Getting Started
Project 2

Part 1 – Tracing System Calls

- Write an empty C program
  - Strace it to see how many syscalls it produces
- Write a small C program
  - Strace it to see how many syscalls it produces
- Iteratively change the small program until it is 8 calls more than the empty program
- Look at the new calls and see how they map to your code
  - e.g. what system calls come from a printf library call

Part 2 – xtime Module

- Setup a simple procfs hello world module
  - Provided on Canvas
- Store value of xtime on each proc read
  - Display in proc file
  - Use lxr to search the kernel
    - http://elixir.free-electrons.com/linux/v4.14.12/ident
- Take difference of last two xtime values
  - Not applicable on first proc read
  - Display in proc file
  - Similar to project 1's etime command

Part 3 – Elevator

- Start with a simple procfs module
- Design how the pieces should fit together
  - Don't just start writing code immediately
- Write the general framework
  - Use printk to help debug
  - Keep things simple
    - Handle 1 person per floor/elevator
    - Use very simple scheduler like SCAN
- Add system calls
  - Will allow you to start testing
  - Temporarily add an extra one to tick the elevator
    - Eventually elevator will have its own thread of execution then you can remove this
    - Alternatively, dual purpose the start_elevator call
- Add procfs output
  - Makes debuging easier
  - Needed for thread contention later
- Add in lists
  - To handle an arbitrary number of people per floor/elevator
- Add in threading / locking
  - Make sure code is working and robust before starting
- Make scheduler more complex
  - If you want extra credit

Project 2 Pacing

- Week of Feb 19
  - Install kernel
  - Email me your groups
  - Do part 1 and start part 2
    - Can be done alone
  - Start designing part 3
- Week of Feb 26
  - Finish part 2
  - Write elevator framework
    - Including simple scheduler
  - Setup system calls
  - Start testing regularly
- Week of Mar 5
  - Setup proc output
  - Add in linked lists
  - Start working on threading
- Week of Mar 12
  - Spring break
- Week of Mar 19
  - Finish threading and locking
  - Wrap everything up
    - Make sure to test throughly
  - Add in extra credit scheduler