Problem A
Control Towers
Time limit: 2 seconds

You are an architect tasked with designing the new airport in your city. After you have completed your design, you just realize you forgot to allocate spaces for the control towers.

The layout of the new airport can be represented by a 2D grid of r rows and c columns, with the rows numbered from 1 to r (top to bottom) and the columns numbered from 1 to c (left to right). The cell in row i and column j is denoted by (i, j). Each cell can either be occupied or empty.

You need to place four control towers (numbered from 1 to 4), each in a different empty cell. To allow easier communication between different towers, for all $k = 1, 2, 3$, you want tower k and tower $k + 1$ to be placed either in the same row or in the same column.

You want to calculate the number of ways to place the control towers to satisfy the requirements above. Two ways are considered different if there exists k where control tower k is placed in different cells.

Input

The first line of input contains two integers r and c ($1 \le r, c \le 2000$). Each of the next r lines contains a string of c characters. The j-th character in the i-th line is `#` if cell (i, j) is occupied; otherwise, it is `.` (dot).

Output

Output the number of ways to place the control towers to satisfy the requirements above.

Sample Input #1	Sample Output #1
3 4 .#.# #... .###	10

Explanation for the sample input/output #1

Figure A.1 illustrates all 10 possible ways to place the control towers, where the cells numbered 1, 2, 3, and 4 represent control towers 1, 2, 3, and 4 respectively.

1	#	2	#
#	4	3	.
.	#	#	#
.	#	4	#
#	1	3	2
.	#	#	#

1	#	2	#
#	.	3	4
.	#	#	#
3	#	2	#
#	.	1	.
4	#	#	#

.	#	1	#
#	3	2	4
.	#	#	#
.	#	4	#
#	2	3	1
.	#	#	#

.	#	1	#
#	4	2	3
.	#	#	#
4	#	3	#
#	.	2	1
.	#	#	#

4	#	3	#
#	1	2	.
.	#	#	#
2	#	3	#
#	.	4	.
1	#	#	#

Figure A.1: All 10 possible ways to place the control towers.

Sample Input #2	Sample Output #2
4 6 ###### #.#.#. .#.#.# ######	0

Explanation for the sample input/output #2

It is impossible for any control tower in row 2 to be in the same column as any control tower in row 3. Since there are not enough empty cells to place all four control towers in the same row, there is no way to place the control towers to satisfy the requirements above.

Sample Input #3	Sample Output #3
1 10	5040

Explanation for the sample input/output #3

All $10 \times 9 \times 8 \times 7 = 5040$ ways of control tower positions satisfy the requirements above.

Sample Input #4	Sample Output #4
1 10 ##########	0

Explanation for the sample input/output #4

There is no empty cell to place any control tower.