Hittites

Hittites, an ancient central Anatolian civilization dating back as far as 1700 BC, left many valuable texts written on tablets in Hittite hieroglyphs. Archaeologists, in search of new articles, recently found a new tablet featuring a number of Hittite words. When the text on the tablet is deciphered, it is understood that the words indeed are codes used to distinguish Hittite citizens from people of other nations. From reliable sources of that time, it is also well-known that each person was assigned with **K**-length unique name. Checking whether a person is Hittite citizen was based on a simple rule: if any code on the tablet appears as a substring in a person's name, then the person is citizen otherwise not.

Given **N** codes on the tablet and name length **K**, your task is to find how many citizens Hittites can have. Clearly, none of such codes can be longer than **K**. Do not worry about hieroglyphs; the archaeologists already translated them into lower-case English letters.

Example

Let the tablet has **N**=2 codes (`aa` and `dbe`) and name length **K**=3, then the persons with names `aab`, `caa`, `aaz` and `dbe` are citizens as they contain `aa` or `dbe` as a substring. But the persons with names `dde`, `aba`, `ebd` and `xyz` are not citizens as they do not have either of the codes as a substring. Among the 26*26*26=17576 distinct names, only 52 (the answer to this example) of them contain either `aa` or `dbe` as a substring. Note that `aa` can be prefixed with 26 ways (`?aa`) and suffixed with 26 ways (`aa?`) too. Since `aaa` is common to both, there are 51 distinct words having `aa` as a substring.

Task

Please write a program that finds modulo (10^9+7) of the number of citizens that Hittites can have. The input/output format is explained below with a sample.

input file (`Standard Input`)	output file (`Standard Output`)
3 2 aa dbe	52

Input format: The first line has two space-separated integers (**K** and **N**, in this order). The next **N** lines contain **N** codes on the tablet (one code in each line). In the example, **K**=3, **N**=2 and the codes are `aa` and `dbe`. Length of each code is at most **K**.

Output format: One line with a single integer. The output is modulo (10^9+7) of the number of citizens that Hittites can have.

Subtasks

Subtask 1 (13 points)

1≤**K**≤5
1≤**N**≤10

Subtask 2 (19 points)

1≤**K**≤5 000
1≤**N**≤26
Length of each code is equal to 1

Subtask 3 (29 points)

1≤**K**≤5 000
N=1
Sum of lengths of **N** codes is at most 2 000

Subtask 4 (39 points)

1≤**K**≤5 000
1≤**N**≤2 000
Sum of lengths of **N** codes is at most 2 000

Implementation details

You have to submit only one file, called `hittites.c`, `hittites.cpp` or `hittites.pas`. The file implements your full program.