

CS512 LABORATORY – WEEK 7 – Winter 2010

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Option 1: When still working on the midterm. This lab gives you the opportunity to work on your take-home midterm exam problems. You were given several files of Lisp code to use for the exam. If you have questions about this code, or about certain Lisp constructs in general, then ask your questions now.

Here are some additional suggestions and reminders:

1. Prefer to use the simpler Lisp constructs that you have seen used in the lecture and lab over constructs that we have not covered. Common Lisp has large number of quite powerful “macros” that look like tempting shortcuts to accomplish certain kinds of program logic. For beginning Lisp learners it is safer to stay away from these and work with the predictable basics you were taught.
2. Refrain from searching the Internet for “somewhat related looking code snippets” and hand them in as your own. Aside from this being plagiarism, more often than not, such “finds” do not meet the requirements of the exam problem, making the entire effort worthless. Write our own code and earn your points.
3. Remember that the midterm exam must be **individual work**. You will obviously be discussing aspects of the problems with each other. That is acceptable, and it can be educational and productive. However, whatever solutions who ultimately hand in, they must be the result of individual work.

Option 2: When done with the midterm. Those who are done with their midterm, can try their hand on implementing all functions necessary to solve instances of the “Tricky Fingers” puzzle.

“Tricky Fingers:” 16 colored marbles (4 red, 4 blue, 4 yellow, and 4 green) are encased in a transparent box. The bottom of the box is a 5x5 grid of round holes, each big enough to catch a marble. Marbles may be moved from hole to hole by gently poking your fingers through the holes on the bottom (instructor will demonstrate). Also given is a diagram that depicts a specific constellation of the 16 marbles in the 5x5 grid. Starting from a puzzle where the marbles are resting in some random pattern, what sequence of moves (“pokes”) will result in the goal pattern shown in the diagram.

This puzzle has similarity to the 15-puzzle, yet it has some distinguishing features. While the 15-puzzle has 15 distinct tiles labelled 1..15, “Tricky Fingers” has 4 sets of 4 indistinguishable game pieces. This fact should have consequences with regards to the difficulty of the puzzle. How will graph-search perform?

In short, define functions `succ-fct`, `eval-fct`, etc. in analogy to `puzz8.lisp`, run `itgs` in `gs.lisp` and see what we get.

Option 3: When done with the midterm. Suggest the implementation of any other worthwhile and doable idea you may be having.