请大家将作业答案上传至:
https://github.com/guowennee/QishiAlgo7_HW
和
https://piazza.com/class/k01p7hh4ghx1je

LC 744: Find Smallest Letter Greater Than Target

https://leetcode.com/problems/find-smallest-letter-greater-than-target/

Given a list of sorted characters `letters` containing only lowercase letters, and given a target letter `target`, find the smallest element in the list that is larger than the given target.

Letters also wrap around. For example, if the target is `target = 'z'` and `letters = ['a', 'b']`, the answer is `'a'`.

Examples:

```
Input:
letters = ["c", "f", "j"]
target = "a"
Output: "c"

Input:
letters = ["c", "f", "j"]
target = "c"
Output: "f"

Input:
letters = ["c", "f", "j"]
target = "k"
Output: "c"
```

LC 475: Heaters https://leetcode.com/problems/heaters/

Winter is coming! Your first job during the contest is to design a standard heater with fixed warm radius to warm all the houses.

Now, you are given positions of houses and heaters on a horizontal line, find out minimum radius of heaters so that all houses could be covered by those heaters.

So, your input will be the positions of houses and heaters seperately, and your expected output will be the minimum radius standard of heaters.

Note:

1. Numbers of houses and heaters you are given are non-negative and will not exceed 25000.
2. Positions of houses and heaters you are given are non-negative and will not exceed 10^9.
3. As long as a house is in the heaters' warm radius range, it can be warmed.
4. All the heaters follow your radius standard and the warm radius will the same.

Example 1:

```
Input: [1,2,3],[2]
Output: 1
Explanation: The only heater was placed in the position 2, and if we use the radius 1 standard, then all the houses can be warmed.
```

Example 2:

```
Input: [1,2,3,4],[1,4]
Output: 1
Explanation: The two heater was placed in the position 1 and 4. We need to use radius 1 standard, then all the houses can be warmed.
```

LC 74: Search a 2D Matrix

https://leetcode.com/problems/search-a-2d-matrix/

Write an efficient algorithm that searches for a value in an *m* x *n* matrix. This matrix has the following properties:

- Integers in each row are sorted from left to right.
- The first integer of each row is greater than the last integer of the previous row.

Example 1:

```
Input:
matrix = [
  [1,   3,  5,  7],
  [10, 11, 16, 20],
  [23, 30, 34, 50]
]
target = 3
Output: true
```

Example 2:

```
Input:
matrix = [
  [1,   3,  5,  7],
  [10, 11, 16, 20],
  [23, 30, 34, 50]
]
target = 13
Output: false
```

LC 34: Find First and Last Position of Element in Sorted Array

https://leetcode.com/problems/find-first-and-last-position-of-element-in-sorted-array/

Given an array of integers `nums` sorted in ascending order, find the starting and ending position of a given `target` value.

Your algorithm's runtime complexity must be in the order of $O(\log n)$.

If the target is not found in the array, return `[-1, -1]`.

Example 1:

```
Input: nums = [5,7,7,8,8,10], target = 8
Output: [3,4]
```

Example 2:

```
Input: nums = [5,7,7,8,8,10], target = 6
Output: [-1,-1]
```

LC 719: Find K-th Smallest Pair Distance

https://leetcode.com/problems/find-k-th-smallest-pair-distance/

Given an integer array, return the k-th smallest **distance** among all the pairs. The distance of a pair (A, B) is defined as the absolute difference between A and B.

Example 1:

```
Input:
nums = [1,3,1]
k = 1
Output: 0
Explanation:
Here are all the pairs:
(1,3) -> 2
(1,1) -> 0
(3,1) -> 2
Then the 1st smallest distance pair is (1,1), and its distance is 0.
```

google 面经题

有一条公路，长度是m，中间有k个加油站，由此我们可以得到一个相邻加油站之间的最大距离，然后给你一个数t，这个数代表增加的加油站的数量（往里面插入），求使得相邻加油站之间最大距离变得最小的值，返回这个最小的最大距离。

http://www.1point3acres.com/bbs/thread-212722-1-1.html