# Problem B. Best Memory

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|---|---|
| Input file: | *standard input* |
| Output file: | *standard output* |
| Time limit: | 3 seconds |
| Memory limit: | 1024 mebibytes |

Mumei practices a picture-matching game every day to improve her memory. In this game, there are $n$ different pictures, conveniently numbered by integers from 1 to $n$, and $2n$ cards such that each picture is printed on exactly two cards. The cards are shuffled and laid out in a row on the table, making the pictures invisible. Each turn, Mumei flips one of the cards and then flips another card; if the pictures on the two cards match, she removes them from the table; if not, she flips them back. The goal is to remove all the cards from the table.

It is the year 2044. Mumei has gained exceptional memory skills, to the point where she makes no mistakes in this game. Now, she follows a specific procedure to play the game:

1. If she has already seen two cards with the same picture, and they are still on the table, she flips those two cards and removes them from the table.
2. If not, she first flips the leftmost card that she has not yet flipped, and looks at the picture.
   (a) If she has already seen another card with the same picture, she flips that card and removes both from the table.
   (b) If not, she continues to flip the leftmost card that she has not yet flipped. If the pictures on the two cards match, she removes them from the table; if not, she flips them back.

It can be proven that following this procedure results in a uniquely determined pair of cards to choose each turn.

You are tasked with writing a program that predicts the number of turns Mumei will need to play the whole game from start to end, based on the initial arrangement of cards on the table. However, a mischievous character named Belz thinks the game is too boring and starts swapping card pairs randomly. Write a program to determine the number of turns needed to play the whole game after each swap.

## Input

The first line of input contains two integers, $n$ and $q$: the number of pictures and the number of swaps ($1 \le n, q \le 200\,000$).

The second line contains $2n$ integers: the numbers of pictures on the cards laid out in a row. Each integer from 1 to $n$ appears exactly twice in this row.

The following $q$ lines describe the swaps. Each swap is denoted by two integers, $\ell$ and $r$, which mean the $\ell$-th and the $r$-th cards in the row have to be swapped ($1 \le \ell < r \le 2n$). The effects of all swaps are cumulative: each swap is applied to the row where all the preceding swaps have already happened.

## Output

On the first line, output the number of turns needed to finish the game from the initial state.

On the following $q$ lines, output the number of turns needed to finish the game after each of the $q$ swaps.

## Example

| *standard input* | *standard output* |
|---|---|
| 4 2<br>1 2 3 1 4 4 2 3<br>1 2<br>1 4 | 6<br>6<br>5 |