Artificium

Cell's Doctor

Runtime Limit – 6s

Problem Statement

The game is played on a two-dimensional grid, with certain squares occupied by cells.

With each step, the cells' evolution is entirely determined by the state of the eight neighboring squares,

in the following way:

- In an *empty* square, a cell is born if it has exactly *three neighboring* cells.
- A cell that has *zero* or *one* neighbor *dies* from *isolation*.
- A cell that has *four* to *eight* neighbors *dies* from *suffocation* (lack of resource).

Your program must take multiple lines which will represent the cell and an integer *n* indicating the number of iterations to be done on the map.

Format

Input

Line 1: An integer *n* which will represent the number of iteration that should be done.

Line 2: An integer *s* size that will represent the number of lines of the input grid.

Next *s* lines: Contains the grid.

Output

The resulting grid after n iterations. Cells are represented using *'X'*, empty squares are represented using *'.'*

Constraints

Each step is independent, which means that the grid that corresponds to the n iteration is SOLELY based on the one that corresponds to the n-1 iteration

Sample

Input

```
2

5

.....

..X..

.X.X.

.....

...X.
```

Output

```
.....

.....

.XXX.

.....

.....
```