

Disjoint Sets

Time Limit: 5 Second
Memory Limit: 2048 MB

You are given a graph with n isolated vertices (i.e. there is no edge in the graph) labeled as $1 \dots n$. Write a program that supports the following two operations:

- *Union* $u\ v$: add an undirected edge between vertex u and v .
- *Count* u : count the number of vertices reachable from u in the current graph. A vertex v is reachable from another vertex u if you can reach v through a non-negative number of edges previous added by *Union* operations.

Input

The first line of input contains two integers n and m ($1 \leq n, m \leq 10^6$) - the number of nodes and operations.

The next m lines contain the description of the operations. Each line starts with one of *Union* or *Count*, and followed by two integers u and v ($1 \leq u, v \leq n$) if the operation is *Union*, or one integer u ($1 \leq u \leq n$) if the operation is *Count*.

Output

For each operation of type *Count*, output a single integer denoting the answer to the query.

Sample Inputs

```
5 5
Union 1 2
Union 2 3
Union 3 4
Count 3
Count 5
```

Sample Outputs

```
4
1
```
