

Sticks

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

Little Cyan Fish has an $n \times n$ matrix. Each row and each column has a stick on its left side and top side, respectively. Let x_i represent the length of the stick on the left side of the i -th row and y_i represent the length of the stick on the top side of the i -th column, where $0 \leq x_i, y_i \leq n$ and both are integers. Additionally, the sticks must not intersect, meaning there should be **no** $i, j \in [1, n]$ such that both $x_i \geq j$ and $y_j \geq i$ hold true.

Little Cyan Fish defines the matrix A as follows:

- For each $i, j \in [1, n]$, if $x_i \geq j$ or $y_j \geq i$, then $A_{i,j} = 1$; otherwise, $A_{i,j} = 0$.

Given an $n \times n$ matrix M containing 0s, 1s, and ?s, you need to determine how many different matrices can be formed by replacing each ? with either a 0 or a 1, so that there is at least one set of the sticks $\{x_1, x_2, \dots, x_n, y_1, y_2, \dots, y_n\}$ that could obtain this matrix. Since the answer may be large, output it modulo 998 244 353.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 3\,000$).

The next n lines of the input describes the matrix M . Each of the line contains a string of length n containing “0”, “1”, and “?”, indicating the matrix.

Output

Output a single line contains a single integer, indicating the answer.

Examples

standard input	standard output
2 ?? ??	14
5 ??1?? ?1??0 ??0?? ???1? ??1??	3144
10 0000000000 ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ??????????	361458985