your tank = 0 + 4 = 4
Travel to station 4. Your tank = 4 - 1 + 5 = 8
Travel to station 0. Your tank = 8 - 2 + 1 = 7
Travel to station 1. Your tank = 7 - 3 + 2 = 6
Travel to station 2. Your tank = 6 - 4 + 3 = 5
Travel to station 3. The cost is 5. Your gas is just enough to travel back to station 3.
Therefore, return 3 as the starting index.
```

Example 2:

Input: gas = [2,3,4], cost = [3,4,3]

Output: -1

Explanation:

You can't start at station 0 or 1, as there is not enough gas to travel to the next station.

Let's start at station 2 and fill up with 4 unit of gas. Your tank = 0 + 4 = 4

Travel to station 0. Your tank = 4 - 3 + 2 = 3

Travel to station 1. Your tank = 3 - 3 + 3 = 3

You cannot travel back to station 2, as it requires 4 unit of gas but you only have 3.

Therefore, you can't travel around the circuit once no matter where you start.

Constraints:

- n == gas.length == cost.length
- 1 <= n <= 10^5
- 0 <= gas[i], cost[i] <= 10^4

Seen this question in a real interview before?

1/5

Yes

No

Accepted

934.5K

Submissions

2M

Acceptance Rate

45.6%

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Discussion (205)

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1. Please don't post **any solutions** in this discussion.

2. The problem discussion is for asking questions about the problem or for sharing tips - anything except for solutions.

3. If you'd like to share your solution for feedback and ideas, please head to the solutions tab and post it there.

Kratos50

Jan 06, 2023

I got interview in a couple hours but LeetCode streak is more important

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yomaChoma

Jan 07, 2023

This question is very confusing.

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dadick

Jan 06, 2023

Hint: if you start from station `a` and stuck at `b`, then you can't get to `b` from any station between `a` and `b`.

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gjulianm

Aug 31, 2023

One of the test cases does not have a unique solution. It's gas = [2,0, lotsofzeros] with cost = [0,1,0,lotsofzeros]. With those parameters, any station other than 1 is a valid solution. That test case should be invalidated.

Read more

Feedback

91

4

rabeeh

Jul 29, 2015

Hi
can anyone please explain with giving some examples also to make it clear what is asked? thanks

Read more

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CourteousCoder

Nov 21, 2018

In order to prepare for an interview, it is more important that I am able to recognized the pattern in this problem.

Can someone please help me identify the pattern of this problem?

Is this a variation of a classic problem in Computer Science?
If so, which?

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yueyunpeng

Nov 30, 2020

I solved it with a two pass algorithm fairly quickly, the idea is:

1. First just assum the gas tank can fall below zero, complete a loop starting at position 0, and record the index with lowest amount of gas (possibly negative) in tank, call it `lowest_idx`.

2. Complete a loop starting from `lowest_idx`, break and return `-1` if the tank falls below zero at any point. Return `lowest_idx` if it never fell below zero.

Sure it's not one pass, but extremely easy to understand, guarantees to be O(N) time and O(1) space, and did pass all tests. Am I missing anything?

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evidem64

Feb 03, 2022

Problem description states:

> If there exists a solution, it is guaranteed to be unique

On submission my solution fails for the following case:

> [1,2,3,4,5,6,7,8]
> [1,2,3,4,5,6,7,8]

Clearly, there IS a solution, but it's NOT unique, since
you can start at any of the stations.
Expected answer is 0 though, anything else gets rejected.

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banty

Jan 21, 2022

This is not a rant, I genuinly want to know what is it that this problem trying to test so that I can practice it more and be better at it

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Kaltu

Jun 18, 2023

The last sentence from the problem description states "If there exists a solution, it is **guaranteed** to be **unique**"

This is violated for testcases similar to the 40th testcase, for example, if `gas=[2,0,0]` `cost=[0,1,0]` the expected answer is `0`.
However, one can also start from `2` and complete the circuit.

Since this is a circular problem, a simple rotation should still work.
If the rotated version was manually inputted as a custom testcase `gas=[0,2,0]` `cost=[0,0,1]`, the answer from the official testcase should also be rotated to `1`.
However, the system says "Invalid Testcase" and "The answer should be unique."

Meaning that the system successfully detects there are non-unique solutions for `gas=[0,2,0]` `cost=[0,0,1]`, but fails to detect it in the official testcase `gas=[2,0,0]` `cost=[0,1,0]`

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Feedback

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3

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1

2

3

4

5

```
class Solution {
    public int canCompleteCircuit(int[] gas, int[] cost) {


    }
}
```

Saved

Ln 5, Col 2

gas =

[1,2,3,4,5]

cost =

[3,4,5,1,2]

9

1

2

3

4

›

[1,2,3,4,5]

[3,4,5,1,2]

[2,3,4]

[3,4,3]

</>
Source

FindHeaderBarSize

FindTabBarSize

FindBorderBarSize