A. Barcode

Time limit: 2s   Memory limit: 256 MB

You've got an *n*×*m* pixel picture. Each pixel can be white or black. Your task is to change the colors of as few pixels as possible to obtain a barcode picture.

A picture is a barcode if the following conditions are fulfilled:

- All pixels in each column are of the same color.
- The width of each monochrome vertical line is at least *x* and at most *y* pixels. In other words, if we group all neighbouring columns of the pixels with equal color, the size of each group can not be less than *x* or greater than *y*.

Input
The first line contains four space-separated integers *n*, *m*, *x* and *y* ($1 \leq n,m,x,y \leq 1000$; $x \leq y$).

Then follow *n* lines, describing the original image. Each of these lines contains exactly *m* characters. Character "." represents a white pixel and "#" represents a black pixel. The picture description doesn't have any other characters besides "." and "#".

Output
In the first line print the minimum number of pixels to repaint. It is guaranteed that the answer exists.

Examples

input
6 5 1 2 ##.#. .###. ###.. #...# .##.# ###..

output
11

input
2 5 1 1 ##### .....

| output |

```
5
```

Note

In the first test sample the picture after changing some colors can looks as follows:

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

In the second test sample the picture after changing some colors can looks as follows:

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