

Contest Duration: 2025-06-21(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250621T2100&p1=248>) - 2025-06-21(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250621T2240&p1=248>) (local time) (100 minutes)

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C - Black Intervals

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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) ($1 \leq l \leq r \leq N$) that satisfy all of the following:

- The l -th, $(l + 1)$ -th, \dots , 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.

Constraints

- $1 \leq N, Q \leq 5 \times 10^5$
- $1 \leq A_i \leq N$

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- All input values are integers.

Input

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

```
N Q
A1 A2 ... AQ
```

Output

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

Sample Input 1

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

[Copy](#)

Sample Output 1

[Copy](#)

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

[Copy](#)

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

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- 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
```

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Sample Output 2 Copy

```
1
0
```

Copy

After the 2nd query, all squares are painted white, so output 0 on the 2nd line.

Sample Input 3 Copy

```
3 3
1 3 2
```

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Sample Output 3 Copy

```
1
2
1
```

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'#telegram)

'url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc411%2Ftasks%2Fabc411_c%3Flang%3Den&title=C%20-

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