C. Maximum Median

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

You are given an array a of n integers, where n is odd. You can make the following operation with it:

- Choose one of the elements of the array (for example a_i) and increase it by 1 (that is, replace it with $a_i + 1$).

You want to make the median of the array the largest possible using at most k operations.

The median of the odd-sized array is the middle element after the array is sorted in non-decreasing order. For example, the median of the array $[1, 5, 2, 3, 5]$ is 3 .

Input

The first line contains two integers n and k ($1 \le n \le 2 \cdot 10^5$, n is odd, $1 \le k \le 10^9$) — the number of elements in the array and the largest number of operations you can make.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$).

Output

Print a single integer — the maximum possible median after the operations.

Examples

input Copy

```
3 2
1 3 5
```

output Copy

```
5
```

input Copy

```
5 5
1 2 1 1 1
```

output Copy

```
3
```

input Copy

```
7 7
4 1 2 4 3 4 4
```

output Copy

```
5
```

Note

In the first example, you can increase the second element twice. Than array will be $[1, 5, 5]$ and it's median is 5 .

In the second example, it is optimal to increase the second number and than increase third and fifth. This way the answer is 3 .

In the third example, you can make four operations: increase first, fourth, sixth, seventh element. This way the array will be $[5, 1, 2, 5, 3, 5, 5]$ and the median will be 5 .

Codeforces Round #577 (Div. 2)
Finished
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 ACM-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

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 浏览...

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

→ Last submissions

Submission	Time	Verdict
58367041	Aug/06/2019 07:42	Accepted
58367035	Aug/06/2019 07:42	Compilation error
58366993	Aug/06/2019 07:40	Wrong answer on test 2
58366736	Aug/06/2019 07:28	Time limit exceeded on test 5
58350067	Aug/05/2019 19:46	Accepted
58349962	Aug/05/2019 19:43	Wrong answer on test 47

58349709	Aug/05/2019 19:37	Wrong answer on test 6

→ Problem tags

binary search | greedy | math | sortings | *1400

No tag edit access

→ Contest materials

- Announcement (en)
- Tutorial #1 (en)
- Tutorial #2 (en)