

Palindromic Palindrome Partition

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

You are given a string s of length n .

A partition of a string s is an ordered sequence of k contiguous non-empty substrings* t_1, t_2, \dots, t_k such that $t_1 + t_2 + \dots + t_k = s$, where $+$ represents string concatenation.

A partition is considered valid if it satisfies both of the following conditions:

1. Each substring t_i in the partition is a palindrome[†].
2. The sequence of substring lengths $|t_1|, |t_2|, \dots, |t_k|$ also forms a palindrome[‡].

The score of a valid partition is defined as k^2 , where k is the number of substrings in the partition.

For example, if the string is **abaccded**, then a valid partition is [**aba**, **cc**, **ded**] because, **aba**, **cc**, and **ded** are all palindromes, and the sequence of lengths [3, 2, 3] is also a palindrome. The score of this partition is $3^2 = 9$.

Your task is to compute the sum of scores over all valid partitions of s . Since the answer can be large, output it modulo 998 244 353.

*A string a is a substring of a string b if a can be obtained from b by deletion of several (possibly, zero or all) characters from the beginning and several (possibly, zero or all) characters from the end. For example, **stiu** is a substring of **austiupc**, but **stup** and **cpu** are not.

†A string is a palindrome if it reads the same forwards and backwards. For example, **abba** and **yobananaboy** are palindromes, but **abca** is not.

‡A sequence a of length n is a palindrome if $a_i = a_{n-i+1}$ for all i from 1 to n . For example, [1, 2, 10, 2, 1] is a palindrome, but [1, 2, 3, 4, 1] is not.

Input

The first line contains a single integer t ($1 \leq t \leq 1000$) — the number of test cases.

The first and only line of each test cases contains a single string s ($1 \leq |s| \leq 5000$).

It is guaranteed that the sum of string lengths $|s|$ over all test cases does not exceed 5000.

Output

For each test case, print a single integer — the sum of scores over all valid partitions modulo 998 244 353.

Example

standard input	standard output
5	1
a	5
aa	4
ab	34
aaxzz	173
babccbab	

Note

In the fourth test case, the valid partitions are:

- [aa, x, zz], score: $3^2 = 9$. Here, aa, x, and zz are all palindromes, and the sequence of lengths [2, 1, 2] is also a palindrome.
- [a, a, x, z, z], score: $5^2 = 25$. Here, a, a, x, z, and z are all palindromes, and the sequence of lengths [1, 1, 1, 1, 1] is also a palindrome.

The sum of all scores is $9 + 25 = 34$.

In the fifth test case, the valid partitions are:

- [babccbab], score: $1^2 = 1$,
- [b, abccba, b], score: $3^2 = 9$,
- [b, a, bccb, a, b], score: $5^2 = 25$,
- [b, a, b, cc, b, a, b], score: $7^2 = 49$,
- [b, a, b, c, c, b, a, b], score: $8^2 = 64$,
- [bab, cc, bab], score: $3^2 = 9$,
- [bab, c, c, bab], score: $4^2 = 16$.

The sum of all scores is $1 + 9 + 25 + 49 + 64 + 9 + 16 = 173$.