What did we do?

- OS theory
  - OSC book's suggested syllabus
    - http://codex.cs.yale.edu/avi/os-book/OS9/syllabi-dir/typical.html
  - Many things were added – ex) Linux implementations
  - But skimmed/skipped the following:
    - Deadlock theory – OSCE2 5.11 / OSC9 7.1-7.3
    - I/O systems – OSCE2 chapter 12 / OSC9 chapter 13, COMS 3827 & 4824
    - Network file system (NFS) – OSCE2 11.8 / OSC9 12.8
- Advanced UNIX programming
  - APUE book & http-server assignments
  - Many advanced topics including:
    - Signal handling
    - Multi-threaded programming, concurrency, locking
    - Non-blocking I/O, select(), mmap()
    - IPC – pipes, shared memory, domain sockets

What else did we do?

- Linux system administration
  - Arch Linux! – install, maintenance, and repair
  - Shell scripting and kernel compilation
  - I wish I had time to cover virtualization:
    - https://www.vmware.com/pdf/virtualization.pdf
    - https://www.vmware.com/pdf/asplos235_adams.pdf
    - http://www.virtualbox.org/manual/ch10.html
- Linux kernel programming
  - HW2: intro to crazy OS-level C
  - HW5, *aka Fridge*: system calls, kernel-level locking, wait queues
  - HW6, *aka Freezer*: new Linux scheduler
  - HW7: *aka Pantry:* simple file system from scratch!
  - HW8: *aka Cabinet:* understanding Linux page table structure
  - We skimmed/skipped:
    - Interrupt handlers and bottom half
    - Kernel synchronization using RCU
    - Kernel memory management & block I/O layer

A gamer says to an OS student:

You should get into gaming!

OS student says:

Who needs game when you got grep.

Please

- Fill out CourseWorks evaluation
- Remember your pledge
  - Don’t share class materials with friends
  - Don’t post any class-related code to GitHub
  - Don’t post exams to CourseHero

The most important thing I learned was not be afraid.

That's a harder lesson to learn that it sounds, because the only way to really learn it is to do the things you think sound hard. . . . this was the biggest takeaway for me from the kernel development work in OS.

- Andrew Kiluk

Hack on!