Count the Islands (/problems/counttheislands/info.pdf)

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Continuing your work as the executive hacking advisor for an upcoming film about pirates in the Caribbean sea, you discover that the film studio is already planning a sequel to release next summer. In this sequel, Captain Fact Arrow and her well-hydrated crew sail out of Flatlandia into the three-dimensional ocean. They enter an uncharted sea known only as the Greater Ocean Of Good-Looking Eugene's Yacht (the GOOGLEY sea).

Many fortnights ago, Good-Looking Eugene successfully navigated this sea in his personal yacht. He made no maps of the region, though, because his yacht is a self-sailing yacht that navigated the GOOGLEY sea while Good-Looking Eugene was preparing for a job interview.

As the greatest pirate on the high seas, Captain Fact wants to identify all of the islands in the GOOGLEY sea so that she and her crew can plunder them. Her lookout creates a chart of this part of the sea, which looks like this:

```
o,o,x,o,o,o
o,o,x,x,o,x
o,x,o,o,x,o
o,o,o,o,o,x
```

The `o`s represent open ocean and the `x`s mark the land. An island is a group of patches of land `x` that are connected to each other vertically or horizontally, but not diagonally. There is no limit on the size of an island.

Captain Fact wants to number the islands, starting in the top-left corner and traversing the map by row from left to right. When she finds an unnumbered island, she will mark it in its entirety before proceeding from where she left off. She numbers the first island with a 1, and she numbers all of the open ocean with a 0. Her algorithm for numbering islands produces the following chart of the sea:

```
0,0,1,0,0,0
0,0,1,1,0,2
0,3,0,0,4,0
0,0,0,0,0,5
```

Input

Each test case will start with a line containing two space-separated integers, **M** and **N** (1 <= **M** <= 100, 1 <= **N** <= 100). After this, there will be **M** lines, each containing **N** comma-separated characters. Each character will either be `x` or `o`.

Output

Output **M** lines, containing the **M** rows of the grid with the islands counted according to Captain Fact's algorithm. Each row should contain **N** integers, separated by a comma with no leading or trailing spaces, corresponding to each cell of the grid and its state as either open sea (`0`) or a part of a numbered island (`1`, `2`, `3`, `27`, etc).

Sample Case 1

```
4 6
o,o,x,o,o,o
o,o,x,x,o,x
o,x,o,o,x,o
o,o,o,o,o,x
```

```
0,0,1,0,0,0
0,0,1,1,0,2
0,3,0,0,4,0
0,0,0,0,0,5
```

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