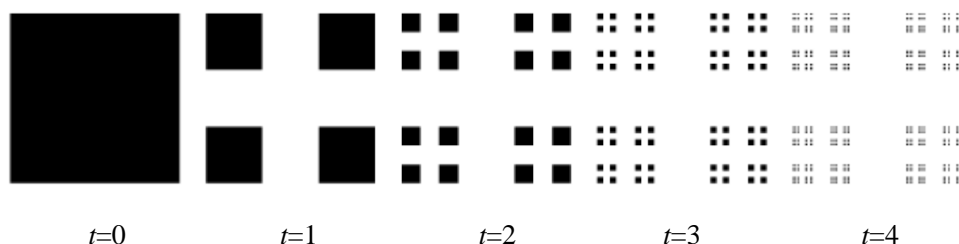# Cantor dust

Cantor dust is a two-dimensional fractal figure generated beginning with a square; with each iteration, remove the middle third horizontal and vertical stripe of each square in the figure. The following figure shows the first few stages:

| $t=0$ | $t=1$ | $t=2$ | $t=3$ | $t=4$ |

You are given a pattern which represents a rectangular pattern of black and white squares (represented by 'x' and '.' characters, respectively).

Request: Your task is to count the number of occurrences of this pattern in Cantor dust at iteration time. Overlapping occurrences are allowed.

Input

The first line contains 3 integers t, h and w, where:

- t is iteration time ($1 \le t \le 15$)
- h and w are height and width of the rectangular pattern. ($1 \le h, w \le \min(3^t, 5000)$, $1 \le h \times w \le 5000$)

Next, there are h lines, each line contains w characters representing one row of pattern. Each character is either 'x' or '.'. The characters do not have spaces between them.

Output

The number of occurrences of this pattern in Cantor dust.

Examples

Standard Input	Standard Output
1 2 2 .X ..	1
1 1 2 ..	2