Cutting sticks

We have n sticks, with each stick having integer length $a_1, a_2, \cdots, a_n$. We need **at least** k new sticks that have the same positive integer length. The only way of making new sticks is just cutting the sticks we have. We cannot glue some sticks to make a new stick, because it make sticks weaker. If you have some sticks left, there is no choice but to throw them away.

Of course, we want the length of the new sticks to be as large as possible. Given $a_1, a_2, \cdots, a_n$ and k, could you write a program that calculates the desired length?

Input

Your input consists of an arbitrary number of records, but no more than 10.

For each record, the first line contains two integers n $(1 \leq n \leq 10{,}000)$ and k $(n \leq k \leq 1{,}000{,}000)$, separated by a space. The next line contains n separated positive integers $a_1, a_2, \cdots, a_n$ $(1 \leq a_i < 2^{31})$, which denotes the length of each stick. It is guaranteed that you can always make at least k new sticks with positive integer length (answer always exists)

The end of input is indicated by a line containing only the value -1.

Output

For each input record, print the maximum possible length of the new sticks.

Example

Standard input	Standard output
4 7 10 5 9 8 3 6 2 2 2 -1	4 1

Time Limit

1 second.