Follow Up Question

九章算法强化班 第7章

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Overview

1. Find peak Element 2 follow up
2. Subarray sum 3 follow up
3. Continuous Subarray Sum 2 follow up
4. Wiggle Sort 2 follow up
5. K Largest 6 follow up

Find Peak Element

http://www.lintcode.com/en/problem/find-peak-element/
http://www.jiuzhang.com/solutions/find-peak-element/

Find Peak Element II

http://www.lintcode.com/en/problem/find-peak-element-ii/

www.jiuzhang.com/solutions/find-peak-element-ii

There is an integer matrix which has the following features:

- The numbers in adjacent positions are different.
- The matrix has n rows and m columns.
- For all i < m, *A[0][i] < A[1][i] && A[n - 2][i] > A[n - 1][i].*
- For all j < n, *A[j][0] < A[j][1] && A[j][m - 2] > A[j][m - 1].*

We define a position P is a peek if:

```
A[j][i] > A[j+1][i] && A[j][i] > A[j-1][i] && A[j][i] > A[j][i+1] && A[j][i] > A[j][i-1]
```

Find a peak element in this matrix. Return the index of the peak.

ℹ Notice

The matrix may contains multiple peeks, find any of them.

Have you met this question in a real interview? Yes

Example

Given a matrix:

```
[
  [1 ,2 ,3 ,6 ,5],
  [16,41,23,22,6],
  [15,17,24,21,7],
  [14,18,19,20,10],
  [13,14,11,10,9]
]
```

return index of 41 (which is `[1,1]`) or index of 24 (which is `[2,2]`)

用一道题足以
区分5类面试者

一道题可以区分5类面试者

Find Peak Element 只会O(n)	只会写for循环
Find Peak Element 会O(log(n))	会优化
Find Peak Element II 只会O(n^2)	会优化不会举一反三
Find Peak Element II 会O(nlog(n))	会优化会举一反三
Find Peak Element II 会证明是O(n)	会举一反四

帮助大家从1，2，3　晋升到4，5 档。

Subarray sum

Subarray sum

http://www.lintcode.com/en/problem/subarray-sum/

http://www.jiuzhang.com/solutions/subarray-sum/

Submatrix Sum

http://www.lintcode.com/en/problem/submatrix-sum/
http://www.jiuzhang.com/solutions/submatrix-sum/

Subarray Sum II

http://www.lintcode.com/en/problem/subarray-sum-ii/
http://www.jiuzhang.com/solutions/subarray-sum-ii/

☆ Subarray Sum II

Description | Notes | >_ Testcase | Judge

Given an integer array, find a subarray where the sum of numbers is in a given interval. Your code should return the number of possible answers. (The element in the array should be positive)

Have you met this question in a real interview? Yes

Example

Given `[1,2,3,4]` and interval = `[1,3]`, return `4`. The possible answers are:

```
[0, 0]
[0, 1]
[1, 1]
[2, 2]
```

Tags

循环连续子序列

Continuous Subarray Sum

www.lintcode.com/en/problem/continuous-subarray-sum/
www.lintcode.com/en/problem/maximum-subarray/
http://www.jiuzhang.com/solutions/continuous-subarray-sum/

{ -2, 11, -4, 13, -5, -2 }

402. Continuous Subarray Sum ☆

Description | Notes | >_ Testcase | Judge

Given an integer array, find a continuous subarray where the sum of numbers is the biggest. Your code should return the index of the first number and the index of the last number. (If their are duplicate answer, return anyone)

Have you met this question in a real interview? Yes

Example

Give `[-3, 1, 3, -3, 4]`, return `[1,4]`.

Tags

Array Subarray

Related Problems

Continuous Subarray Sum II

http://www.lintcode.com/en/problem/continuous-subarray-sum-ii/
http://www.jiuzhang.com/solutions/continuous-subarray-sum-ii/

{ -2, 11, -4, 13, -5, -2 }

旋转排序

Wiggle Sort

http://www.lintcode.com/problem/wiggle-sort/

http://www.jiuzhang.com/solutions/wiggle-sort/

Wiggle Sort II

http://www.lintcode.com/problem/wiggle-sort-ii/

http://www.jiuzhang.com/solutions/wiggle-sort-ii/

反向思路的BFS

Build Post Office

http://www.lintcode.com/en/problem/build-post-office/

☆ Build Post Office

Description | Notes | >_ Testcase | Judge

Given a 2D grid, each cell is either an house `1` or empty `0` (the number zero, one), find the place to build a post office, the distance that post office to all the house sum is smallest. Return the smallest distance. Return `-1` if it is not possible.

