Problem E. Stone Ocean

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4.5 seconds
Memory limit:	512 megabytes

In *JoJo*'s world, some people are capable of transforming their inner spiritual power into a *Stand*. Cujoh Jolyne, like his father, has *Stand Power*. Her Stand is called *Stone Free* which can manipulate strings. Unfortunately, she was framed and sentenced to 15 years in the Green Dolphin Prison. She needs to use her *Stand Power* to help her regain her freedom from the Stone Ocean.

Since she has just acquired her *Stand Power*, it will take her some time to get used to it. Now there are n strings $S_1, S_2, \ldots S_n$. She wants to train her power with these strings by the following steps:

1. Set index $i = 1$, and T as an empty string.
2. Choose a character from S_i uniformly and randomly, which means the probability of each character being selected is $\frac{1}{|S_i|}$, where $|S_i|$ is the length of S_i.
3. Append the chosen character to the back of T.
4. If $i < n$, increase i by 1 and go back to step 2.

After these steps, Cujoh Jolyne gets another string T. She defines the power value of T as the number of pemutations $p_1, p_2, \ldots, p_n$ that satisfy the following condition: $T_{p_1}T_{p_2}....T_{p_n}$ is a palindrome.

Recall that a palindrome is defined as a string that is identical when read from left to right or right to left. For example, `aa`,`aba`,`acca` are palindromes while `ab`,`cab` are not. A permutation $p_1, p_2, \ldots, p_n$ is a sequence where every integer from 1 to n appears exactly once.

To estimate the strength of her power, Cujoh Jolyne wants to know the expectation of the power value of string T.

Input

The first line contains an integer n ($2 \le n \le 30$).

For the next n lines, the i-th line contains a string S_i ($1 \le |S_i| \le 50000$, where $|S_i|$ is the length of S_i) consisting of lowercase letters only.

Output

Output an integer indicating the expectation of the power value of string T modulo 998244353. Formally, let $M = 998244353$. It can be shown that the answer can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \neq 0$. Output $p \cdot q^{-1} \bmod M$, where q^{-1} denotes the multiplicative inverse of q modulo M.

Examples

standard input	standard output
2 ab ac	499122177
4 aabcc abab bbaa acac	399297744

Note

For the first example, string T can be `aa`, `ac`, `ba`, `bc` with the same probability, and the power values of them are $2, 0, 0, 0$ respectively. So the expectation of the power value is $\frac{2+0+0+0}{4} = \frac{1}{2}$.