CS105L: Discrete Structures
I semester, 2006-07

Homework # 5

Due before class on **Thursday, September 14th, 2006**

Instructor: Amitabha Bagchi

September 10, 2006

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

Figure 1: The rules of sudoku: Fill in the grid so that each row, each column and each of the 3×3 boxes marked contain all the digits 1 through 9. Warning: the sudoku in the figure has not been checked for correctness.

- Each solution must be fully argued. Simply writing the answer will be marked with a 0 even if the answer is correct.
- We will number the rows of the Sudoku grid 1 to 9 from top to bottom and number the columns 1 to 9 from left to right. The boxes will be numbered left to right column by column i.e. the top left box will be box 1, immediately to it's right will be box 2, immediately below it will be box 4 and so on.
- When we say a row, column or box is *filled* we mean it is filled feasibly i.e. according to the rules of Sudoku.

1. Given that row 1 has been filled, how many ways are there of filling row 2?
2. Given that row 3 has been filled, how many ways are there of filling row 4?
3. Given that box 1 has been filled, how many ways are there of filling box 2?
4. Given that box 1 and box 2 have been filled, how many ways are there of filling box 3?
5. Given that box 1 and box 2 have been filled, how many ways are there of filling box 6?