ℹ Notice

- You can pass through house and empty.
- You only build post office on an empty.

Have you met this question in a real interview? Yes

Example

Given a grid:

```
0 1 0 0
1 0 1 1
0 1 0 0
```

return `6` . (Placing a post office at (1,1), the distance that post office to all the house sum is smallest.)

Tags

Build Post Office II

http://www.lintcode.com/en/problem/build-post-office-ii/

☆ Build Post Office II

Description | Notes | >_ Testcase | Judge

Given a 2D grid, each cell is either a wall `2`, an house `1` or empty `0` (the number zero, one, two), find the place to build a post office, the distance that post office to all the house sum is smallest. Return the smallest distance. Return `-1` if it is not possible.

ℹ Notice

- You cannot pass through wall and house, but can pass through empty.
- You only build post office on an empty.

Have you met this question in a real interview? Yes

Example

Given a grid:

```
0 1 0 0 0
1 0 0 2 1
0 1 0 0 0
```

return `8`, You can build at `(1,1)`. (Placing a post office at (1,1), the distance that post office to all the house sum is smallest.)

Challenge

Bomb Enemy

http://www.lintcode.com/en/problem/bomb-enemy/

☆ Bomb Enemy

Description | Notes | >_ Testcase | Judge

Given a 2D grid, each cell is either a wall `'W'`, an enemy `'E'` or empty `'0'` (the number zero), return the maximum enemies you can kill using one bomb.
The bomb kills all the enemies in the same row and column from the planted point until it hits the wall since the wall is too strong to be destroyed.

ℹ Notice

You can only put the bomb at an empty cell.

Have you met this question in a real interview? Yes

Example

Given a grid:

```
0 E 0 0
E 0 W E
0 E 0 0
```

return `3`. (Placing a bomb at (1,1) kills 3 enemies)

Tags

第K大问题

Kth Largest Element

http://www.lintcode.com/en/problem/kth-largest-element/

http://www.jiuzhang.com/solutions/kth-largest-element/

Kth Smallest Number In Matrix

http://www.lintcode.com/en/problem/kth-smallest-number-in-sorted-matrix/
http://www.jiuzhang.com/solutions/kth-smallest-number-in-sorted-matrix/

Kth Smallest Number In Two Array

Kth Smallest Number Sum In Two Array
Kth Smallest Number Product In Two Array

给一个很大的数组求第K大
(不能全部放到内存里面)
给一个很大的数组求median

Google 面试题

(4-6月) 码农类 硕士 全职@Google - 内推 - 技术电面 |Failfresh grad应届毕业生
]三面试的，今天接到电话说已经挂了。

gle的面试给我留下了很好的印象，因为做的比较规范，最后反馈也都是电话告知结果，非常正规的感觉。

i时面试的时候运气不错，是一个美国小哥，题目也蛮简单的。第一题是给两个string,其中一个string比另外一个多了个字母，返回这个字母。

-题就用了最简单的比较，比较每一个字母（按照顺序就可以了），注意一下边界条件，最后一个的边界条件。

ow up是如果字母顺序打乱了怎么找。我先说了HashMap，要写的时候想起来另外一个方法，就是把所有的ASICII加起来，减一下，得到的就是多出来的那个。 我就直接说了这个，然后写了这
写完之后小哥问了一下时间空间复杂度，然后说你已经把本来要提升的东西做了、

i给了个第三题，是说如果说要实现一个数据结构，要有insert（），delete（），medium（），mode（）方法，怎么写。

i感觉是我最后被拒的原因，因为我感觉我没正确理解他的意思。因为这里你用LinkedList（）也好，ArrayList（）也好，总会有一个时间复杂度会很高，后面结束的时候想想可能是想让我比较
i构的优缺点。

