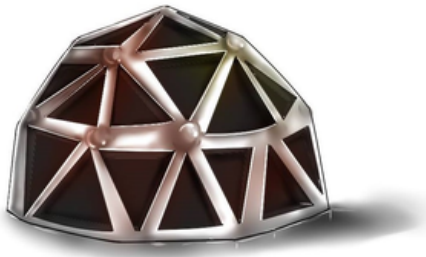


B. New Colony

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

After reaching your destination, you want to build a new colony on the new planet. Since this planet has many mountains and the colony must be built on a flat surface you decided to flatten the mountains using boulders (you are still dreaming so this makes sense to you).



You are given an array h_1, h_2, \dots, h_n , where h_i is the height of the i -th mountain, and k — the number of boulders you have.

You will start throwing boulders from the top of the first mountain one by one and they will roll as follows (let's assume that the height of the current mountain is h_i):

- if $h_i \geq h_{i+1}$, the boulder will roll to the next mountain;
- if $h_i < h_{i+1}$, the boulder will stop rolling and increase the mountain height by 1 ($h_i = h_i + 1$);
- if the boulder reaches the last mountain it will fall to the waste collection system and disappear.

You want to find the position of the k -th boulder or determine that it will fall into the waste collection system.

Input

The first line contains a single integer t ($1 \leq t \leq 100$) — the number of test cases.

Each test case consists of two lines. The first line in each test case contains two integers n and k ($1 \leq n \leq 100$; $1 \leq k \leq 10^9$) — the number of mountains and the number of boulders.

The second line contains n integers h_1, h_2, \dots, h_n ($1 \leq h_i \leq 100$) — the height of the mountains.

It is guaranteed that the sum of n over all test cases does not exceed 100.

Output

For each test case, print -1 if the k -th boulder will fall into the collection system. Otherwise, print the position of the k -th boulder.

Example

inputCopy

```
4
4 3
4 1 2 3
2 7
1 8
4 5
4 1 2 3
3 1
5 3 1
```

Codeforces Round #699 (Div. 2).

Contest is running

01:33:43

Contestant

Submit?

Language: GNU G++14 6.4.0

Choose file:파일 선택선택된 파일 없음

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

Score table

	Score
Problem A	448
Problem B	672
Problem C	1344
Problem D	1792
Problem E	2240
Problem F	2688
Successful hack	100
Unsuccessful hack	-50
Unsuccessful submission	-50
Resubmission	-50

* If you solve problem on 00:26 from the first attempt

output

Copy

```
2
1
-1
-1
```

Note

Let's simulate the first case:

- The first boulder starts at $i = 1$; since $h_1 \geq h_2$ it rolls to $i = 2$ and stops there because $h_2 < h_3$.
- The new heights are $[4, 2, 2, 3]$.
- The second boulder starts at $i = 1$; since $h_1 \geq h_2$ the boulder rolls to $i = 2$; since $h_2 \geq h_3$ the boulder rolls to $i = 3$ and stops there because $h_3 < h_4$.
- The new heights are $[4, 2, 3, 3]$.
- The third boulder starts at $i = 1$; since $h_1 \geq h_2$ it rolls to $i = 2$ and stops there because $h_2 < h_3$.
- The new heights are $[4, 3, 3, 3]$.

The positions where each boulder stopped are the following: $[2, 3, 2]$.

In the second case, all 7 boulders will stop right at the first mountain rising its height from 1 to 8.

The third case is similar to the first one but now you'll throw 5 boulders. The first three will roll in the same way as in the first test case. After that, mountain heights will be equal to $[4, 3, 3, 3]$, that's why the other two boulders will fall into the collection system.

In the fourth case, the first and only boulders will fall straight into the collection system.

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