

Zurikela is creating a graph with a special graph maker. At the beginning, it is empty and has no nodes or edges. He can perform **3** types of operations:

1. **A x** : Create a set of x new nodes and name it **set- K** .
2. **B x y** : Create edges between nodes of **set- x** and **set- y** .
3. **C x** : Create a set composed of nodes from **set- x** and its directly and indirectly connected nodes, called **set- K** . Note that each node can only exist in one set, so other sets become empty.

The first **set**'s name will be **set-1**. In first and third operation **K** is referring to the index of new set:

```
K = [index of last created set] + 1
```

Create the graph by completing the Q operations specified during input. Then calculate the **maximum number of independent nodes** (i.e.:how many nodes in the final graph which don't have direct edge between them).

Input Format

The first line contains Q .
The Q subsequent lines each contain an operation to be performed.

Constraints

- $1 \leq Q \leq 10^5$.
- For the first operation, $1 \leq x \leq 10^4$.
- For the second operation, $x < y$ and all y s are *distinct*.
- For the second and third operation, it's guaranteed that **set- x** and **set- y** exist.

Output Format

Print maximum number of *independent nodes* in the final graph (i.e.: nodes which have no direct connection to one another).

Sample Input

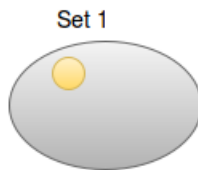
```
8
A 1
A 2
B 1 2
C 1
A 2
A 3
B 3 4
B 4 5
```

Sample Output

Explanation

There are 8 operations.

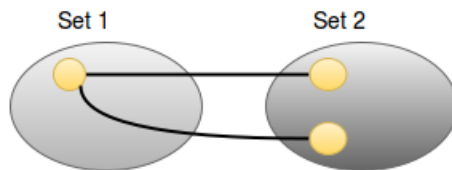
After first operation(**A 1**):



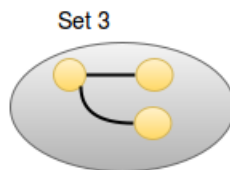
After second operation(**A 2**):



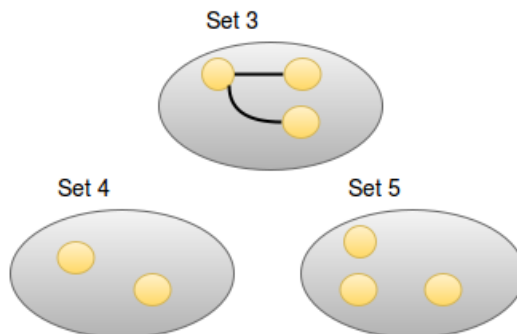
After third operation(**B 1 2**):



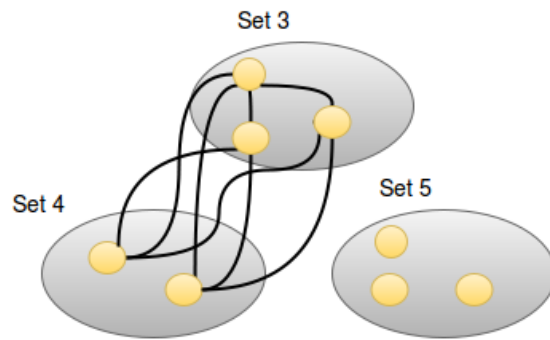
After fourth operation(**C 1**):



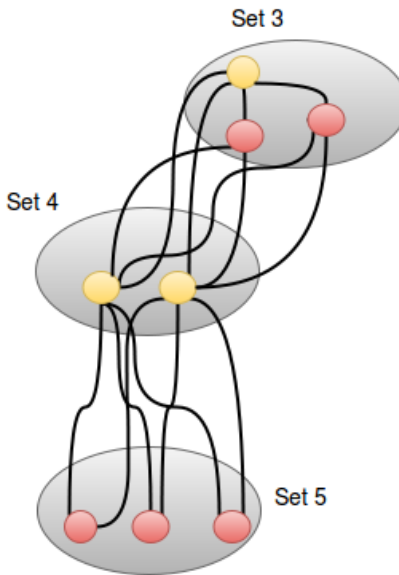
After fifth and sixth operation (**A 2**) and (**A 3**):



After seventh operation(**B 3 4**):



After eighth operation(***B* 4 5**):



There are **2** independent nodes in ***set-3*** and **3** independent nodes in ***set-5***, so we print their sum (**5**) as our answer.