

# COMP 9 Final Project

Due: Thursday, April 26th, 12:00 PM

March 30, 2011

## 1 Introduction

The final month of the course will be spent working in small groups on a final project. I hope that you come up with a project that interests and challenges you, and of which you can be proud.

- You could do an econometric simulation involving buyers and sellers.
- You could write a graphical version of a Blackjack game using the Shoes graphical toolkit (this would require working primarily on a Mac or Windows system, as our Linux machines won't run Shoes, even though it's available for some versions of Linux).
- Also using Shoes, you could write a graphical Tamagotchi, with buttons corresponding to actions and a display of the state of your pet.
- You could solve a fun algorithmic problem such as the Towers of Hanoi, or a sorting algorithm, with a textual representation of the towers and discs or the things being sorted.
- You could take the *Simian Similarity* assignment further in a way you find interesting:
  - try to overcome the limitation that we were looking only at *proteins* which correspond to *genes*. What about introns?
  - Look at several different species and come up with some overall measure of pairwise similarity, and come up with a representation of a *phylogenetic tree*

## 2 Requirements

You may work in groups of up to 4 people; you are *strongly discouraged* from working alone. The scope of this project is *too big* for one person.

You will come up with a project that sufficiently interests you, and will have approximately a month to work on it.

Please have your group meet with me (Prof. Daniels) within the next two weeks to discuss your project. Depending on what you decide to do, you may need me to explain some additional algorithms or techniques.

Your group will submit all code, graphics, and other files at the end of the semester using `provide`, and your group will give a presentation in the last week of the semester, showing the rest of the class what you've done.

You must email `ta9@cs.tufts.edu` with the names of all members of your group by *Friday, April 1st* at 5 PM.

## 3 Resources

### 3.1 Sorting visualizations

Check out [www.youtube.com/watch?v=kSyJb-EfNVI](http://www.youtube.com/watch?v=kSyJb-EfNVI) and related videos for some nice examples of what you might do. If you're interested in a project like this, please meet with me for a short introduction to sorting algorithms.

### 3.2 Shoes

Shoes is a graphical toolkit for Ruby development. It was developed by a mysterious character known only as ‘\_Why the Lucky Stiff’.

Shoes is available at [shoesrb.com](http://shoesrb.com)

The manual for Shoes is available at [shoesrb.com/manual/Hello.html](http://shoesrb.com/manual/Hello.html)

Shoes works on Linux, Windows, and Mac OS X, but does NOT work on the particular version of Linux we have in the labs. If you're interested in using Shoes, I suggest you browse the Shoes website.

### 3.3 MacRuby

MacRuby is an implementation of the Ruby language on top of the core technologies of Mac OS X. This gives it access to all the power of the Mac programming frameworks. MacRuby includes a library called HotCocoa, which makes it very easy to develop graphical Mac applications using MacRuby (Cocoa is the name of the graphical application development framework on Mac OS X).

MacRuby is far more powerful than Shoes, but is significantly more complex. My recommendation would be to try Shoes first, but you may have fun exploring MacRuby and HotCocoa.

MacRuby can be downloaded from [macruby.org](http://macruby.org)

All the MacRuby documentation is available at [www.macruby.org/documentation.html](http://www.macruby.org/documentation.html)

The HotCocoa documentation is at [www.macruby.org/hotcocoa.html](http://www.macruby.org/hotcocoa.html)

There are also three useful tutorials:

[www.macruby.org/hotcocoa/getting\\_started.html](http://www.macruby.org/hotcocoa/getting_started.html)

[www.macruby.org/hotcocoa/application\\_layout.html](http://www.macruby.org/hotcocoa/application_layout.html)

[www.macruby.org/hotcocoa/functionality.html](http://www.macruby.org/hotcocoa/functionality.html)

## 4 Design Document

Please answer the following questions:

1. Describe your project: what is it going to do?
2. If this project is based on an existing assignment, what major changes will be needed?
3. If this project is not based on an existing assignment, what questions do you need to answer before you start writing code?
4. Sketch out a rough design document for this hypothetical project proposal.
5. What classes might you want to write?
6. What do you need to look up (research) online?
7. On what items do you need to ask for advice?

## 5 Handing in your solution

Initially, have the course staff check over your design. Do not write any code on Thursday, March 31st.

You should create your project in a new directory; ultimately, you can submit *all* files in a directory as follows, if it's on the Linux lab systems:

```
provide comp9 final *
```

The asterisk means *all files in the current directory* so make sure all and *only* the files for this project are in that directory.

More importantly, you will have the opportunity to demonstrate your project to the class!

## 6 Presentation

We will take the last class session of the semester to present each group's project. We may invite some computer science students and faculty members to look on. We'll discuss guidelines for the presentations later in April.