Programming Paradigms 2016-2017
Prolog Assignment: Minesweeper Puzzle

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1 Minesweeper

Your assignment is to build and test a prolog implementation of the puzzle game minesweeper. This puzzle variant on the classic game Minesweeper consists of a grid that holds a number of bombs. Using limited information from a few uncovered squares, your job is to find out the position of all bombs.

2 Prolog Program

Your prolog program will be given a specification of a minesweeper puzzle. A specification is a square matrix of characters. Alphanumeric characters represent the number of mines adjacent to that field. Empty fields contain an unknown number of mines adjacent to it (or an actual mine). The task is to write a program in prolog that solves arbitrary instances of these puzzles.

You must provide a rule minesweeper such that the following query is allowed and produces the required result:

```
example :- minesweeper([[_,_,2,_,3,_],
                        [2,_,_,_,_,_],
                        [_,_,2,4,_,3],
                        [1,_,3,4,_,_],
                        [_,_,_,_,_,3],
                        [_,3,_,3,_,_]], _).
```

results in

```
* 2 2 2 2 *
2 * 2 * * 3
1 1 2 4 * 3
1 2 3 4 * 2
2 * * * 4 2
* 3 3 3 * *
```

The first parameter is the starting grid, the second parameter should contain the result after completion. As a result of calling `example`, some clear string representation of the solved grid should be printed.

3 Practical

Submit your solution before the imposed deadline through Blackboard in a zip archive. Don't forget to add a README file that explains your project. You will only be able to make one submission on Blackboard. No solutions will be accepted via e-mail; only timely submissions posted on BlackBoard will be accepted and assessed; no extensions of the deadline will be granted. You are expected to work on this assignment individually. Recall that work submitted for grading must ultimately be your own work, reflecting your personal learning curve and performance. Cheating is a serious academic offense; we do not tolerate cheating, nor assisting others to do so.