VM7WC '15 #5 Silver - Sets

This week, you are going to do some computer science. For real though, you are finding the minimum, but not of parabolas anymore. ;)

You will write a program to find the minimal solution to a set of set inequalities. Each line will be in the format "A contains X", where A may be any set name and (IMPORTANT!!!) X may be a set name or set element. If X is a set name the inequality means that A is a superset or equal to X. If X is an element the inequality means that A contains X. Sets are named A-Z and contain elements from a-z.

Have fun.

Input Specification

The first line of input specifies the number of set inequalities N with the next N lines containing one set inequality.

Output Specification

For each set name that appears in the input, your program must determine its minimal set: the smallest set of elements that the name must take in order that all of the inequalities hold. Output, in alphabetical order, each set name followed its minimal set, with the elements in alphabetical order, in the format shown below.

Sample Input

```
9
A contains B
A contains c
B contains d
F contains A
F contains z
X contains Y
Y contains X
X contains x
Q contains R
```

Sample Output

```
A = {c,d}
B = {d}
F = {c,d,z}
Q = {}
R = {}
X = {x}
Y = {x}
```