

COMP356 Homework assignment 10: final project (15 points)

Write a program of your choice in either Scheme or Prolog. The purpose and nature of the program are entirely up to you. The bulk of our last three classes will be devoted to lab periods for working on this assignment, which means you will have at least three hours of class time to work on it. The total amount of effort for the assignment should amount to no more than, say, 5 or 6 hours -- meaning that you are not expected to spend more than 2 or 3 hours outside class on this assignment.

As a rough guideline, your program should consist of at least a few dozen lines of code, and perhaps as many as one or two hundred lines of code. Your program should be clearly documented, stating the overall purpose of the program, and giving instructions on how to run it with sample input, in addition to comments explaining individual lines of code as necessary.

The emphasis for this assignment is on trying something new. Therefore, it will be graded generously. Any reasonable attempt to use the lab periods productively will receive 12/15 or better. Additional points will be awarded for ambitious or creative programs.

If you copy even small snippets of code from anywhere (online or a book), these must be clearly acknowledged in your comments. You will receive credit only for lines of code written by you.

Submit your program as a single file to Moodle by the due date and time.

Here are a few ideas for programs to write (but of course you should feel free to come up with your own idea):

- One or more classical algorithms. For example: shortest path in a graph, minimum spanning tree for a graph, one or more sorting algorithms, a graph matching algorithm or a min-cut algorithm, determining whether a number is prime, any kind of cryptographic primitive, string searching or matching
- One or more standard data structures. For example: binary trees, balanced binary trees (e.g. AVL or red-black), heaps, stacks, queues.
- A simple game like tic-tac-toe (with or without a good AI strategy).
- Generating magic squares using Prolog
- Any kind of simple database in Prolog, such as the running example we used in class with students, instructors, and courses.
- A simple object-oriented program in Scheme, using the object-oriented idiom demonstrated in class. (For example, something like the car dealership C++ assignment, but written in Scheme instead.)