Consider the following encoding scheme used in one famous compresion algorithm. Suppose we will code only sequences of lower case letters. Each such sequence of characters can be encoded to a sequence of pairs (p_i, r_i), where $p_i \geq 0$ is an integer and r_i is either a character (if $p_i = 0$) or an integer greater than zero and less or equal than p_i (if $p_i > 0$).

We describe now the decoding procedure for our encoding scheme. Let (p_1, r_1), (p_2, r_2), $\ldots$ be a code of a sequence. We get the sequence as follows: we take successively individual pairs of the code. If $p_i = 0$ then r_i is a character and we simply add r_i to the end of already decoded sequence. If $p_i > 0$ then r_i is an integer, $0 < r_i \leq p_i$, and we add to already decoded sequence r_i letters from this sequence starting at the position p_i places before the end.

For example, consider the sequence of pairs $(0a)$, $(1,1)$, $(0,b)$, $(3,3)$, $(3,3)$, $(3,2)$, $(0,c)$. Decoding $(0,a)$ we get "*a*". Decoding $(1,1)$ we get "*aa*". $(0,b)$ adds "*b*" getting "*aab*". $(3,3)$ will add "*aab*", so now we have "*aabaab*". Next pair $(3,3)$ will again add "*aab*" so we have "*aabaabaab*". $(3,2)$ will add "*aa*", so our sequence is "*aabaabaabaa*" and $(0,c)$ adds "*c*". So the decoded sequence is "*aabaabaabaac*". Note that in general for a given w it can exist more such sequences of pairs.

Let u, v be some sequences. By uv we will understand the sequence created by appending of the sequence v to the end of sequence u. Let C_w be a sequence of pairs which encodes a sequence of lowercase letters w. Suppose we have given a sequence of pairs C_w. The question is how many possibilities does exist for expressing the sequence C_w in the form $C_u C_v$ where u, v are sequences satisfying the equation $w = uv$ and neither u nor v is empty. Write a program that will answer this question.

Input

The input file consists of blocks of lines. Each block describes one sequence of pairs C_w to some w in such a way that the i-th line of the block contains either two integers p_i, r_i, $(r_i \leq p_i < 1000)$ separated by one space or '`0`' followed by one space and one character. Each block ends with one empty line.

Output

The output file contains the lines corresponding to the blocks in the input file. Each line contains the number of possibilities of representation of the sequence C_w in the form $C_u C_v$ where u, v are sequences satisfying the equation $w = uv$ and neither u nor v is empty.

Sample Input

```
0 a
1 1
0 b
3 3
3 3
3 2
0 c

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Sample Output

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1
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