B. 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 ($1 \le n \le 10^5, 0 \le s \le 10^9, 1 \le l \le 10^5$).

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

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.