CODECON

Memory Limit: 1350 MB
Time Limit: 5 s

Minimum Sets (200 points)

Introduction

You are provided information for a collection of sets in a format that minimizes space utilization. To avoid repeating data which could be part of multiple sets, the data is present in our system exactly once. The sets, however show up multiple times. Your task is to parse out the data into each individual set and display the sets one after another.

Input Specifications

The first line will be the number of lines `1 < N < 100` followed by that many lines, each with one of the following tokens:

- A caret ^ followed by a single letter, indicating that set (named by that letter) is now open
- A unique signed integer, which now becomes a part of all currently open sets
- A slash / followed by a single letter, indicating that the set (named by that letter) is now closed.

Notes:

- Any number seen while a set is open will become a part of the set.
- This means that if a number is seen when a set is closed, then that set does not contain the number.
- This also means that you should ignore all lines where no sets are open.
- A set can be opened and closed multiple times during the course of data entry.
- Ignore the opening of a set, if it was already open
- Ignore the closing of a set, if it isn't currently open.
- Upper case letters and lower case letters are considered different set names.
- All numbers are unique.
- Empty sets (sets that were opened at some point, but do not have any contents) must still be included in the output.

Output Specifications

Print out the values in each set, with each set on its own line. The numbers within a set should be separated by a space character on that line, and in ascending order. The last character of each line should never be a space. The sets should be displayed in ASCII alphabetical order, where all lower case sets displayed after all upper case sets.

Sample Input/Output

Input

```
12
^A
3
^B
2
^C
/B
```

```
/C
-1
^B
4
/A
/B
```

Output

```
A -1 2 3 4
B 2 4
C
```

Explanation

The first set we see is A. Once it is opened, it is not closed (/A) until the end, so all numbers are a part of set A. Set B is opened after the number 3, but before the number 2. So, B contains 2. C is opened, B is closed, and C is closed, so C doesn't have any members. B is reopened again after -1 but before 4, so now set B contains both 2 and 4.