The hungry knight   P17866_en

Examen extraordinari d'Algorísmia, FME (2013-07-03)

A knight is on a chess board. The knight can only move following the usual chess rules (that is, moving two units in one coordinate, and one unit in the other coordinate, for a total of up to eight possible movements), as long as the knight does not leave the board, nor it visits any forbidden cell. What is the minimum number of steps to reach a carrot?

Input

Input consists of several cases. Each case begins with the number of rows f and the number of columns c of the board, both between 3 and 200. Follow f rows with c characters each. A 'p' indicates a carrot, an 'x' indicates a forbidden cell, and a period indicates a free cell. Every case ends with the initial position (row and column) of the knight. The left-most cell of the first row is (1, 1). The initial cell is always free.

Output

For every case, if the knight can reach some carrot, print the minimum number of steps. Otherwise, print "no".

Sample input

```
3 3
...
..p
...
1 1

4 6
XXXXXX
X..XXX
XXXX.X
pX.XXX
2 3

3 4
XXXX
XXX.
XXXX
2 4

3 4
ppXX
p.pp
ppp.
3 4
```

Sample output

```
1
4
no
no
```

Problem information

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