

String

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Ivancho is exploring very long string. The string is the K-th element of recurrent row. In this row it is guaranteed that each element of the row is created from the previous two. The initial two strings are A and B. A is the first element of the row, B is the second. He is wondering what is the number of occurrences of string C in the K-th element of the row. As this string can be very long Ivancho can't find this number manually. You want to help him so you have to write the program **string**, that by given A, B and C, recurrent row and K – finds the occurrences of C in the K-th element of the row.

Each element of the row depends only on the last two. It is guaranteed that both of them are used in the generation of each element. The only operation that is performed between the both strings is concatenation. The N-th element of the row is described with the string R. It consists of capital letters X and Y denoting the N-2 th element and N-1 element.

Input

From the first 2 rows of the output file `string.in` are entered 2 strings - A and B. On the next row is given R. On the 4-th row is placed C and on the 5-th row is entered K – the number of the element of the row that Ivancho is

Output

On the single row of the output file `string.out` you must output the number of occurrences of C.

Constraints

$1 \leq |A|, |B|, |C|, |R| \leq 1\,000\,000$

$1 \leq K \leq 10\,000\,000$

Example

Input (string.in)	Output (string.out)