

How Many Bodies (of Water) Are There?

Filename: water

The Problem

Your boss has just given you crude pictures of a region, in pixellated form. In particular, the only thing you can tell based on each pixel is whether or not the sub-region it represents is land or water. The '~' character is used to denote a sub-region of water while the '.' character is used to denote land. For example, in the following 4 x 5 section shown below, there are two bodies of water:

```
~ . . . .  
~ . . ~ .  
~ . ~ ~ .  
~ . . . .
```

The first is a vertical line all the way on the left side of the grid, while the second is in a reverse L shape. We consider two pixels of water to be contained in the same body of water if they are connected to another pixel in the same body of water, either vertically or horizontally. Thus, the following 4 x 3 grid has 5 bodies of water:

```
~ . ~  
 . ~ .  
 . . .  
~ . ~
```

In this problem, your job will be to determine the number of bodies of water in a region represented by a map in this pixellated form.

The Input

The first line of the input file will contain a single positive integer, n , representing the number of maps to evaluate. Each of the maps follows. The first line of each test case will contain two positive integers, r ($r \leq 50$) and c ($c \leq 50$), the number of rows and columns in the map, respectively. The following r lines will contain c characters each (of which will be '.' or '~'), followed by a newline.

The Output

For each map, output a single line with the following format:

Map #X: Contains Y bodies of water.

where X is the 1-based case number, and Y is the number of bodies of water in that particular map. If there is one body of water for the particular map, format the statement as follows:

Map #X: Contains 1 body of water.

Sample Input

3

4 5

~.

~. . ~. .

~. ~ ~. .

~.

4 3

~. ~

. ~ .

. . .

~. ~

2 2

~~

~~

Sample Output

Map #1: Contains 2 bodies of water.

Map #2: Contains 5 bodies of water.

Map #3: Contains 1 body of water.