Have you ever played Minesweeper? It’s a cute little game which comes within a certain Operating System which name we can’t really remember. Well, the goal of the game is to find where are all the mines within a *M × N* field. To help you, the game shows a number in a square which tells you how many mines there are adjacent to that square. For instance, supose the following 4 × 4 field with 2 mines (which are represented by an ‘\*’ character):

\*...

....

.\*..

....

If we would represent the same field placing the hint numbers described above, we would end up with:

\*100

2210

1\*10

1110

As you may have already noticed, each square may have at most 8 adjacent squares.

**Input**

The input will consist of an arbitrary number of fields. The first line of each field contains two integers *n* and *m* (*0 < n, m ≤ 100*) which stands for the number of lines and columns of the field respectively. The next *n* lines contains exactly *m* characters and represent the field.

Each safe square is represented by an ‘.’ character (without the quotes) and each mine square is represented by an ‘\*’ character (also without the quotes). The first field line where *n = m = 0* represents the end of input and should not be processed.

**Output**

For each field, you must print the following message in a line alone:

Field #x:

Where *x* stands for the number of the field (starting from 1). The next n lines should contain the field with the ‘.’ characters replaced by the number of adjacent mines to that square. There must be an empty line between field outputs.

*Sample Input*

4 4

\*...

....

.\*..

....

3 5

\*\*...

.....

.\*...

0 0

*Sample Output*

Field #1:

\*100

2210

1\*10

1110

Field #2:

\*\*100

33200

1\*100

The end result should be a web application (ideally combining the use of a java script framework such as JQuery, Angular, or similar) that gets the game settings from a Database (preferably SQL Server Express), computes the output and displays it on screen. Please do not use entity framework or any other similar framework to extract the data from the database. Your aim is to demonstrate

­

* ­efficient use of OO
* Possibly some design patterns
* Use of unit testing
* Separation of Concerns

PS – we know it is a simple program and maybe some patterns maybe an over kill for the solution. Don’t worry go ahead and use them