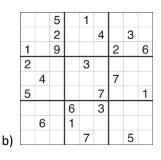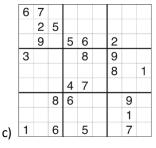# CS4750/7750 HW #6 (20 points)

This is a group programming assignment. You may use any programming language in your implementation.

In this assignment, you are asked to do the following tasks:

- Implement forward checking together with the backtracking search algorithm with the MRV and degree heuristics for variable selection to solve 9x9 Sudoku puzzle (https://en.wikipedia.org/wiki/Sudoku). Run forward check after each variable-value assignment during backtracking search.
- When selecting which variable to be assigned values in backtracking search, break variable ties in the left to right (primary) and top to bottom (secondary) order. Selecting the values to be assigned to a variable in increasing order of the values, i.e., 1, 2, etc.
- Run your program on the following three instances to find a solution for each instance. Terminate your program if it runs for more than one hour.



Submission:
1) (18 points) A pdf file of your report containing the following:
   a. (7 points) A description of your CSP problem formulation (define the variables, domains, and constrains) and implementation of forward checking and backtracking search with MRV and degree heuristic. If you use existing code, cite the sources.
   b. (8 points) For each of the three instances, print out the first 4 variable-value assignments in the backtracking search, including a) the variable selected, b) the domain size of the selected variable, c) the degree of the selected variable, and d) the value assigned to the selected variable.
   c. (3 points) For each instance, report its solution and the corresponding CPU execution time in seconds.

2) (2 points) A zip of pdf file containing your code with appropriate comments.