
Game of the life (2)

P27283_en

This exercise is a continuation of the exercise P26100: “Game of life (1)”

Let M_0 be a matrix with bacteria at the initial time, and let M_1, M_2, M_3, \dots be the matrices at the times 1, 2, 3, ... Write a program that, given M_0 , finds the cycle that is obtained starting at M_0 , that is, the first and shortest sequence of matrices $M_i, M_{i+1}, \dots, M_{j-1}, M_j$ such that $M_{j+1} = M_i$. Suppose $j < 100$.

Input

Input consists of the description of the matrix M_0 : two strictly positive natural numbers n and m , followed by n lines, each one with m characters: ‘B’ if the position has a bacterium, and ‘.’ if the position is empty.

Output

Print the matrices of the cycle $M_i, M_{i+1}, \dots, M_{j-1}, M_j$ separated by an empty line.

Sample input 1

```
7 7  
. . . . BBB  
.B.BBBB  
.B.BBBB  
..BBBBB  
.B.BBBB  
.B.BBBB  
. . . . BBB
```

Sample output 1

```
. . . . .  
. . . . .  
. . . . .  
BBB . . . .  
. . . . .  
. . . . .  
. . . . .  
.. . . .  
.. . . .  
.B . . . .  
.B . . . .  
.B . . . .  
. . . . .  
. . . . .
```

Sample input 2

```
2 2  
BB  
..
```

Sample output 2

```
..  
..
```

Sample input 3

```
10 10  
. . . . . . . . . . . .  
. . . . BBBB . . . . . .  
. . . . B . . B . . . . . .  
. BBB . . BBB . . . . . .  
. B . . . . . . B . . . . . .  
. B . . . . . . B . . . . . .  
. BBB . . BBB . . . . . .  
. . . B . . B . . . . . .  
. . . . BBBB . . . . . .  
. . . . . . . . . . . .
```

Sample output 3

```
. . . . . . . . . . . .  
. . . . BBBB . . . . . .  
. . . . B . . B . . . . . .  
. BBB . . BBB . . . . . .  
. B . . . . . . B . . . . . .  
. B . . . . . . B . . . . . .  
. BBB . . BBB . . . . . .  
. . . B . . B . . . . . .  
. . . . BBBB . . . . . .  
. . . . BB . . . . . .  
.. . . . .  
. . . . BB . . . . . .  
. . . . BBBB . . . . . .  
.. . . . . . . . . . . .  
. B . B . . B . B . . . . . .  
BB . . . . . . BB . . . . . .  
BB . . . . . . BB . . . . . .  
. B . B . . B . B . . . . . .  
.. . . . . . . . . . . .  
. . . . BBBB . . . . . .  
. . . . BB . . . . . .  
.. . . . . . . . . . . .  
BBB . . . . . . BBB . . . . . .  
.. . . . . . . . . . . .  
BBB . . . . . . BBB . . . . . .  
. . BB . . BB . . . . . .  
. . . B . . B . . . . . .  
. . . B . . B . . . . . .
```

Problem information

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