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Contest Duration: 2025-06-21(Sat) 08:00 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20250621T2100&p1=248) - 2025-06-21(Sat) 09:40 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20250621T2240&p1=248) (local time) (100 minutes) Back to Home (/home)

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# C - Black Intervals Editorial (/contests/abc411/tasks/abc411\_c/editorial)



Time Limit: 3 sec / Memory Limit: 1024 MiB

Score: 350 points

### **Problem Statement**

There are N squares arranged in a row from left to right. Initially, all squares are painted white.

Process Q queries in order. The *i*-th query gives an integer  $A_i$  between 1 and N, inclusive, and performs the following operation:

Flip the color of the  $A_i$ -th square from the left. Specifically, if the  $A_i$ -th square from the left is painted white, paint it black; if it is painted black, paint it white.

Then, find the number of intervals of consecutively painted black squares.

Here, an interval of consecutively painted black squares is a pair of integers (l,r) $(1 \le l \le r \le N)$  that satisfy all of the following:

- The l-th, (l+1)-th,  $\ldots$ , r-th squares from the left are all painted black.
- Either l=1, or the (l-1)-th square from the left is painted white.
- Either r = N, or the (r + 1)-th square from the left is painted white.

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#### **Constraints**

- $1 \le N, Q \le 5 \times 10^5$
- $1 \leq A_i \leq N$
- All input values are integers.

## Input

The input is given from Standard Input in the following format:

## **Output**

Output Q lines. On the i-th line  $(1 \le i \le Q)$ , output the answer to the i-th query.

# Sample Input 1 Copy

```
5 7
2 3 3 5 1 5 2
```

# Sample Output 1 Copy

```
1
1
1
2
2
1
1
1
1
```

Below, the i-th square from the left is referred to as square i.

After each query, the state is as follows:

- After the 1st query, only square 2 is painted black. There is 1 interval of consecutively painted black squares: (l,r)=(2,2).
- After the 2nd query, squares 2, 3 are painted black. There is 1 interval of consecutively painted black squares: (l, r) = (2, 3).
- After the 3rd query, only square 2 is painted black. There is 1 interval of consecutively painted black squares: (l,r)=(2,2).
- After the 4th query, squares 2, 5 are painted black. There are 2 intervals of 10:19:12 -04:00 consecutively painted black squares: (l,r)=(2,2),(5,5).

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• After the 5th query, squares 1, 2, 5 are painted black. There are 2 intervals of consecutively painted black squares: (l, r) = (1, 2), (5, 5).

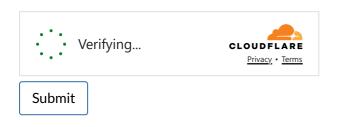
- After the 6th query, only squares 1,2 are painted black. There is 1 interval of consecutively painted black squares: (l,r)=(1,2).
- After the 7th query, only square 1 is painted black. There is 1 interval of consecutively painted black squares: (l,r)=(1,1).

Thus, output 1, 1, 1, 2, 2, 1, 1 separated by newlines.

Sample Input 2 Copy	
1 2 1 1	Сору
Sample Output 2 Copy	
1 0	Сору
After the $2$ nd query, all squares are painted white, so output $0$ on the $2$ nd line.	
Sample Input 3 Copy	
3 3 1 3 2	Сору
Sample Output 3 Copy	
1	Сору
2 1	
Language	
Python (CPython 3.11.4)	
Source Code	
☐ Open File Customize Toggle Editor Auto Height	
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<sup>\*</sup> Your source code will be saved as Main. extension.



#### #telegram)

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<sup>\*</sup> at most 512 KiB