Numerically Speaking

`numbers.p`, `numbers.c`, `numbers.C`

Foreign languages are one of the main problems met by the candidate countries. The people do not have good knowledge of languages. Then, electronic translators must come to help. A developer of such devices has decided to develop a mapping between all possible words and unique integers. Such mapping can also be handy for creating crossword puzzles and other similar word games.

The mapping is very simple, with the ordering being done first by the length of the word, and then alphabetically. Part of the list is shown below.

a	1
b	2
...	...
z	26
aa	27
ab	28
...	...
snowfall	157,118,051,752
...	...

Your job in this problem is to develop a program which can translate, bidirectionally, between the unique word numbers and the corresponding words. You may assume that no word will be longer than 20 characters.

Input Specification

Input to the program is a list of words and numbers, one per line starting in column one, followed by a line containing a single asterisk ("`*`") in column one. A number will consist only of decimal digits (0 through 9) followed immediately by the end of line (that is, there will be no commas in input numbers). A word will consist of between one and twenty lowercase alphabetic characters ("`a`" through "`z`").

Output Specification

The output is to contain a single line for each word or number in the input data. This line is to contain the word starting in column one, followed by an appropriate number of blanks, and the corresponding word number starting in column 23. Word numbers that have more than three digits must be separated by commas at thousands, millions, and so forth.

Sample Input

```
29697684282993
transcendental
28011622636823854456520
computationally
zzzzzzzzzzzzzzzzzzzz
*
```

Output for Sample Input

```
elementary            29,697,684,282,993
transcendental        51,346,529,199,396,181,750
prestidigitation      28,011,622,636,823,854,456,520
computationally       232,049,592,627,851,629,097
zzzzzzzzzzzzzzzzzzzz  20,725,274,851,017,785,518,433,805,270
```

P.S.: As you can see, some numbers in this problem clearly will not fit into a standard integer type.