

C. To Become Max

time limit per test: 2 seconds

memory limit per test: 256 megabytes

You are given an array of integers a of length n .

In one operation you:

- Choose an index i such that $1 \leq i \leq n - 1$ and $a_i \leq a_{i+1}$.
- Increase a_i by 1.

Find the maximum possible value of $\max(a_1, a_2, \dots, a_n)$ that you can get after performing this operation at most k times.

Input

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

The first line of each test case contains two integers n and k ($2 \leq n \leq 1000$, $1 \leq k \leq 10^8$) — the length of the array a and the maximum number of operations that can be performed.

The second line of each test case contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^8$) — the elements of the array a .

It is guaranteed that the sum of n over all test cases does not exceed 1000.

Output

For each test case output a single integer — the maximum possible maximum of the array after performing at most k operations.

Example

input	Copy
6	
3 4	
1 3 3	
5 6	
1 3 4 5 1	
4 13	
1 1 3 179	
5 3	
4 3 2 2 2	
5 6	
6 5 4 1 5	
2 17	
3 5	
output	Copy
4	
7	
179	
5	
7	
6	

Note

In the first test case, one possible optimal sequence of operations is:

[1, 3, 3] → [2, 3, 3] → [2, 4, 3] → [3, 4, 3] → [4, 4, 3].

In the second test case, one possible optimal sequence of operations is:

[1, 3, 4, 5, 1] → [1, 4, 4, 5, 1] → [1, 5, 4, 5, 1] → [1, 5, 5, 5, 1] → [1, 5, 6, 5, 1] → [1, 6, 6, 5, 1] → [1, 7, 6, 5, 1]

Codeforces Round 890 (Div. 2)

supported by Constructor

Institute

Finished

→ Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

[Register for practice](#)

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

→ Problem tags

[binary search](#) [brute force](#)

[data structures](#) [dp](#) [*1600](#)

No tag edit access

→ Contest materials

- Announcement (en)

- Tutorial (en)

The only programming contests Web 2.0 platform
Server time: Jan/04/2025 12:53:50 UTC+9 (j3).
Desktop version, switch to [mobile version](#).
[Privacy Policy](#)

Supported by



ITMO