cs143A: Principles of Operating Systems
Lecture: Class Logistics

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Who am I?

- I build operating systems (since 2000)
- Bits of L4 microkernel, micro-ITRON, XenTT, LCDs, LVDs, RedLeaf
  - https://www.ics.uci.edu/~aburtsev/

Class details

- Undergraduate
  - 203 students
- Instructor: Anton Burtsev
- Meeting time: online
- 4 TAs
  - Tian, Hans, Xiangdong, and Yuchen
  - Send us private message on Piazza
- Web page
  - https://www.ics.uci.edu/~aburtsev/143A/

This course

- Inspired by
  - MIT 6.828: Operating System Engineering
  - https://pdos.csail.mit.edu/6.828/2018/
  - Adapted for undergraduate students
- We will use xv6
  - Relatively simple OS kernel (only 9K lines of code)
  - Reasonably complete UNIX kernel
  - https://pdos.csail.mit.edu/6.828/2018/xv6.html
- xv6 comes with a book
  - https://pdos.csail.mit.edu/6.828/2018/xv6/book-rev11.pdf
- And source code printout
  - https://pdos.csail.mit.edu/6.828/2018/xv6/xv6-rev11.pdf

More details

- 5-6 homeworks
  - Several small ones (designed to help you)
    - Create a simple Makefile, simple UNIX programs
    - Become familiar with GDB
    - Learn what’s inside the program (how it gets linked and loaded)
  - Several big ones
    - Implement a shell
    - Implement a system call
    - Build POSIX threads

More details

- Small online quiz every week about the lectures
  - On Gradescope
- Midterm
- Final
- Grades are curved
  - Homework: 50%, quizzes 15%, midterm exam: 15%, final exam: 20% of your grade.
  - You can submit late homework 3 days after the deadline for 60% of your grade

Another Book

“Operating Systems: Three Easy Pieces” (OSTEP) Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau

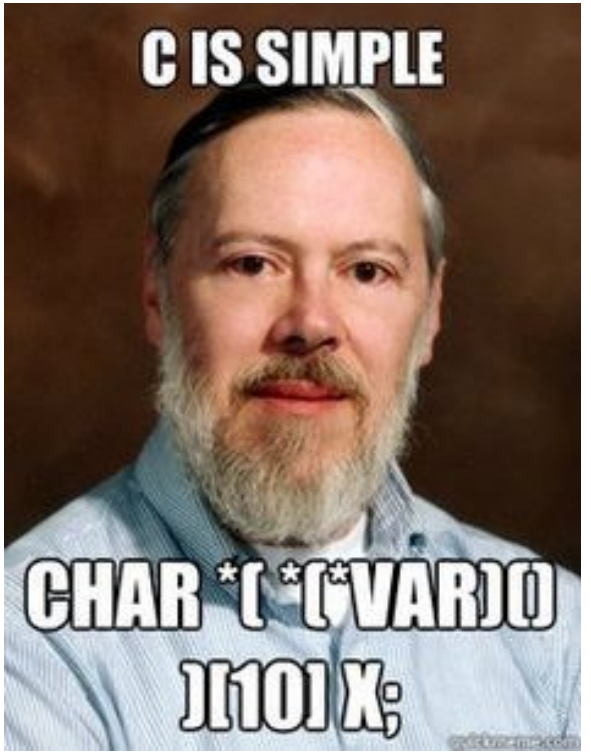
- Free online version http://pages.cs.wisc.edu/~remzi/OSTEP/

Course organization

- Live Zoom lectures (recorded)
  - High level concepts and abstractions
  - You have to watch them before coming to discussion sessions
- Live Zoom discussion (once a week, recorded)
  - Rotating schedule
- Reading
  - Xv6 book + source code
  - Bits of OSTEP book
- Homeworks
  - Coding real parts of the xv6 kernel
- Design riddles
  - Understanding design tradeoffs, explaining parts of xv6

Prerequisites

- Solid C coding skills
  - Xv6 is written in C
  - You need to read, code, and debug
  - All homeworks are in C
  - Many questions will require explaining xv6 code
- Be able to work and code in Linux/UNIX
- Some assembly skills



How to succeed?

- Read the source

How to succeed (2)?

- Don’t get scared
  - The class is hard
  - The goal is to teach you how real OS works, and it’s non-trivial
  - Homeworks and exams are challenging
    - We’re very generous graders

Thank you!
Questions on Piazza!

Demo: Hello world!