

D. Strip

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

Alexandra has a paper strip with n numbers on it. Let's call them a_i from left to right.

Now Alexandra wants to split it into some pieces (possibly 1). For each piece of strip, it must satisfy:

- Each piece should contain at least l numbers.
- The difference between the maximal and the minimal number on the piece should be at most s .

Please help Alexandra to find the minimal number of pieces meeting the condition above.

Input

The first line contains three space-separated integers n, s, l ($1 \leq n \leq 10^5$, $0 \leq s \leq 10^9$, $1 \leq l \leq 10^5$).

The second line contains n integers a_i separated by spaces ($-10^9 \leq a_i \leq 10^9$).

Output

Output the minimal number of strip pieces.

If there are no ways to split the strip, output -1.

Examples

input
7 2 2 1 3 1 2 4 1 2
output
3

input
7 2 2 1 100 1 100 1 100 1
output
-1

Note

For the first sample, we can split the strip into 3 pieces: $[1, 3, 1]$, $[2, 4]$, $[1, 2]$.

For the second sample, we can't let 1 and 100 be on the same piece, so no solution exists.