New York University Polytechnic School of Engineering

Department of Computer Science & Engineering

CS6233 Spring 2017

Operating Systems I Professor Callahan

Lectures: Wednesday 3:25 – 5:55 pm; JABS 474

Contact

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Course Description

This is a graduate-level course that covers an introduction to operating systems. It is geared at graduate students who have not had a good undergraduate course that covers the principles of operating systems. This material is critical for understanding anything about what is really going on in your desktop, your laptop, your phone and/or in your data center.

While it covers material that often finds its place in undergraduate curricula, we will be supplementing that material with some more recent results from the systems literature, and we will doing a lot of hands on homework to see what a real operating system looks like.

In addition, there is the opportunity to customize the material based on overall student background entering the course. Finally, we will also focus on some very recent commercial trends in the Operating Systems space, with particular focus on virtualization and how it is transforming the way we think about computing and the way that every Fortune-1000 company manages its information technology infrastructure.

Grading

30% Homework (Programming Projects)

30% Midterm

40% Final

Readings

Textbooks:

- Andrew S. Tannenbaum, **Modern Operating Systems**.

  Available from the NYU Bookstore
- Russ Cox, Frans Kaashoek, and Robert Morris, **xV6: A simple, Unix-like teaching operating system**.
  http://pdos.csail.mit.edu/6.828/2014/xV6/book-rev8.pdf

Useful references:

- Linux command line cheat sheet:
  http://cli.learncodethehardway.org/bash_cheat_sheet.pdf
- Gdb cheat sheet:
  http://darkdust.net/files/GDB%20Cheat%20Sheet.pdf

Course requirements

- Attendance will not be taken, but showing up is highly recommended.
- Assignments must be received by midnight on the day they are due. Late homework will not be accepted.

Cooperation Policy

You may work with at most one other person on every assignment. If you work with a partner, you must list the name of your partner when you turn in your assignment. Only one person needs to submit the assignment; if you both submit and your answers differ, there is no guarantee that both will be graded.

Academic Honesty

Aside from the narrow exception for collaboration on homework, all work submitted in this course must be your own. Cheating and plagiarism will not be tolerated. If you have any questions about a specific case, *please ask me.*

NYU Poly's Policy on Academic Misconduct:

http://engineering.nyu.edu/academics/code-of-conduct/academic-misconduct

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

Course schedule

In the following, **MOS** stands for "**Modern Operating Systems**" and **xV6** stands for "**xV6: A simple, Unix-like teaching operating system."** How much we will actually use xV6 is an open question.

Week	Date	Topic	Reading
1		Course Information. Overview of Computer Systems. Evolution of Operating Systems	MOS 1 xV6 0-1
2		PC Hardware & Assembly Language	MOS 1 xV6 0-1
3		The Boot Process System Call Interface	xV6 Appendix B
4		Process, Threads, and Scheduling	MOS 2 xV6 5
5		Memory Management	MOS 3.1-3.2 xV6 2
6		Virtual Memory	MOS 3.3-3.5 xV6 2
7		Device Drivers, Interrupts, and I/O Midterm Review	MOS 5 xV6 3
8		Midterm	
9		Concurrency	MOS 2-3, 2-5 and 6 xV6 4
10		Storage & Filesystems	MOS 4.1-4.4 xV6 6
11		Security	MOS 9
12		Virtualization Distributed Systems	MOS 7 MOS 8.3
13		Mobile OSs	
14		Advanced topics	

15		Final Exam Review	
		Final Exam	

NOTE: This syllabus is based upon Prof. Sandoval's syllabus from Fall 2016.