Painting a board — P40479_en

Write a program to paint several zones of an $n \times m$ board. Here, a zone is defined as a maximal set of adjoining cells, both horizontally and vertically.

Input

Input consists of several cases. Every case begins with the dimensions n and m, followed by n lines with m characters each. A character '#' indicates a wall. A dot indicates an empty cell. A lowercase or uppercase letter indicates what must be used to fill that zone. Every zone has at most one letter. Suppose $3 \leq n \leq 30$, $3 \leq m \leq 30$, and that the borders of the board only have walls.

Output

For every case, print the result of painting the board, followed by an empty line.

Sample input 1

```
6 10
##########
#....A...#
##########
#...##...#
##.z.....#
##########
7 15
###############
#..#......#..Z#
#Z#...#....#..#
##...#.#....#.#
#...#...#..#t##
#..#..a..#..#.#
###############
8 10
##########
#........#
#..#..#..#
#.#.#....#
#.#.#....#
#..#...b.#
#........#
##########
```

Sample output 1

```
##########
#AAAAAAAA#
##########
#zzz##zzz#
##zzzzzzz#
##########

###############
#ZZ#......#ZZZ#
#Z#...#....#ZZ#
##...#a#....#Z#
#...#aaa#..#t##
#..#aaaaa#..#.#
###############

##########
#bbbbbbbb#
#bb#bb#bb#
#b#.#bbbb#
#b#.#bbbb#
#bb#bbbbb#
#bbbbbbbb#
##########
```

Problem information

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