Powerful Strings

Time limit: *10000 ms*
Memory limit: *256 MB*

You are given an integer N and M strings S_i with lowercase, English letters. Consider a string of length N with lowercase, English letters. The power of that string is computed as 2^k where k is the total number of occurrences of strings from S. For example let $M = 2$, $S_1 = ab$ and $S_2 = c$. The power of $ababccca$ is equal $2^5 = 32$ because S_1 occurs twice and S_2 occurs three times. Your task is to calculate the sum of powers of all strings of length N modulo 998244353.

Standard input

The first line contains two integers N and M. Then M lines follow. The i-th of these lines contains the string S_i.

Standard output

Output one line with the sum of powers of all strings of length N modulo 998244353.

Constraints and notes

- $1 \leq N \leq 10^{18}$,
- $1 \leq M \leq 100$,
- for all $1 \leq i \leq M$, the length of S_i is not greater than 20

Input	Output
3 2 ab ba	17682

In the first example there are two strings aba and bab with power 4, exactly 100 strings with power 2 and 17474 strings with power 1.