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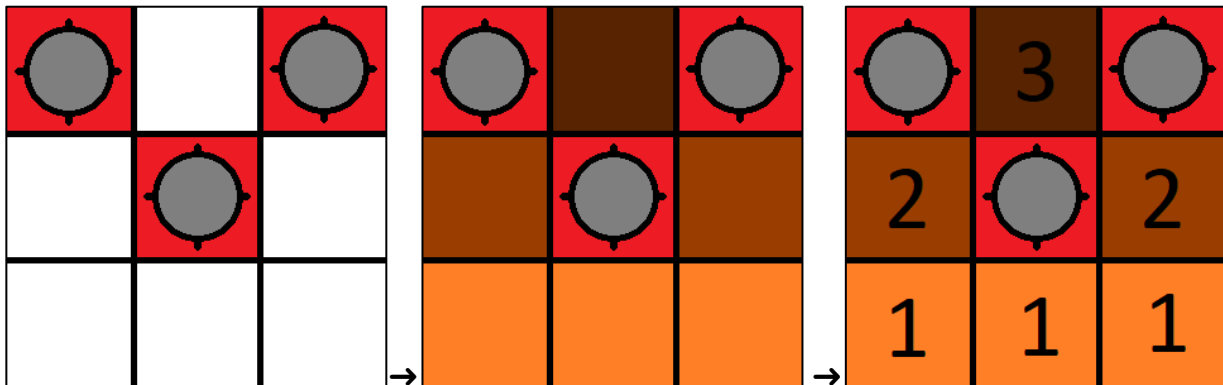
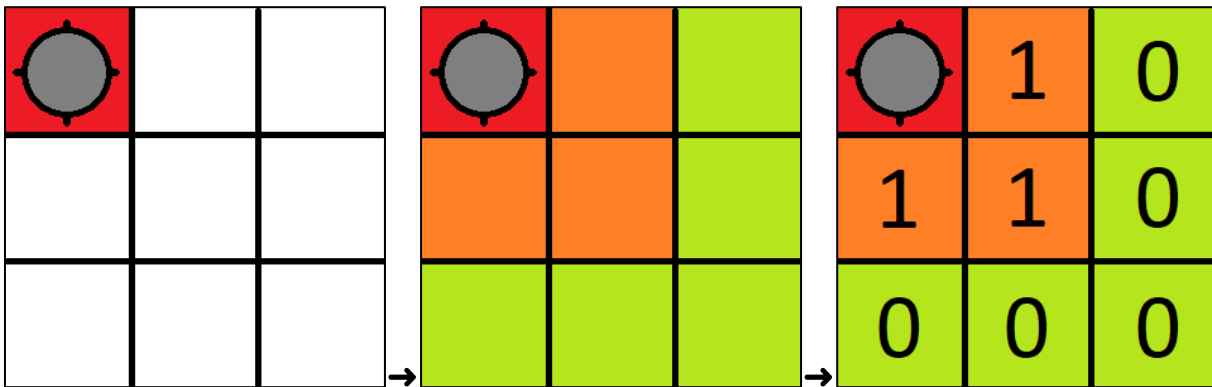
Minesweeper *9 points*

Introduction

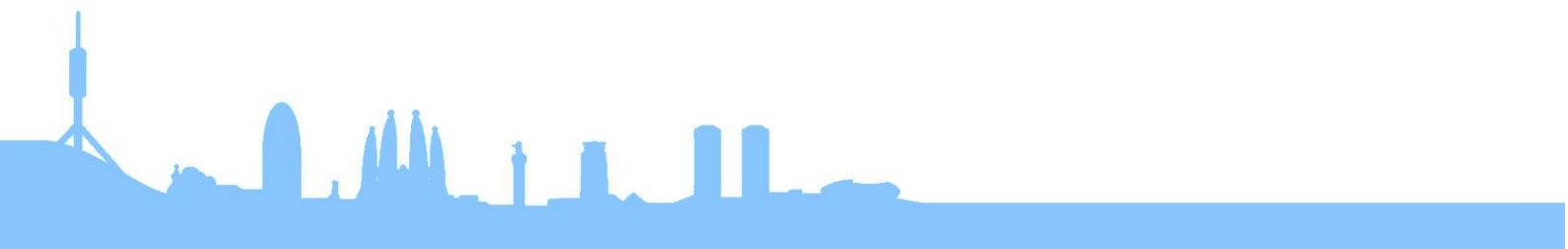
A mission has been entrusted to you.

The government is having trouble delimiting safe zones in places where mines have been detected. The objective is to indicate the level of each perimeter of the dangerous place. To do this, you will be assigned to a control zone, and the places where the mines were detected.

The president's words are very clear: "We need you to show us a map of the area, indicating the level of danger in terms of nearby mines, with 0 being an area that has no surrounding mines, and 8 an area completely surrounded by mines. Good luck."



