People connect with each other in a social network. A connection between Person I and Person J is represented as $\mathbf{M\ I\ J}$. When two persons belonging to different communities connect, the net effect is the merger of both communities which I and J belongs to.

At the beginning, there are N people representing N communities. Suppose person 1 and 2 connected and later 2 and 3 connected, then 1,2, and 3 will belong to the same community.

There are two type of queries:

1. $\mathbf{M\ I\ J} \implies$ communities containing person I and J merged (if they belong to different communities).
2. $\mathbf{Q\ I} \implies$ print the size of the community to which person I belongs.

Input Format

The first line of input will contain integers N and Q, i.e. the number of people and the number of queries.
The next Q lines will contain the queries.

Constraints :
$1 \leq N \leq 10^5$
$1 \leq Q \leq 2 \times 10^5$

Output Format

The output of the queries.

Sample Input

```
3 6
Q 1
M 1 2
Q 2
M 2 3
Q 3
Q 2
```

Sample Output

```
1
2
3
3
```

Explanation

Initial size of each of the community is 1.