

In computer science, a set is an abstract data type that can store certain values, without any particular order, and no repeated values(Wikipedia).  $\{1, 2, 3\}$  is an example of a set, but  $\{1, 2, 2\}$  is not a set. Today you will learn how to use sets in java by solving this problem.

You are given  $n$  pairs of strings. Two pairs  $(a, b)$  and  $(c, d)$  are identical if  $a = c$  and  $b = d$ . That also implies  $(a, b)$  is *not* same as  $(b, a)$ . After taking each pair as input, you need to print number of unique pairs you currently have.

Complete the code in the editor to solve this problem.

## Input Format

In the first line, there will be an integer  $T$  denoting number of pairs. Each of the next  $T$  lines will contain two strings seperated by a single space.

## Constraints:

- $1 \leq T \leq 100000$
- Length of each string is atmost 5 and will consist lower case letters only.

## Output Format

Print  $T$  lines. In the  $i_{th}$  line, print number of unique pairs you have after taking  $i^{th}$  pair as input.

## Sample Input

```
5
john tom
john mary
john tom
mary anna
mary anna
```

## Sample Output

```
1
2
2
3
3
```

## Explanation

- After taking the first input, you have only one pair: (john,tom)
- After taking the second input, you have two pairs: (john, tom) and (john, mary)
- After taking the third input, you still have two unique pairs.

- After taking the fourth input, you have three unique pairs: (john,tom), (john, mary) and (mary, anna)
- After taking the fifth input, you still have three unique pairs.