i时是写了一个Arraylist的，他问如果找中位数怎么办，是不是会time complexity很高，然后我说每个结构都会有缺点，是个trade off。

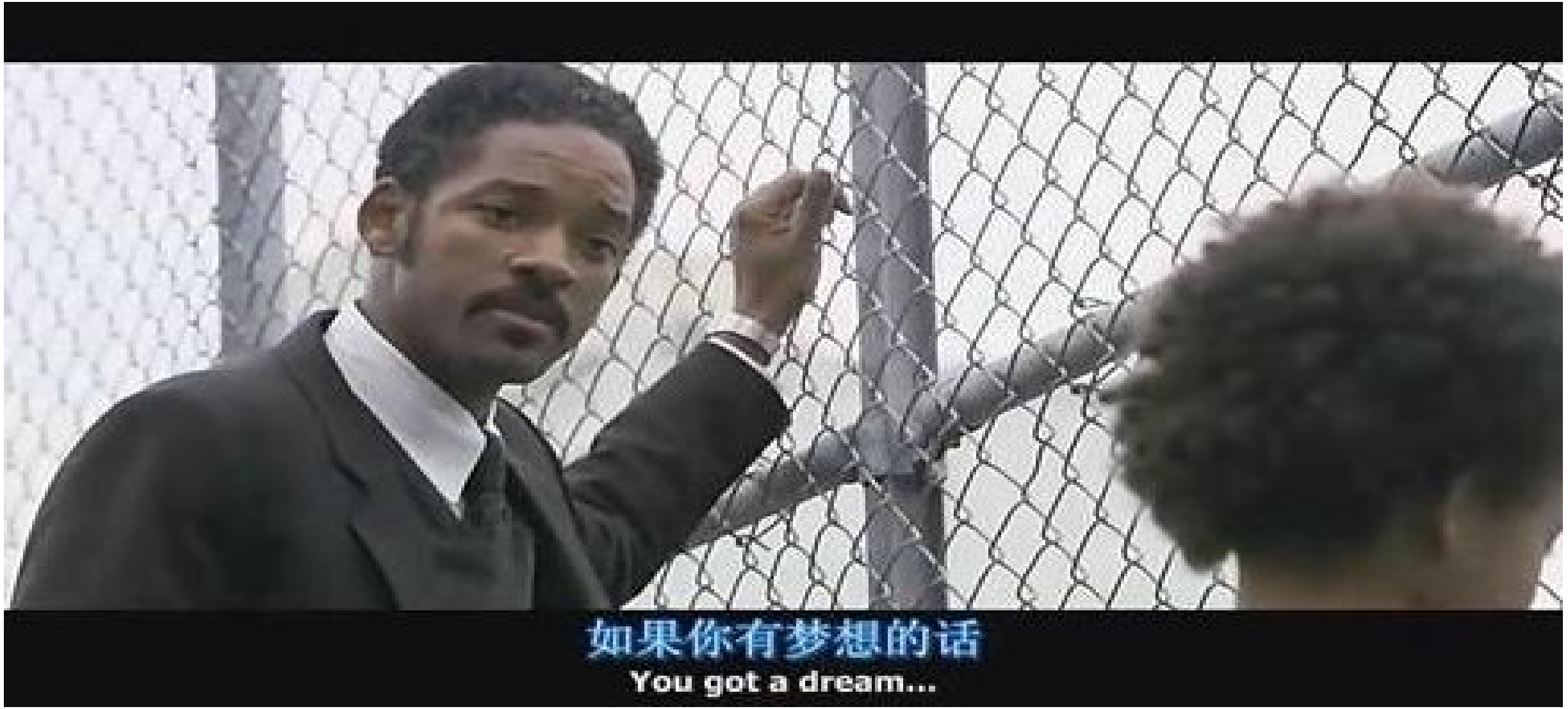
i时间也不够，因为是额外加的，草草结束了这题。

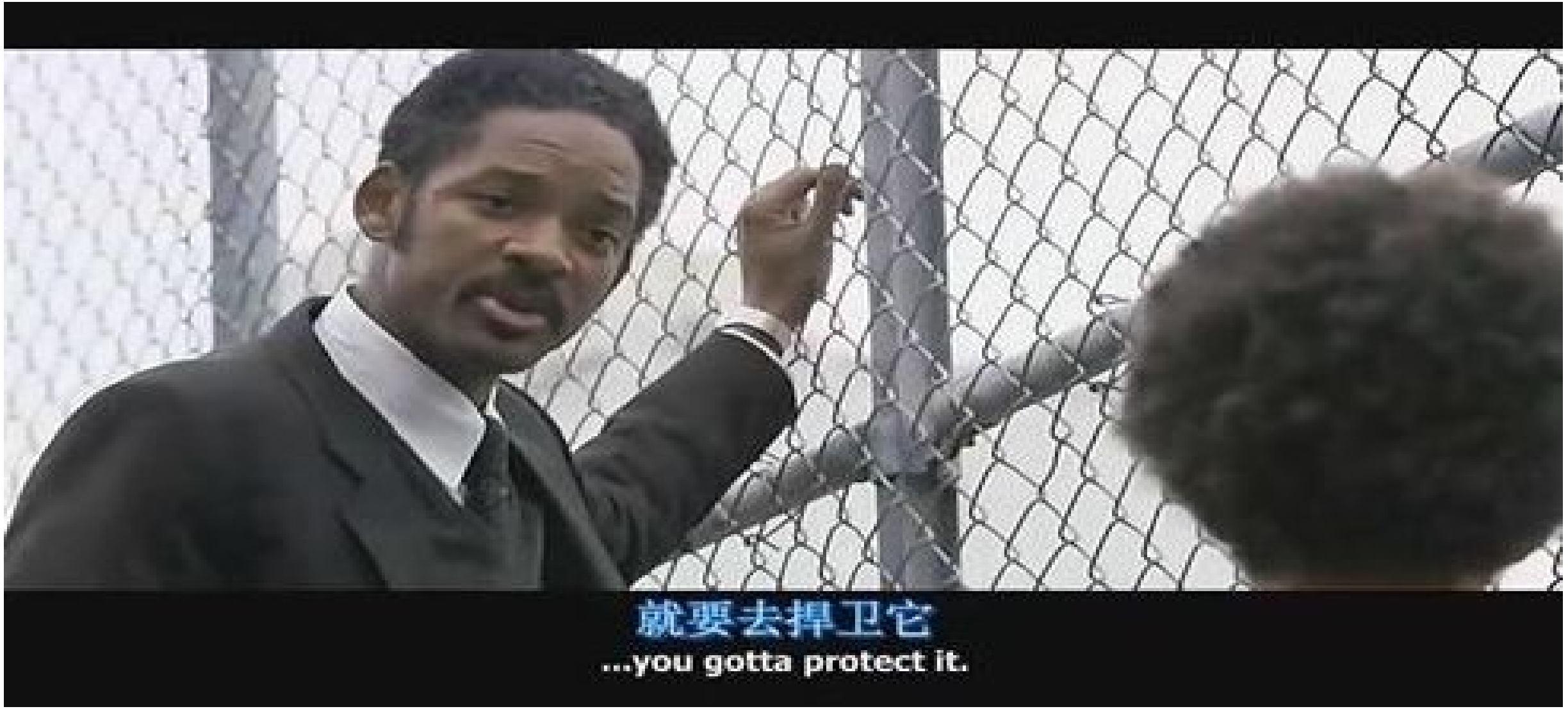
:答完感觉还可以，不过最后还是挂了。

e on了，不过HR还是很nice，今天电话告知我挂了之后问我要不要点学习资料，还发了学习资料，然后说8到12个月以后再见。 整体对google的招聘印象很好

Follow Up 常见方式

- 一维转二维
  - 可以套相同的思路试一试
    - Find Peak Element I/II
    - Trapping Water I/II
    - Subarray Sum/Submatrix Sum
- 数组变成循环数组
  - 循环数组小技巧
    - Continuous Subarray Sum
- 题目条件加强
  - 可能题目的解题方法会变化
    - Wiggle Sort I/II
- 换马甲(变一个描述，本质不变)
  - 本质不变
    - Number of airplane on the Sky/ Meeting Room
    - BackPack Problem
    - Two Sum/ Three Sum/ Four Sum
- 描述完全不一样，但是方法相同
  - 这种题目得去分析
    - 前向型指针的题目
    - Quick Sort/ Bolt Nuts Problem





Thank You!!!