Java Hashset

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.

Note: Brute force solution will not earn full points.

Hints: Solve Java Comparator problem first!

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:
$1<=T<=100000$
Length of each string is atmost 5 and will consist lower case letters only.
The testcases were generated randomly.

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.