You have been asked to perform a simple lexical analysis of works of literature. As part of this analysis you need to determine how many words there are in a given piece of text. In addition you need to count how often each of the alphabetic characters ('a'..'z') occur within the given piece of text. The text is known to not only contain the lowercase characters 'a'..'z', but also the uppercase characters 'A'..'Z' as well as various punctuation characters '.' ',' '?' ''' ':' ';' '-'. Some of the text isn't well formatted and there may be multiple spaces between some of the words.

A word is defined as one or more non-whitespace characters, that contains at least one alphabetic character ('A'..'Z' and/or 'a'..'z').

No distinction should be made between an upper case and lower case character, for example, both 'A' and 'a' count as the same character.

Input

The input consists of an arbitrary number of records, but not more than 20.

Each record consists of a single line (terminated by a newline character - \n), representing a piece of text containing one or more words (not more than 10 000 characters and 1 000 words), which only consists of the characters listed above. There will not be any leading or trailing spaces on the lines.

The end of input is indicated by a line containing only '-1'.

Output

For each record, output a line with the first value indicating the number of words in the piece of text, followed by the number of times each of the 26 alphabet characters appeared within the text, $c_a \ldots c_z$. Uppercase and lowercase characters should be counted together, all other characters must be ignored.

Sample Input

```
The apple falls under the tree.
Careful, it can't be that easy
So ... you thought it was  obvious?
-1
```

Sample Output

```
6 2 0 0 1 6 1 0 2 0 0 0 3 0 1 0 2 0 2 1 3 1 0 0 0 0 0
6 4 1 2 0 3 1 0 1 1 0 0 1 0 1 0 0 0 1 1 4 1 0 0 0 1 0
6 1 1 0 0 0 0 1 2 2 0 0 0 0 5 0 0 0 3 3 3 1 1 0 1 0
```