Problem D. Angle Beats 2.0

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

You have a rectangular board consisting of $n \times m$ squares. Each square contains a character which is either "*" or ".".

A tromino is a figure formed by a square of the board, called the center, and two other squares, each sharing an edge with the center. A tromino is L-shaped if these two squares have a common vertex.

You can draw some disjoint L-shaped trominoes on the board. The center of an L-shaped tromino must contain "*", and each "*" should be a center of some tromino.

All non-center squares of all trominoes must contain ".".

Your goal is to find the number of ways to draw L-shaped trominoes under these constraints.

As the answer may very big, you only need to find it modulo 998 244 353.

Input

The first line of input contains one integer t ($1 \le t \le 250\,000$): the number of test cases.

The first line of each test case contains two integers n and m: the number of rows and columns of the board ($2 \le n, m \le 100$).

Each of the next n lines contains m characters, and each character is either "*" or ".". Together, these lines describe the board.

It is guaranteed that sum of $n \cdot m$ is at most 1 000 000.

Output

For each test case print one integer: the number of ways to draw L-shaped trominoes under given constraints.

Example

standard input	standard output
3 3 3 ... .*. ... 3 3 *.. ... ..* 3 3 ... ..* .*.	4 1 0