

## U-turn

Mirko has been learning to drive, but he still cannot make a U-turn in a narrow street. That's why he has decided to go practice in a town where U-turns are forbidden everywhere.

Mirko has soon figured out that his ideal town must not contain dead-end streets, since it is impossible to exit such a street without a U-turn (let us assume that Mirko cannot drive in reverse either). Write a program to analyse a town map and determine whether the town is suitable for Mirko (i.e. whether the town has any dead-end streets).

The town map is a table with  $R \times C$  cells, where each cell is a building segment (denoted by X) or a road surface (denoted by a dot). From a road surface cell, Mirko can move to any of the surrounding four cells (up, down, left, or right), provided that it is also a road surface (i.e. not a building).

Formally, we will determine that a town is free of dead-end streets if, starting from any road surface cell and going in any of the possible directions, we can return to the starting cell without making a 180 degrees turn (changing our direction to the opposite one).

### Input

The first line of input contains the positive integers  $R$  and  $C$  ( $3 \leq R, C \leq 10$ ), the dimensions of the town.

Each of the next  $R$  lines contains  $C$  characters, with each character either "X" or ".". These  $R \times C$  characters represent the town map as described in the text above. At least two cells will be road surfaces, and all road surfaces will be connected (i.e. mutually reachable).

### Output

The first and only line of output must contain 0 if the town is free of dead-end streets, otherwise it must contain 1.

### Sample input

### Sample output

4 3 XXX X.X X.X XXX	1
5 5 XX.XX X...X  .... X...X XX.XX	1
3 9 ...XXX... .X.....X. ...XXX...	0