B. INI-file

time limit per test: 5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The INI file format is a de facto standard for configuration files. INI files are simple text files with a basic structure. They are commonly associated with Microsoft Windows, but are also used on other platforms.

Each line in INI-file stands for key-value mapping or defines new section. A key-value line has a format "`key=value`", where `key` — is the name of some property, and `value` — it's value. It is possible that it will be spaces from the both sides of `key` and/or `value`, the spaces should be ignored.

A section line has a format "`[section]`". It means that all key-value lines after it define properties of the specified section. Of cause, the following section line changes the current section. A section line may have spaces around any of brackets.

Also you should ignore comment lines — the first non-space character of comment line is "`;`".

You task is to write the program which will format given INI-file in a special way:

- first, print key-value lines which do not belong to any section;
- print all the sections in the lexicographical (alphabetical) order of their names;
- inside each of two previous items, order key-value lines lexicographically by "`key`";
- if there are more than one key-value lines with the same key inside a single section (or outside any sections), leave only one line (which appears later in the input data);
- remove all redundant spaces and lines.

Input

The first line contains single integer n ($1 \le n \le 510$) — the number of lines in given INI-file.

The rest of the input contains a valid INI-file in n lines. Values of `section`, `key` and `value` contain only Latin letters, digits, "`.`" and/or "`-`".

Each line has length not exceeding 255 characters and not less than 1 character. The total length of all the lines does't exceed 10000.

Output

Print formatted INI-file.

Examples

input

```
11
a= 1
b=a
a = 2
 ; comment
[z]
1=2
[y]
2=3
[z]
2=1
[w]
```

output

```
a=2
b=a
```

```
[w]
[y]
2=3
[z]
1=2
2=1
```