CS110 Practice Midterms

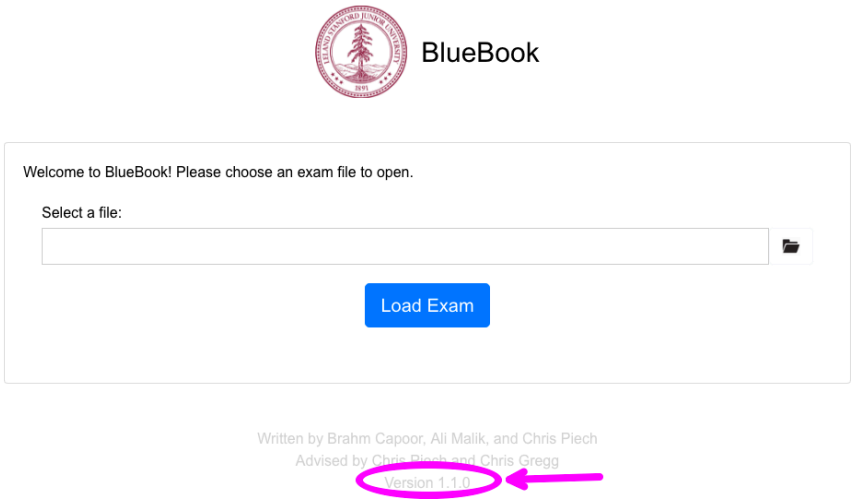
Midterm Details

- Date: Monday, October 28
- Time: 11:30am - 1:20pm
- Location: 320-105 (regular classroom)

The exam is closed book, closed note, closed electronic device. We will provide you with all of the C function prototypes and C++ classes that might be relevant to a particular problem, and you can always ask a CS110 staff member during the exam if you want to use a core C function or C++ class we didn't provide. Caveat: You are permitted to populate both sides of a single 8.5" x 11" sheet of paper with as much material as you can cram into it.

The exam will, of course, focus on the concepts we've learned during the first 7 lecture slide decks and first 8 lectures of the course (everything up to and including our discussion of signals and the OS scheduler, but no threading or related concurrency issues).

The exam will be taken using the BlueBook software. If you have taken a course that used BlueBook in the past two quarters, you should not have to re-download the software. When you open up BlueBook, you should see a version number of 1.1.0, as seen below:



The download links are here:

Mac Download
Windows Download
Linux Download

There is one practice midterm (Spring 2019) which is available to test on Bluebook:

Practice BlueBook Midterm
Password: **alligator**

Material

Here's the impressive list of topics you should be familiar with:

- You should understand how **`open`**, **`read`**, **`write`**, **`close`**, **`dup`**, **`dup2`**, **`stat`**, and **`lstat`** all work.
- You should understand file descriptor tables, the file entry table, the vnode table, and what type of information is stored in each.
- You should understand the UNIX v6 file system concepts, data structures, and layers you coded against for Assignment 2.
- You should be familiar with **`fork`**, **`waitpid`**, all of the various status macros, **`execvp`**, **`signal`**, signal handlers, signal blocking and unblocking, **`kill`**, **`raise`**, process ids and process groups, **`pipe`**, **`pipe2`**, and pipes.
- You should be familiar with the various concurrency issues that can come up as a result of a single code base controlling multiple processes.
- You should have a basic understanding of how the OS scheduler works (as covered in lab 3 (Thur/Fri October 17/18).
- You should understand your implementations of **`pipeline`**, **`subprocess`**, **`farm`**, and **`trace`**, from Assignment 3.
- You should understand all of the material in the lab handouts (although we will not test you on anything regarding tools —i.e. **`g++-5`**, **`gdb`**, **`valgrind`**, **`info`**, the **`/sys/proc`** pseudo filesystem, etc. will not come up).

Practice Midterms

Below is a collection of problems across four sample midterms that represent the type we might give . We'll write the exam with the idea that it can be completed in 80 minutes, but you will have 110 minutes with the hope there's virtually no time pressure.

Understand that we're under no obligation to replicate the structure of these practice midterms while writing yours, as we are only trying to give you a sense of what some CS110 midterm problems have looked like in the past. Some of the material on past exams is different from the material from this quarter. Note that some of the problems from the practice exams have been cannibalized to contribute to your lab handouts. We should be able to ask you any of those questions again and hold you responsible for their answers.

Here are links to the five practice midterms and their solutions:

- Practice Midterm 1 [solution]
- Practice Midterm 2 [solution]
- Practice Midterm 3 [solution]
- Practice Midterm 4 [solution]
- Practice Bluebook Exam (pw: alligator) [solution]