

Roger is researching the family tree for his pet quesnot Arthur. Quesnots are mythical animals who cooperate to raise a number of young. Adult quesnots form a parenthood of up to ten parents to raise a litter of young. Once the young have matured, all parents are exhausted and cannot help raise a second litter before they die.



Roger has determined some of Arthur's ancestors' families, but is having trouble determining whether certain relatives are ancestors of another. He has written a program to calculate this fact, but Roger requires lists of a particular format. Your job is to convert his family tree into one or more lists for him to use.

Input

A family tree will be given as input. Each line will consist of a quesnot name, possibly followed by a list of at most ten parents. Each name will be at most 30 characters, and may include letters, numbers, hyphens, spaces or periods. Names on a line will be separated by commas. There will be at least one and at most 5000 unique names in the tree, and no quesnot can be his own ancestor.

Recall that each quesnot will have at most one child. Brothers and sisters, aunts and uncles will not be included in the input. Each name will occur as the first name on a line at most once. You may assume that the first name on the first line is the bottom of the tree (i.e., will have no children), and that this is the only name in the file with no children.

Output

You are to produce a minimum number of lists with the following properties:

- Every quesnot mentioned in the tree occurs in each list exactly once,
- Quesnot *A* is an ancestor of quesnot *B* exactly when *A* appears before *B* in every list.

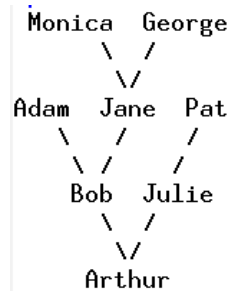
The first line of output indicates the number of lists *m*, $m > 0$. A blank line then appears. Following are *m* lists, each containing all names in appropriate order. A blank line appears between lists.

There may be several solutions satisfying these requirements. Any such solution may be chosen.

Note: The family tree corresponding to the Sample Input below looks like

Sample Input

```
Arthur,Bob,Julie
Bob,Adam,Jane
Jane,Monica,George
Julie,Pat
```



Sample Output

2

```
Adam
Monica
George
Jane
Bob
Pat
Julie
Arthur
```

```
Pat
Julie
George
Monica
Jane
Adam
Bob
Arthur
```