DMPG '18 S3 - Black and White IV

Time limit: 0.3s
Java: 1.0s
Python: 1.0s

Memory limit: 64M
Python: 256M

A particularly interesting math problem catches your eye! The problem is asking about an M by N grid. Some of these squares are coloured black while the rest are white. The grid in this problem is coloured in such a way that no four distinct black squares form a rectangle with sides parallel to the sides of the grid.

You are trying to see what kind of colourings of the M by N grid have this property. As such, you have given yourself a colouring of the grid. However, you aren't sure if the way you coloured it actually works.

Given a colouring of an M by N grid, determine whether or not there exist four distinct black squares which form a rectangle with sides parallel to the sides of the grid.

Clarification: These four distinct black squares must be exactly the four corners of the rectangle they form.

Constraints

Subtask 1 [20%]

$1 \leq M, N \leq 70$

Subtask 2 [30%]

$1 \leq M, N \leq 400$

Subtask 3 [50%]

$1 \leq M, N \leq 2\,000$

Input Specification

The first line will contain two space-separated integers, M and N in that order.
The next M lines will each contain a single string of length N. Each character will either be a `.` representing a white tile, or a `#` representing a black tile.

Output Specification

Output the answer on a single line. This answer should be `yes` if this colouring does **not** have a rectangle formed by four black squares. Otherwise, output `no`.

Sample Input 1

```
3 4
#.##
##..
..##
```

Sample Output 1

```
no
```

Sample Input 2

```
1 4
####
```

Sample Output 2

```
yes
```