134. Gas Station ★

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Total Accepted: **69237** Total Submissions: **246576** Difficulty: **Medium**

There are *N* gas stations along a circular route, where the amount of gas at station *i* is `gas[i]`.

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

Return the starting gas station's index if you can travel around the circuit once, otherwise return -1.

Note:

The solution is guaranteed to be unique.

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C++

```
class Solution {
public:
    int canCompleteCircuit(vector<int>& gas, vector<int>& cost) {
        vector<int> diff;
        int  n = gas.size();
        diff.reserve(gas.size());
        for (int i = 0; i < n; ++i) {
            diff.push_back(gas[i] - cost[i]);
        }
        int sum = 0, startIndex = 0, nowIndex = 0;
        sum = diff[startIndex];
        nowIndex = (nowIndex+1) % n;
        if (nowIndex == 0) { // nowIndex == 0
            return (sum >= 0) ? 0 : -1;
        }
        while (startIndex != n && !(startIndex == nowIndex)) {
            while (sum < 0) {
                sum -= diff[startIndex];
                ++startIndex;
            }
            sum += diff[nowIndex];
            nowIndex = (nowIndex+1) % n;
        }
```

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```
24          if (startIndex == n || sum < 0) {
25              return -1;
26          }
27          return startIndex;
28      }
```

Custom Testcase

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Notes