MNYC '17: Bells

There are N $(1 \leq N \leq 100\,000)$ bells arranged in a line, labelled 1 to N. The ith bell has a frequency of f_i Hz $(1 \leq f_i \leq 10^8)$. There are Q $(1 \leq Q \leq 50\,000)$ operations to perform.

There are two types of operations:

- `1 i f` Replace the ith bell with one with a frequency of f Hz.
- `2 l r` Output the number of distinct frequencies between the lth and r^{th} bell (inclusive).

There will be at most 1000 distinct frequencies at a time.

Fast input may be required.

Constraints

For 10% of the points, $1 \leq N \leq 100, 1 \leq Q \leq 100$.

For 90% of the points, $1 \leq N \leq 100\,000, 1 \leq Q \leq 50\,000$.

Input Specification

The first line contains two space separated integers, $N\ Q$, respectively the number of bells and the number of queries.

The next line contains N space separated integers, the frequency of the bells.

The next Q lines each contain a query in the format described above.

Output Specification

Output a single integer on its own line for each type 2 query.

Sample Input 1

```
6 3
1 2 1 4 4 2
2 1 6
1 2 1
2 1 3
```

Sample Output 1

```
3
1
```

Sample Output 1 Explanation

In the beginning, there are only 3 distinct frequencies which the bells have, 1 Hz, 2 Hz, and 4 Hz. After switching the second bell with one with a frequency of 1 Hz. There is only one distinct frequency among the first 3 bells.