CS4750/7750 HW #6 (20 point)

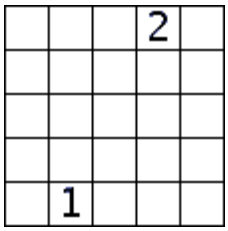
Fall 2016

(Due 10/27, Thursday)

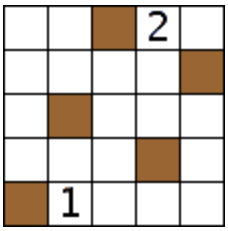
In this programming assignment, implement the backtracking search with the MRV and degree heuristic and forward checking to solve Latin Square Puzzles.

In each puzzle, shade in some of the squares so that: 1) no shaded squares are adjacent (including diagonally), 2) there is exactly one shaded square in each row and in each column, 3) no square containing a number can be shaded, and 4) each number should be equal to the number of adjacent (including diagonally) shaded squares.

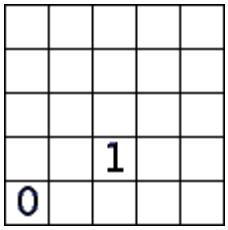
Example:

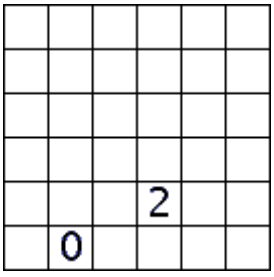


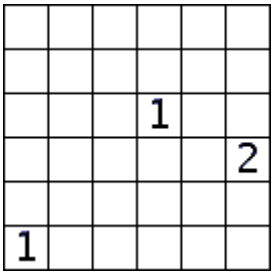
Solution:

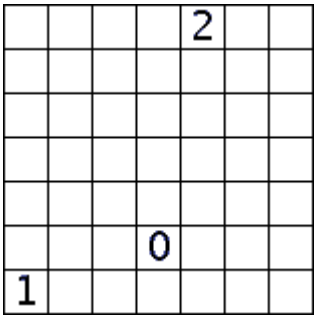


Solve the following four instances in the homework.









Submission:

a) A brief description of your algorithms and implementation.
b) The solutions of these instances.
c) The number of partial assignments examined during the search process (i.e., the number of search nodes) until finding a solution for each of the instances.
d) The CPU execution time of finding a solution for each of the instances.
e) Your code with appropriate comments.

You may form groups of up to three students in each group. The group can be different from those for other PAs. One solution is submitted by each group electronically in Blackboard. You may use any programming language in your implementation.

Your submission should be a single pdf file with file name containing your name and assignment number. For example, *firstname_lastname_hw6.pdf* for HW6.