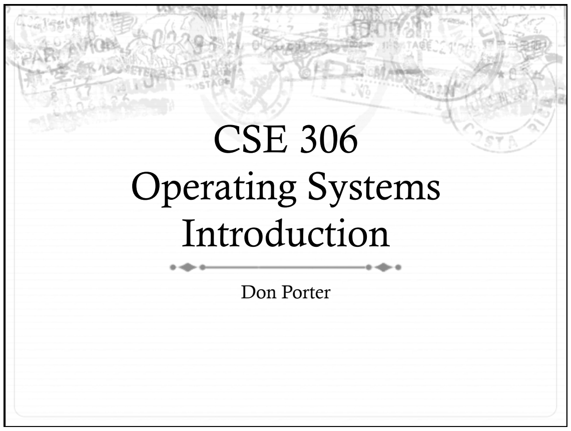
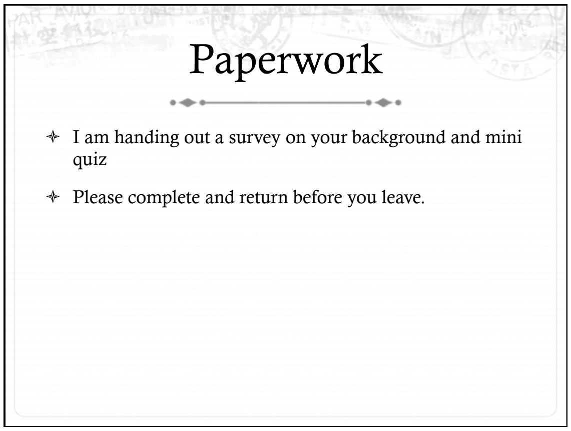


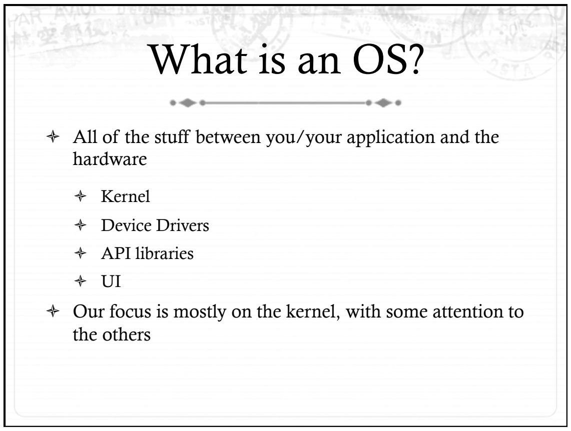
CSE 306 Operating Systems Introduction

Don Porter



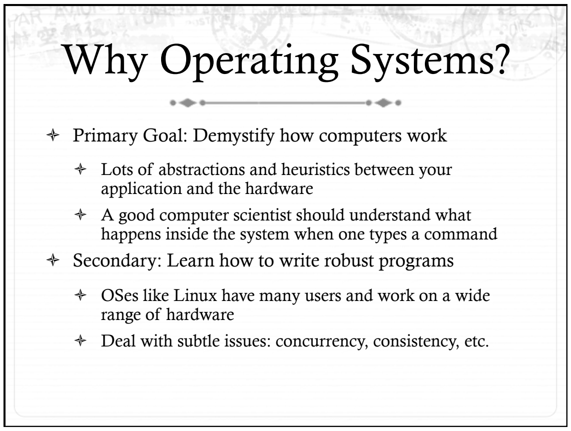
Paperwork

- I am handing out a survey on your background and mini quiz
- Please complete and return before you leave.



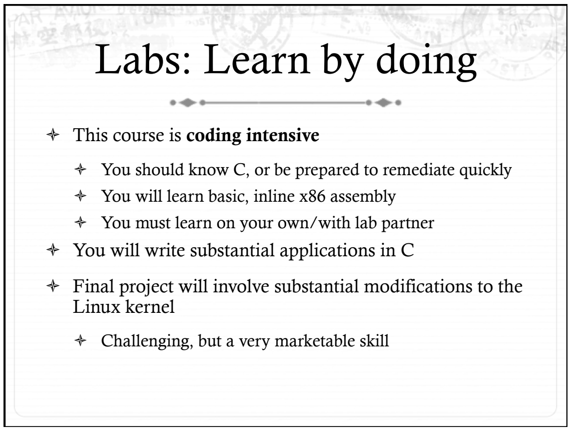
What is an OS?

