CIS 415 Operating Systems

Project 2 Report Collection

Submitted to:

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Report

Introduction

The goal of this project is to experiment with processes and scheduling. The ghost in the shell is made to run processes concurrently, and allows students to experiment with managing cpu time on their own. It also allows some use of the round robin scheduling technique.

Background

My main function is essentially an expanded-upon version of lab 1, and also simultaneously expanded upon project 1 in some sense. This is for the most part just the string parser, but outside of that, not much remains the same. The use of execvp and fork really changes the project from the other two aforementioned, as that's what really makes the project about concurrency.

Implementation

For my implementation, I took extreme advantage of Lab 1's built-in main function as a starting point, since I knew that would work with the string parser I created (also from Lab 1). Turning Lab 1's main into a functioning main for my project definitely sped up my process by roughly 5 hours. I also created a makefile early on that sped up my testing process a lot too, along with testing each command with my own personal test cases, since I could more easily see how the code might interact with the OS. Using the given executable was a big help with this project, since being able to see what the output was supposed to look like really helped give a better idea on what to look for in my code.

Performance Results and Discussion

My project works relatively efficiently, but more importantly doesn't have any memory leaks or bugs. The code works somewhat slow since there's a lot of intentional stopping and starting of processes, especially in parts 3 and 4. Overall though I would say it's pretty efficient except for the amount of repeated code, which could be simplified in some ways.

Conclusion

Overall this was another interesting project. I'm enjoying the complexity of them so far, since it feels like there's enough time to really dive into concepts and create bigger projects than I would be able to in other classes without the majority of the code being provided for me.