The English mathematician John Conway invented in 1970 the following game: Imagine a matrix with \( n \) rows and \( m \) columns. We consider neighbor positions to a given position the (at most, eight) adjacent positions, either horizontally, vertically or diagonally. Every moment, each position is either empty or it contains a bacterium. The rules are:

- An empty position at time \( t \) will contain a bacterium at time \( t + 1 \) if and only if at time \( t \) it had exactly three neighbor bacteria.
- An occupied position at time \( t \) will contain a bacterium at time \( t + 1 \) if and only if at time \( t \) it had two or three neighbor bacteria.

Write a program that, for every given matrix, prints it at the next moment of time.

**Input**

Input consists of several cases. Every case begins with \( n \) and \( m \) (both strictly positive), followed by \( n \) lines, each one with \( m \) characters: ‘\( B \)’ if the position has a bacterium, and ‘.’ if the position is empty. A special case with \( n = m = 0 \) marks the end of the input.

**Output**

For each case, print the matrix corresponding to the next moment of time using the same format of the input (do not print \( n \) and \( m \)). Separate matrices with an empty line.

**Sample input**

```
2 3
B.B
.B.

2 2
BB
BB

0 0
```

**Sample output**

```
.B.
.B.

BB
BB
```

**Problem information**

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