

Block Party (prob3)

There are a variety of games such as Bejeweled and Shape Shift that are played on a grid of tiles, each having a color and sometimes another image. A move is a swap of two tiles that have the same shape on them. When a swap results in a chain 4 or more of the same color, then those tiles are removed from the board and the tiles above them slide down to fill the gaps. (Two tiles are in a chain if they share a side.) After tiles have slid down, more chains might form. Note: No tiles slide until all chains in the current configuration of the board have been removed.

A board can be represented by a rectangular arrangement of letters. One such arrangement is shown in the figure below. On that board, there are two chains of length 4, one of the character "R" and one of the character "B". Note that to be a chain, the characters must be an exact match; case is significant.

The start of a sequence of reactions is shown in the figure. Reactions continue until there are no more chains. In real games, new tiles replace open spaces in the grid, but we will not be concerned with replacement tiles.

Write a program that processes the sequence of chain reactions in a board.

2 chains identified	Chains removed	Slide completed	Another chain...
Y O O G Y B Y G R G Y B b B O G R G O B Y B B G B R R B Y R Y R R O R B O Y B O B O Y G B Y B B G O O B Y B R G B B Y R R B O	Y O O G Y B Y G R G Y B b B O G R G O B Y B B G B B Y R Y O R B O Y B O O Y G B Y G O O B Y R G B B Y R R B O	Y O O Y G R G G B O G R Y Y B B G G B B Y R Y B Y b R B O Y B B B O Y G B Y O O G O O B Y O R G B B Y R R B O	Y O O Y G R G G B O G R Y Y B B G G B B Y R Y B Y b R B O Y B B B O Y G B Y O O G O O B Y O R G B B Y R R B O

Input

The input is a sequence of test cases, each representing a board. The first line of each test case contains two nonnegative integer values w ($0 < w < 256$) and h ($0 < h < 256$) separated by a space giving the width and height of the board (in tiles). The line containing the dimensions is followed by h lines of w non-blank characters each.

The end of input is indicated by a line containing 0 0 for w and h . This case should not be processed.

Output

The output for each test case is the number of the test case (where the first test case is numbered 1) followed by a colon and a space followed by an integer value that shows the number of tiles remaining after all reactions complete.

Sample input

```
7 9
YOOGYBY
GRGYBbB
OGRGOBY
BBGBRRB
YRYRROR
BOYBOBO
YGBYBBG
OOBYBRG
BBYRRBO
3 2
YBY
BYB
0 0
```

Sample output (corresponding to sample input)

```
1: 51
2: 6
```