Christmas Lights (`lights`)

Davide wants to decorate his home for Christmas, even though his budget as a student is pretty limited, and he needs to avoid excessive expenses. After days of searching around the city, he finally found a nice row of almost new Christmas lights: it is time to start the decorations!

Figure 1: Davide's house, nicely decorated for Christmas.

The row consists of N consecutive lights, numbered from 0 to $N-1$. Each light has a colour L_i ($i = 0 \dots N-1$), represented by a number between 0 and $C-1$. Every colour between 0 and $C-1$ appears at least once in the row of lights. In order to save energy (running the house dynamo is tiring!), he wants to cut off a segment of consecutive lights from the row containing every colour between 0 and $C-1$ at least once.

What is the length of the shortest segment he can cut?

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

Input

The first line contains the two integers N and C. The second line contains N integers L_i.

Output

You need to write a single line with an integer: the length of a shortest segment of lights containing every colour.

Constraints

- $3 \leq C \leq N \leq 200\,000$.
- $0 \leq L_i < C$ for each $i = 0 \ldots N-1$.
- Every colour c between 0 and $C-1$ appears at least once in the row of lights, i.e., there exists at least one i $(0 \leq i < N)$ such that $L_i = c$.

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** (15 points) $C = 3$.

– **Subtask 3** (10 points) $N \leq 50$.

– **Subtask 4** (20 points) $N \leq 500$.

– **Subtask 5** (25 points) $N \leq 5000$.

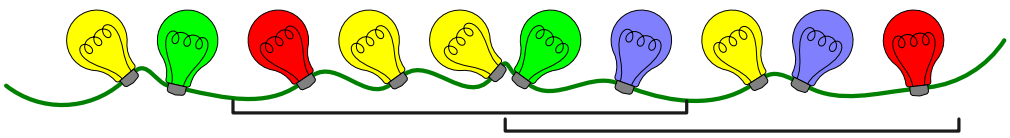
– **Subtask 6** (30 points) No additional limitations.

Examples

input	output
10 4 0 1 3 0 0 1 2 0 2 3	5
11 3 1 1 0 0 2 2 1 1 1 2 2	4

Explanation

In the **first sample case**, the row of lights is the following:



There are two different segments of length five that include all four colours, depicted above. Every segment of a shorter length does not include all four colours, so the answer is five.

The **second sample case**, with one of the two possible shortest segments highlighted, is depicted below.