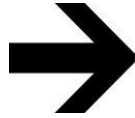


Name: \_\_\_\_\_

8				5			9	
1		2	4	9		3		
				2	1	6		
		1			5		2	
	3					5		7
5	9				4			
			9	8				6
9			5		3	8		4
		8			6			



8	4	3	6	5	7	2	9	1
1	6	2	4	9	8	3	7	5
7	5	9	3	2	1	6	4	8
6	8	1	7	3	5	4	2	9
2	3	4	8	1	9	5	6	7
5	9	7	2	6	4	1	8	3
4	1	5	9	8	2	7	3	6
9	2	6	5	7	3	8	1	4
3	7	8	1	4	6	9	5	2

Sudoku is a simple game with some very interesting computational characteristics. In case you've never played before, the rules are quite simple. Fill in all empty cells with numbers from 1 to 9, so that they don't appear more than once in each row, column and inside 3x3 block.

**Before class begins, discuss with those sitting next to you how you might build a Sudoku solver – a program that can take in an arbitrary Sudoku puzzle (of size n – see the slide) and find a working set of numbers. What is the Big O of your solution?**

You'll be turning this paper in, so don't use it for your class notes.

Do you think it is possible to express a Sudoku game as a boolean expression? That is, have a set of True/False variables that represent the state of a Sudoku board and a set of predicates that relate them. For example, you could define a variable  $\text{HasEight}(1,1)$  to denote the idea that there is an Eight in the upper left (1,1) position. Given that, what expression would express the rule that if there is an eight in the upper left hand corner then no other eight can exist in the top row?