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 6 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

●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 debugging 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 Sep 30
  - Install kernel
  - Email me your groups
  - Do part 1 and start part 2
  - Can be done alone
  - Start designing part 3

- Week of Oct 7
  - Finish part 2
  - Write elevator framework
  - Including simple scheduler
  - Setup system calls
  - Start testing regularly

- Week of Oct 14
  - Setup proc output
  - Add in linked lists
  - Start working on threading

- Week of Oct 21
  - Finish threading and locking
  - Wrap everything up
  - Make sure to test thoroughly
  - Add in extra credit scheduler
  - Schedule Presentation

- Week of Oct 28
  - Give presentation (will decide the venue later)