E. Truffula Trouble

time limit per test: 1 second
memory limit per test: 256 megabytes

The Once-ler is back with his lucrative Thneed business!

There are N truffula trees in a row, and the Once-ler visits them **in order**, starting at the first truffula tree. He starts with a Super-Axe-Hacker with durability d.

Each truffula tree has toughness t_i, and the Once-ler can choose to chop down a truffula tree if and only if the durability of his Super-Axe-Hacker is greater than or equal to the current tree's toughness ($d \geq t_i$). Every time the Once-ler chops down a tree, the durability of his Super-Axe-Hacker decreases by one.

However, this time, the Once-ler wants to avoid chopping down trees unsustainably and angering the Lorax. Therefore, the Once-ler refuses to chop down more than one tree in a row.

However, he still needs to make a profit. Each truffula tree he cuts down can make one Thneed. To reach his quota, he needs to make k Thneeds.

What is the minimum starting durability d_{min} of the Once-ler's Super-Axe-Hacker that guarantees at least k Thneeds will be made?

Input
The first line contains two integers N and k where N is the number of truffula trees, and k is the number of Thneeds the Once-ler needs to make. ($1 \leq N \leq 10^5, 1 \leq k \leq N$)

The next line contains N integers $t_1 \ldots t_n$ where t_i is the toughness of the ith truffula tree. ($1 \leq t_i \leq 10^9$)

Output
Output d_{min}, the minimum starting durability that guarantees at least k Thneeds will be made. If it is not possible to make k Thneeds while satisfying all the requirements, output -1.

Examples

input	Copy
6 2 4 9 2 1 2 10	
output	Copy
3	

input	Copy
6 5 8 8 8 8 8	
output	Copy
-1	

Note
In the first example, the Once-ler starts with durability $d = 3$, and chops down the 3rd and 5th trees to create 2 Thneeds.

In the second example, the Once-ler cannot make 5 Thneeds without angering the Lorax.