COCI '07 Contest 2 #3 Prva

Time limit: 0.6s **Memory limit:** 32M

Little Ivica solves crossword puzzles every day. In case you haven't seen one, a crossword puzzle starts on a grid of $R \times C$ squares, each of which is either empty or blocked. The player's task is to write words in consecutive empty squares vertically (top down) or horizontally (left to right).

Ivica's sister has a strange habit of looking at crosswords Ivica has finished solving, and finding the **lexicographically smallest word** in it. She only considers words at least 2 characters long.

Write a program that, given a crossword puzzle, finds that word.

Input Specification

The first line contains two integers R and C $(2 \leq R, C \leq 20)$, the number of rows and columns in the crossword.

Each of the following R lines contains a string of C characters. Each of those characters is either a lowercase letter of the English alphabet, or the character '#' representing a blocked square.

The input will be such that a solution will always exist.

Output Specification

Output the lexicographically smallest word in the crossword.

Sample Input 1

```
4 4
luka
o#a#
kula
i#a#
```

Sample Output 1

```
kala
```

Sample Input 2

```
4 4
luka
o#a#
kula
i#as
```

Sample Output 2

```
as
```

Sample Input 3

```
4 5
adaca
da##b
abb#b
abbac
```

Sample Output 3

```
abb
```