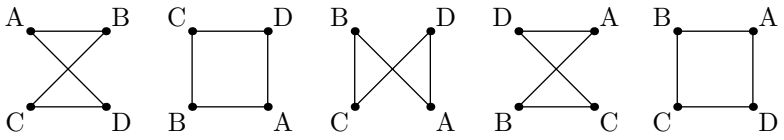
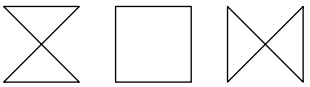
Loops

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

Consider four integers A, B, C, and D, such that $A < B < C < D$. Let's put them in the corners of a square in some order and draw a loop $A - B - C - D - A$. Depending on the arrangement of the integers, we can get different loop shapes, but some arrangements produce the same shape:

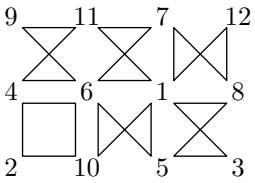


There are three possible loop shapes we can get:



type 1 type 2 type 3

Now consider an $n \times m$ matrix filled with distinct integers from 1 to nm, inclusive. Each 2×2 square in this matrix can be seen as a square with integers in its corners. Let's build a loop for each of these squares like we did before:



Your task is to perform the inverse operation. You are given the shape types for all $(n-1)(m-1)$ loops, and you need to build an $n \times m$ matrix filled with distinct integers from 1 to nm, inclusive, that produces these shapes.

Input

The first line contains two integers n and m ($2 \le n, m \le 500$).

Each of the next $n-1$ lines contains a string of $m-1$ characters without spaces. Each character is a digit from 1 to 3, denoting the type of the shape of the corresponding loop.

Output

Print an $n \times m$ matrix filled with distinct integers from 1 to nm, inclusive, that produces the shapes of the loops in the input.

It can be shown that such a matrix always exists. If there are multiple answers, print any of them.

Example

standard input	standard output
3 4 113 231	9 11 7 12 4 6 1 8 2 10 5 3