Project 1 Write Up

Sam Quinn

October 27, 2014

What do you think the main point of this assignment is?

This was the first time I have ever modified Linux source code. It was really cool to make our own I/O scheduler and actually have it work and use it for computing actual tasks. It was a good learning experience in regards to double checking your solution. Since overtime you make a change you cannot simplify just try it out it really opened my eyes to re-reading my code for correctness before I save to compile.

How did you personally approach the problem? Design decisions, algorithm, etc.

I personally first searched for and researched the concept of a "Shortest Seek Time First" scheduler. After I got a basic understanding that it is essentially a FIFO algorithm prioritizing I/O request closest to the read write head. After looking at the current schedulers installed on the computer with the command *cat /sys/block/queue/scheduler* I noticed that the Noop scheduler was installed by default. I then copied the Noop scheduler and adjusted the algorithm to add a descending prioritisation. Most of the structures used were already defined in the Noop Scheduler so transitioning was fairly simple.
My team and I devised a solution that will go through the entire queue and find which I/O request has the shortest seek time.

How did you ensure your solution was correct? Testing details, for instance.

We tested our solution by taking advantage of the *printk* function to print debugging information. With the debugging print statements in place we copied a folder with multiple files into a new location and analyzed the output via serial.

What did you learn?

I learned how to make an I/O scheduler which I thought would have been much more complicated. I did however take a look at the CFQ scheduler and notice that it is much more complex than the simple FIFO based algorithms I took advantage of. I also learned how to make a changes to source code and make the Makefile only re-compile my changes by deleting the '.o' file.