Improving Grades (grades)

In Italy, every parent of a high-school student can check how their child is doing in terms of grades. In fact, at any given moment the parent can access the "electronic register" where the professors regularly upload the grades obtained by their students in the various tests throughout the year.

Edoardo is in high-school, and he's definitely not the best of his class: he regularly gets lots of insufficient grades! Grades in Italian high-schools go from 2 to 10, and a grade is said to be "sufficient" when it is **higher than or equal to 6**.

Luckily, Edoardo's parents are not very tech-savvy: they know how to use a tablet, but they can't access the "electronic register" website on their own. Edoardo thinks this is a good thing, since all of his friends are constantly kept in check by their parents.

Figure 1: The "electronic register".

The end of the year is getting close so, today, Edoardo's parents asked him to show them his grades. He thought about cheating (faking the website content) but he would feel bad about it. Instead, he wants to impress his parents by showing them that he *improved* during the year.

For this reason Edoardo decided to *zoom in* in the long list of grades, so that only part of the list is visible. More specifically: Edoardo can hide a prefix and a suffix of the list by zooming in.

To impress his parents as much as possible, Edoardo wants this "new list" to show a **clear improvement**: the first grade must be *insufficient* and the last one should be *sufficient*. In order to make the "new list" look realistic, he should also try to hide as few grades as possible.

Help Edoardo measure the maximum number of grades he can include in a zoomed-in list so that the first grade is insufficient and the last one is sufficient. If this is impossible, return `-1`.

☞ Among the attachments of this task you may find a template file `grades.*` with a sample incomplete implementation.

Input

The first line contains the only integer N, the total number of grades uploaded by Edoardo's teacher. The second line contains N integers G_i, the grades.

Output

You need to write a single line with an integer: the maximum number of grades that can be included in the zoomed-in list, or `-1` if it's not possible to find a suitable list.

Constraints

- $1 \leq N \leq 100\,000$.
- $2 \leq G_i \leq 10$ for each $i = 0 \ldots N-1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (30 points) $N \leq 10$.

– **Subtask 3** (50 points) $N \leq 1000$.

– **Subtask 4** (20 points) No additional limitations.

Examples

input	output
5 7 5 7 8 4	3
6 7 5 7 8 4 6	5
3 6 7 4	-1

Explanation

In the **first sample case**, it is possible to obtain the zoomed-in list `5 7 8` of length 3, which starts with an insufficient grade and ends with a sufficient grade. It's impossible to find a longer list.

In the **second sample case**, at the cost of "ending with a 6" instead of with an 8, Edoardo will prefer zooming in the sublist `5 7 8 4 6` because having 5 grades in the electronic register is more realistic than having just 3.

In the **third sample case** Edoardo cannot show that he improved, since the only sublist starting with an insufficient grade is `4`, which does not end with a sufficient grade.