B. Little Pony and Sort by Shift

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

One day, Twilight Sparkle is interested in how to sort a sequence of integers $a_1, a_2, ..., a_n$ in non-decreasing order. Being a young unicorn, the only operation she can perform is a unit shift. That is, she can move the last element of the sequence to its beginning:

$$a_1, a_2, ..., a_n \rightarrow a_n, a_1, a_2, ..., a_{n-1}.$$

Help Twilight Sparkle to calculate: what is the minimum number of operations that she needs to sort the sequence?

Input

The first line contains an integer n $(2 \le n \le 10^5)$. The second line contains n integer numbers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10^5)$.

Output

If it's impossible to sort the sequence output `-1`. Otherwise output the minimum number of operations Twilight Sparkle needs to sort it.

Examples

input
2 2 1
output
1

input
3 1 3 2
output
-1

input
2 1 2
output
0