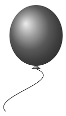
Problem I. Dwayne and Megan



Ballon:
Time limit: 1 seconds
Memory limit: 512 megabytes

Within the premises of a castle represented as an $N \times M$ grid, two individuals, **D**wayne and **M**egan, reside. The castle has doors marked with '#' symbols and empty spaces marked with '.' symbols. **D**wayne and **M**egan can only move in four directions: up, down, left, and right. Another person, referred to as **X**men, wants to separate **D**wayne and **M**egan by locking all the doors and constructing at most one new door at any empty location within the castle, except for the current positions of **D**wayne or **M**egan. The condition for **X**men to succeed is that there should be no path between **D**wayne and **M**egan that allows them to reach each other.

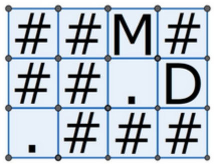


Figure 1: In the given diagram, **X**men can separate **D**wayne and **M**egan by placing a single wall between them.

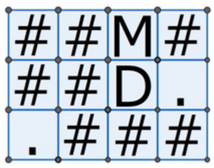


Figure 2: In the given diagram, **X**men cannot separate **D**wayne and **M**egan.

Find the number of pairs of positions for **D**wayne and **M**egan that allow **X**men to successfully divide them. Each square can only contain a single person, so **D**wayne and **M**egan must be in different squares. This means that there will be at least two squares containing '.' for them to occupy.

Input

The first line contains two integers N and M separated by a space, where $1 \leq N, M \leq 500$.

The next N lines each contain a string of length M consisting of '#' and '.', where '#' represents a door and '.' represents an empty space in the castle. It is guaranteed that there will be at least two squares containing '.'

Output

Print an integer representing the number of unique pairs of positions for **D**wayne and **M**egan that allow **X**men to divide them with at most one door.

Examples

standard input	standard output
3 4 ##.# ##.. .###	8
2 3 #.. #.#	2
2 3	0
4 5 #...# #.##. ..##. ..##.	86

Note

In example 1, there are 8 valid pairs of position **D**wayne and **M**egan.

1: $\begin{bmatrix} \# & \# & M & \# \\ \# & \# & . & D \\ . & \# & \# & \# \end{bmatrix}$ 2: $\begin{bmatrix} \# & \# & M & \# \\ \# & \# & . & . \\ D & \# & \# & \# \end{bmatrix}$ 3: $\begin{bmatrix} \# & \# & . & \# \\ \# & \# & M & . \\ D & \# & \# & \# \end{bmatrix}$ 4: $\begin{bmatrix} \# & \# & . & \# \\ \# & \# & . & M \\ D & \# & \# & \# \end{bmatrix}$

5: $\begin{bmatrix} \# & \# & D & \# \\ \# & \# & . & M \\ . & \# & \# & \# \end{bmatrix}$ 6: $\begin{bmatrix} \# & \# & D & \# \\ \# & \# & . & . \\ M & \# & \# & \# \end{bmatrix}$ 7: $\begin{bmatrix} \# & \# & . & \# \\ \# & \# & D & . \\ M & \# & \# & \# \end{bmatrix}$ 8: $\begin{bmatrix} \# & \# & . & \# \\ \# & \# & . & D \\ M & \# & \# & \# \end{bmatrix}$

In example 2, there are 2 valid pairs of positions:

1: $\begin{bmatrix} \# & . & D \\ \# & M & \# \end{bmatrix}$ 2: $\begin{bmatrix} \# & . & M \\ \# & D & \# \end{bmatrix}$