CMSI 387/587
OPERATING SYSTEMS
Spring 2010

Assignment 0318

Now that you've gone past the major "baptism of fire" that is building and modifying an operating system kernel, we move on with some programming in the process and threads realm.

Not for Submission

SGG Chapters 3, 4, and 5 constitute the supplementary reading for the material that has been covered recently or will be covered in the next week and a half or so.

For Submission

A Shell of Your Own

Modify the *fork-exec.c* program given out in class to implement your own command-line operating system shell. Commit your code to *homework/cmsi387/myshell* or *homework/cmsi587/myshell*.

In addition to the basic command prompt loop for entering a command then executing it, implement the following two features:

- Let a command ending with "&" run concurrently with the shell (i.e., just like *bash*).
- Make sure that the *cd* command works correctly (when you try this out, you'll see what I mean).

Threaded Matrix Multiplication

Do *Project 2* at the end of SGG Chapter 4, which implements matrix multiplication using threads. Use Pthreads for this assignment, and commit your code to *homework/cmsi387/matrix* or *homework/cmsi587/matrix*.

Extra Credit 1

Look up/figure out how to make your new shell *the default shell* of a User Mode Linux virtual machine. To get the extra credit, you must:

- Commit a text file called INSTALL in your *myshell* directory that documents, in step-by-step, how-to fashion, the process for installing and setting your new shell, **and**
- Schedule some time with me to demonstrate your installed shell in action.

Extra Credit 2

Add an "easter egg" to your installed shell so that, if the user types *secret-system-call* into your shell, it invokes the system call that you added to the kernel in Assignment 0304. To get this extra credit, include this "easter egg" code in your *myshell* source, **and** demonstrate your easter egg to me.