CS 3400: Operating Systems

Fall 2023	Topics	Project	Reading
Aug 21-25	introduction, os interfaces	building and running xv6	xv6 ch 1, 3ep ch 1-2
Aug 28-Sep 1	processes and address spaces	hello world OS	xv6 ch 2, 3ep ch 3-5
Sep 4-8 (<i>Labor Day</i>)		multicore, spinlocks	
Sep 11-15	stacks, context	coroutines mini-kernel	xv6 ch 3, 3ep ch 12- 15
Sep 18-22	synchronization	locks	3ep ch 16-24
Sep 25-29	interrupts, context switching	kernel threads, scheduling	xv6 ch 4
Oct 2-6	virtual memory	userspace, paging	xv6 ch 5
Oct 9-13 (Fall break)			
Oct 16-20	fork and exec, page tables	modes, system calls	xv6 ch 6, 3ep ch 25- 30
Oct 23-27			3ep ch 31-34
Oct 30-Nov 3	userspace threads	tour rest of xv6	xv6 ch 7, 3ep ch 6-7
Nov 6-10	userspace memory management		3ep ch 8-11
Nov 13-17	file systems		xv6 ch 8, 3ep ch 35- 38
Nov 20-24 (<i>Thanksgiving</i>)		malloc and free	3ep ch 39-46
Nov 27-Dec 1	distributed file systems		xv6 ch 9, 3ep ch 47- 51
Dec 4-8			

Changes to the schedule will be announced in class.

"xv6" refers to the <u>xv6 commentary book</u>, our guide to the xv6 operating system source code.

"3ep" refers to *Operating Systems: Three Easy Pieces*, our (free) primary text.

Resourses

- <u>Syllabus</u>
- <u>Xv6 main landing page</u>
- Examples from class
- <u>Multi-Threaded Programming with POSIX Threads</u>

To install the tools you need for this class using Debian 12 "Bookworm":

sudo apt install git build-essential gcc-riscv64-linux-gnu gdb-multiarch qemu-system-misc

To start with a fresh instance of xv6:

git clone https://github.com/mit-pdos/xv6-riscv.git

In the main directory you should be able to run make gemu to build and launch the system. Typing ctrl-a x will quit.

Presentation choices

- QNX (Nico, Tom, Brendan)
- VAX/VMS (Thomas, Chaz, Ryan L, Ryan R)
- Windows NT (Brevin, Jack, Calvin)
- ENIAC (Colby, Lexi)
- Multics (Max, Ben, Alyssa, Jerusalem)
- IBM System/360 (Hyrum, Ash, Jarod, Spencer)
- Plan 9 (Liam, Dason, Porter)

• EDSAC (Ryan C, Keaton, Gabe)