Problem 1. Painting Homes

A suburban street consists of *n* homes arranged in a row, each painted black or white. You are given a string *input* of length *n*, such that the *i*th character is 'B' if the *i*th house is black and 'W' if the *i*th house is white.

You consider the homes appealing if all black houses appear before all white houses OR if all white houses appear before all black houses. As a skilled painter, it takes you one day to repaint any one of the houses any color of your choice.

Write a function that takes the input string and returns an integer, the minimum number of days it will take to make the homes appealing. The input string is guaranteed to contain at most 50 characters.

Example Case 1:
Input:
"BBBB"

Output:
0

Example Case 2:
Input:
"WWBBB"

Output:
0

In the two example cases above, the homes are already appealing.

Example Case 3:
Input:
"WBBBWWWB"

Output:
2

We can paint the first house black and the last house white to produce the coloring "BBBBWWWW", which is appealing.

[NOTE: Quotes are not part of input/output.]

Problem 2. Square Frame

Hero and Villain are playing a game on an empty n (rows) by m (columns) board. Villain chooses a subset of cells forming a square **frame** one cell wide and marks them with the character 'X'. He then deletes an arbitrary number of his markings and shows the board to Hero. Every so often, Villain is extra tricky, and shows Hero a board that cannot be obtained through the above procedure. Help Hero write a program to determine the smallest possible side length of a square frame that Villain could have drawn, and return 1 if the required frame does not exist.

The first line of your input consists of two numbers: n (an integer from 15000) and m (an integer from 15000), specifying the dimensions of the board. The following n lines describe the board shown to Hero: each line is guaranteed to contain m characters character j on line i is '.' if the cell on row i and column j is empty and 'X' if the cell is marked.

Example Case 1:
Input:
3 5

.X.X.
.X...
.X.X.

Output:
3

The smallest square frame Villain could have drawn is the following:
.XXX.
.X.X.
.XXX.

Example Case 2:
Input:
3 5
.X...
..X..
...X.

Output:
1

Example Case 3:
Input:
2 2
.X
..

Output:
1
Example Case 4:
Input:
2 3
XXX
.X.

Output:
1