



## Task Desni klik

*NFP is the future!*, this is something all Noa's friends can expect him to say when finance topics come up.

NFP is one of the cryptocurrencies. The value of NFP over the course of  $s$  days can be represented with a matrix with  $r$  rows and  $s$  columns, consisting only of characters . and #. The character # in the  $i$ -th column represents the value of NFP on the  $i$ -th day, with the value being the number of the row, counted bottom-up.



```
....##.  
#...#...  
.##....  
.....#
```

The value of NFP from the second example over the course of 7 days was: 3, 2, 2, 3, 4, 4, 1.  
The insecurity of this NFP is 3.

The *insecurity* of NFP is defined as the difference between the maximum and minimum value it achieves over the course of  $s$  days.

Noa wants to determine the *insecurity* for  $n$  NFPs, whose values are represented by matrices with  $r$  rows and  $s$  columns.

Help him determine the *insecurity* of each of the  $n$  NFPs.

### Input

The first line contains integers  $n$ ,  $r$  and  $s$  ( $1 \leq n \leq 20, 2 \leq r, s \leq 50$ ), the number of NFPs, and the number of rows and columns of the matrices.

$n$  matrices follows, one below another, each with  $r$  rows and  $s$  columns, representing NFP values. Each column consists only of characters ., except for exactly one character #.

### Output

Print  $n$  lines. In the  $i$ -th of  $n$  lines print the *insecurity* od the  $i$ -th NFP.

### Scoring

Subtask	Points	Constraints
1	5	$r = s = 2$
2	15	$n = 1$
3	30	No additional constraints.



## Examples

**input**

4 2 2

##

..

..

##

#.

.#

.#

#.

**output**

0

0

1

1

**input**

1 5 8

.....#.#

...#.#. .

..#.#. . .

.#. . . . .

#. . . . . .

**output**

4

**input**

2 3 3

...

##.

..#

.#. .

#..

..#

**output**

1

2

**Note:** For clarity's sake, in the examples there are blank lines between matrices. In the test cases there will **not** be blank lines between matrices.

### Clarification of the first example:

The values of the first and the second NFP do not change over the days, so their insecurities are equal to 0. The value of the third NFP decreases by 1 on the second day, so the insecurity is equal to 1. The value of the fourth NFP increases by 1 on the second day, so the insecurity is equal to 1.

### Clarification of the second example:

The maximum value NFP has is 5 (on days 6 and 8), and the minimum value is 1 (on day 1). Therefore, the insecurity is equal to  $5 - 1 = 4$ .