Problem C. Cells Blocking

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	512 mebibytes

You are given a grid $n \times m$, and some cells are blocked.

You need to find the number of ways to block two free different cells such that there will be no path from $(1, 1)$ to (n, m) which goes down or to the right by only using free cells.

Note that it is not forbidden to block cells $(1, 1)$ and (n, m). They may be blocked initially as well.

Input

The first line contains two integers n and m ($1 \le n, m \le 3000$): number of rows and columns in the grid.

Each of the next n lines contain m characters, such that the j-th character of i-th string is equal to '.' if cell (i, j) is free and '*' if it is blocked.

Output

Print one integer: the number of ways to block two cells, such that there will be no path from $(1, 1)$ to (n, m) which goes only to the right or down by only using free cells.

Examples

standard input	standard output
3 3	17
3 3 .** .*. ...	15
3 4 **** .... ****	6

Note

In the first example, if you will block $(1, 1)$ or $(3, 3)$ and any other cell, there will be no correct path. The number of such ways is $8 + 8 - 1$.

Also, if you will block ($(1, 2)$ and $(2, 1)$) or ($(3, 2)$ and $(2, 3)$) there will be no correct path, so the answer is $8 + 8 - 1 + 2 = 17$.

In the second example, if you block any two cells, there will be no path, so the answer is $\binom{6}{2} = 15$.

In the third example, initially, there are no paths from $(1, 1)$ to (n, m), so after blocking any two cells there still will be no paths, so the answer is $\binom{4}{2} = 6$.