Circular Swap

Time limit: 4.0s **Memory limit:** 512M

Given a circular sequence A with n integers, denoted as $a_1, a_2, \ldots, a_n$ in clockwise order. Bob is going to perform q operations. Each operation will give an interval $[L, R]$ and an integer x. Bob will modify the sequence as follows.

```
for (int i = L; i <= R; i++) {
    if (a[i] > x) swap(a[i], x);
}
```

Since the sequence is circular, the given R may be less than L. Bob will perform the above operation from L to R in clockwise order. After each operation, Bob wants to know the value of x. Can you write a program to help him?

Input Specification

The first line of input contains two integers n and q ($1 \le n \le 400\,000$, $1 \le q \le 25\,000$), indicating the length of the sequence and the number of operations.

Each of the following n lines contains one integer a_i ($1 \le a_i \le 10^9$), the i-th element in the sequence.

Each of the following q lines contains three integers L, R, and x ($1 \le L, R \le n$, $1 \le x \le 10^9$), indicating an operation.

Output Specification

Output q lines. Each line contains one integer, the final value of x after the operation.

Constraints

Subtask	Points	Additional constraints
1	15	$n \le 2000$, $q \le 2000$.
2	15	$L = 1$, $R = N$.
2	70	No additional constraints.

Sample Input 1

```
6 7
8
6
7
4
5
9
2 4 5
4 1 4
6 2 7
1 5 2
3 4 8
4 3 1
3 1 3
```

Sample Output 1

```
7
9
8
7
8
6
5
```

Explanation

- The initial sequence is like $[8, 6, 7, 4, 5, 9]$.
- After the 1st operation, it's like $[8, 5, 6, 4, 5, 9]$ and $x = 7$.
- After the 2nd operation, it's like $[8, 5, 6, 4, 4, 5]$ and $x = 9$.
- After the 3rd operation, it's like $[7, 5, 6, 4, 4, 5]$ and $x = 8$.

Sample Input 2

```
4 2
5
2
4
7
1 4 3
1 4 1
```

Sample Output 2

```
7
5
```