

Game Design

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

You are a game designer working on a new video game, *Outstandingly Captivating Platforming Challenge*. The game consists of n levels indexed $1 \dots n$, which the player must complete in that order. In addition to the normal progression, the levels are also connected through n one-way *warp portals*. A different team in your company has already completed the design of each level. They have placed one warp portal entrance and one warp portal exit in every level. Your task is to connect each entry portal to an exit portal on a **different** level such that each exit portal is also connected to only one entry portal.

However, there is an additional restriction: the player must not be able to skip ahead in the game. That is, the player must not be able to enter a portal, exit at a portal on a later level, and keep playing on that later level. In order to make this possible, the level designers have placed some exit portals in isolated locations from which the rest of the level is not accessible. That is: if an entry portal on level u leads to an exit portal on some level $v > u$, then the exit portal on level v must be in an isolated location.

You have already written a program to examine all allowed ways to connect each entry portal to an exit portal, in order to measure the predicted audience engagement. That program has been running for a while now, your boss is getting angry, and you want to know how long this program will take. Thus, calculate the number of allowed ways to connect each entry portal to an exit portal. Print the answer modulo 998 244 353.

Input

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

Each test case consists of a binary string s of length n ($2 \leq n \leq 5000$). The i -th character of s is 1 if the exit portal on level i is at an isolated location, and 0 otherwise.

It is guaranteed that the sum of n over all test cases doesn't exceed 5000.

Output

For each test case, print the answer modulo 998 244 353 on a separate line.

Example

standard input	standard output
4	3
0101	0
1010010010001010	44
11111	393298077
10100100011000010010101001001001	

Note

In the first example test, the valid configurations are $[2, 1, 4, 3]$, $[2, 4, 1, 3]$ and $[4, 1, 2, 3]$, where the i -th position in the array is the location of the exit portal connected to the entry portal on the i -th level.

In the second example test, there is no entry portal that can be connected to the exit portal on the last level.