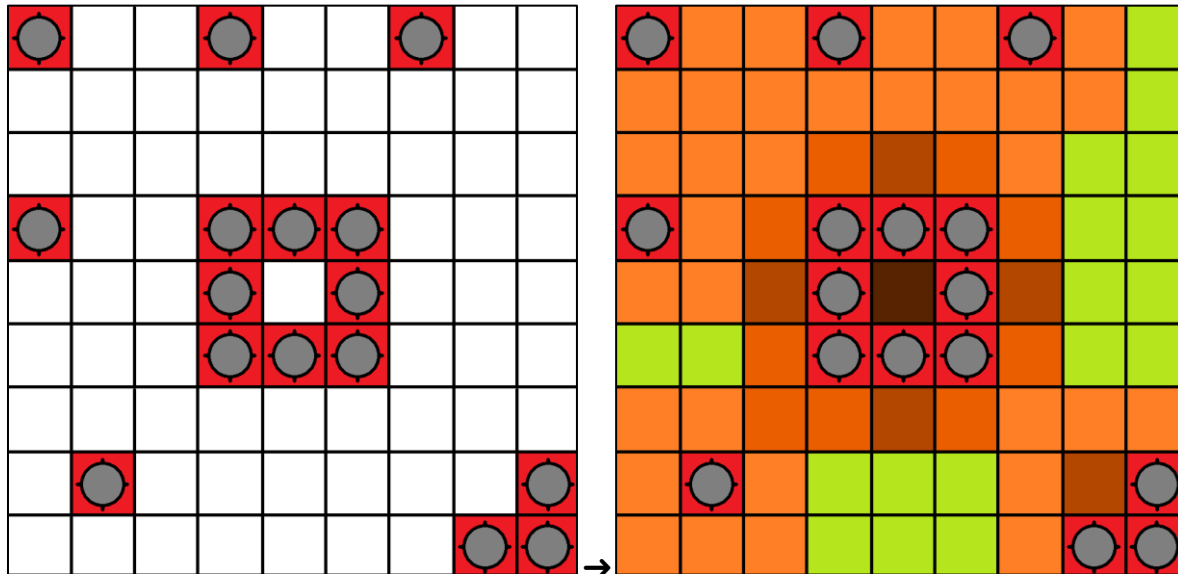
There are different area levels. You must differentiate between "Easy" areas, "Medium" areas and "Hard" areas.





LEVEL	DIMENSION
Easy	3 X 3
Medium	6 X 6
Hard	9 X 9

This is an example of a Hard Level area



Input

The input consists of:

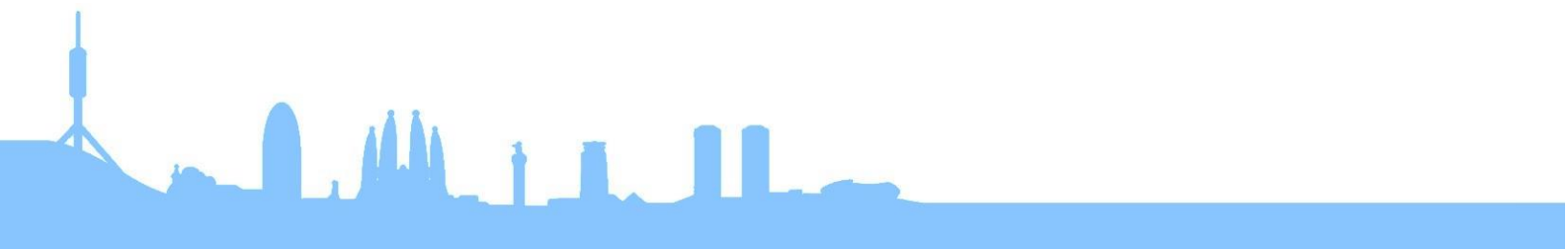
- The first line defines the area level to work in. (Easy, Medium or Hard)
- The second line is the number of mines on the area. (You must assume that there will always be at least one mine, and never more than the area capacity)
- A sequence of LINES representing each mine coordinate (x, y)



HINT: Notice that the first coordinate is (1,1).

Output

The output consists of the final map, representing the mines positions with the character "#", and each sub-area with the integer of nearby mines.





Example 1

Input

Easy

1

1 1

Output

#10

110

000

Example 2

Input

Easy

3

1 1

1 3

2 2

Output

#3#

2#2

111

Example 3

Input

Hard

16

1 1

1 4

1 7

4 1

4 4

4 5

4 6

5 4

5 6

6 4

6 5

6 6

8 2

8 9

9 8

9 9

Output

#11#11#10

111111110

111232100

#12###200

113#8#300

002###200

112232111

1#100013#

1110001##

