

# CISC181H Spring 2009 Lab11

- Write a program for each of the following problems. Be sure to save every separate program. All programs must be properly commented and indented (see Assignment Standards on the class website). Ask your TA for guidance.
- Your group can schedule time to talk to the professor about project design issues. Just send an email with some times when you can all meet.

## Programs

1. Download the timing code and try it. Add timing for a function that uses a loop. Use “man” to look up the optimization options for g++ and CC on Strauss. Compile and run the code under at least three combinations that show different results. Do at least three runs under each option (why?) and graph the results for all functions.

This code probably contains C++ code you have not seen before. Be sure that you read it and understand it. Do not memorize formatting commands.

In the comments, write a brief definition of tail recursion in your own words.

2. Download friendVersions.cc. Do not modify the class def at all. Implement the definitions for all undefined functions.

For each operator = + - \* << write in the comments why the return type is, or is not a good choice. Understanding this is important for the final.

3. Implement a recursive binary search function and one using a loop. Time them searching an array of 100,000 elements, using good scientific method, xo and graph the results.
4. Prepare for your Friday group update: 5 minutes or less on 0) the version of the task(s) that you have accomplished, 1) what design issues you are thinking about, and 3) what you plan to do before next Friday. Everybody must present. Please do not read us long lists from slides.

You should have a total of 3 programs named lab11.1.cc to lab11.3.cc, plus any makefiles and written answers specified above. Make a single script file (see lab00 for the instructions) where you cat, compile, and run lab code in its final form.

Submit all 3 program files *and* your script on WebCT by midnight before your next lab. Give the paper version of the complete script file **only** on paper to your TA at the **beginning** of your next lab. Note: Cat, compile, and run each program in order - do *not* cat all programs, then compile, etc.