Problem E. Prefix Free Code

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

Consider n initial strings of lower case letters, where no initial string is a prefix of any other initial string. Now, consider choosing k of the strings (no string more than once), and concatenating them together. You can make this many such composite strings:

$$n \times (n-1) \times (n-2) \times \ldots \times (n-k+1)$$

Consider sorting all of the composite strings you can get via this process in alphabetical order. You are given a test composite string, which is guaranteed to belong on this list. Find the position of this test composite string in the alphabetized list of all composite strings, modulo $10^9 + 7$. The first composite string in the list is at position 1.

Input

Each input will consist of a single test case. Note that your program may be run multiple times on different inputs. Each test case will begin with a line with two integers, first n and then k ($1 \le k \le n$), where n is the number of initial strings, and k is the number of initial strings you choose to form composite strings. The upper bounds of n and k are limited by the constraints on the strings, in the following paragraphs.

Each of the next n lines will contain a string, which will consist of one or more lower case letters $a..z$. These are the n initial strings. It is guaranteed that none of the initial strings will be a prefix of any other of the initial strings.

Finally, the last line will contain another string, consisting of only lower case letters $a..z$. This is the test composite string, the position of which in the sorted list you must find. This test composite string is guaranteed to be a concatenation of k unique initial strings.

The sum of the lengths of all input strings, including the test string, will not exceed 10^6 letters.

Output

Output a single integer, which is the position in the list of sorted composite strings where the test composite string occurs. Output this number modulo $10^9 + 7$.

Examples

standard input	standard output
5 3 a b c d e cad	26
8 8 font lewin darko deon vanb johnb chuckr tgr deonjohnbdarkotgrvanbchuckrfontlewin	12451