CS 461
Program 3 – logic programming
Due Sunday night, March 18

In this project, we will use logic programming to solve a variant on a Sudoku puzzle. The Prolog language is designed for this (its name is based on PROgramming LOGic). *Programs must be written in Prolog to receive credit.* Prolog is installed on Flarsheim lab computers and available as a free download for all major operating systems. See http://www.swi-prolog.org/versions.txt for more details.

A Hexadecimal Sudoku uses the 16 hexadecimal digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F) on a 16 x 16 grid, which is further divided into 4x4 sub-grids. Each hexadecimal digit appears once on each row, once in each column, and once in each sub-grid.

You are given a partially completed Sudoku; your task is to find a solution for it, if one exists. If more than one exists, you need only find one. (Finding more is nice, and you won't lose points for doing so, but you're only required to find one solution.)

Puzzle:

```
1....c3...5....a
.438.0d5..fab...
.b9..7.f..d.13..
.7...9.e.4....60
4e...f..8.....bc
.6d.9..87..124.f
.2.13....d...5..
..8.6......50.9.
.c.4e......f.2..
..b...4....83.a.
3.172..b4..c.60.
f8.....9..a...cb
7d....f.6.1...e.
..6e.n..2.7..0d.
...984..5c3.ab1.
8....2...0e....3
```

Solution:

```
102d4c369b57e8fa
e43810d5c6fab927
cb96a78f02de1354
57fab92e1483cd60
4e537f108926dabc
06dc9ef87ab1243f
92713ab4fdc0658e
ba8f6dc2e3450791
dca4e503b16f8279
69b2f14cd7083ea5
351728ab4e9cf60d
f8e0d67935a241cb
7d4503fa681b9ce2
a36ecb612f7450d8
8f0984e75c3dab16
81cb526da0e97f43
```

Submit your knowledge base (program) and a transcript of your console session. Your program will be tested against a different hexadecimal sudoku.