- All of the stuff between you/your application and the hardware
  - Kernel
  - Device Drivers
  - API libraries
  - UI
- Our focus is mostly on the kernel, with some attention to the others



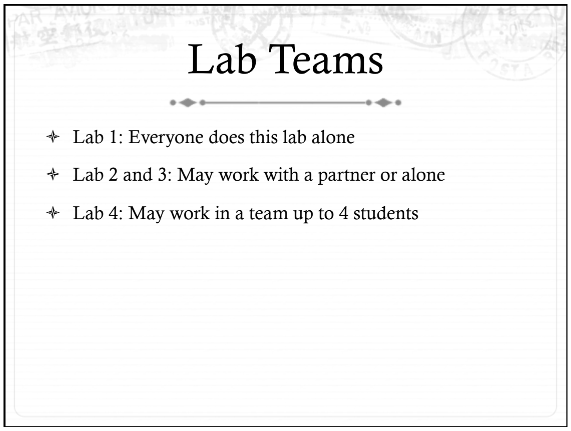
Why Operating Systems?

- Primary Goal: Demystify how computers work
  - Lots of abstractions and heuristics between your application and the hardware
  - A good computer scientist should understand what happens inside the system when one types a command
- Secondary: Learn how to write robust programs
  - OSes like Linux have many users and work on a wide range of hardware
  - Deal with subtle issues: concurrency, consistency, etc.



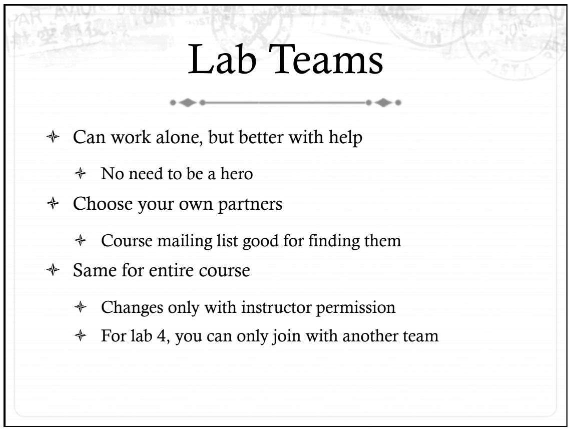
Labs: Learn by doing

- This course is **coding intensive**
  - You should know C, or be prepared to remediate quickly
  - You will learn basic, inline x86 assembly
  - You must learn on your own/with lab partner
- You will write substantial applications in C
- Final project will involve substantial modifications to the Linux kernel
  - Challenging, but a very marketable skill



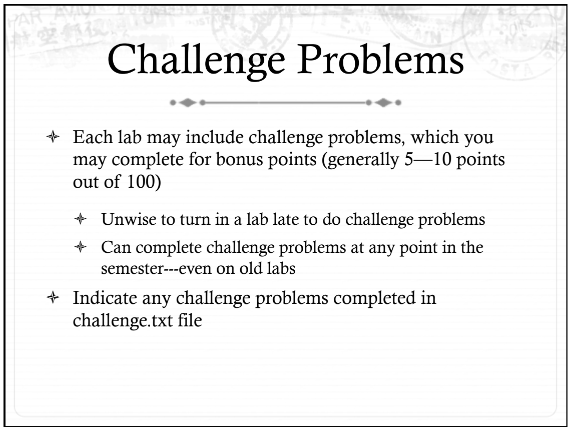
Lab Teams

- Lab 1: Everyone does this lab alone
- Lab 2 and 3: May work with a partner or alone
- Lab 4: May work in a team up to 4 students



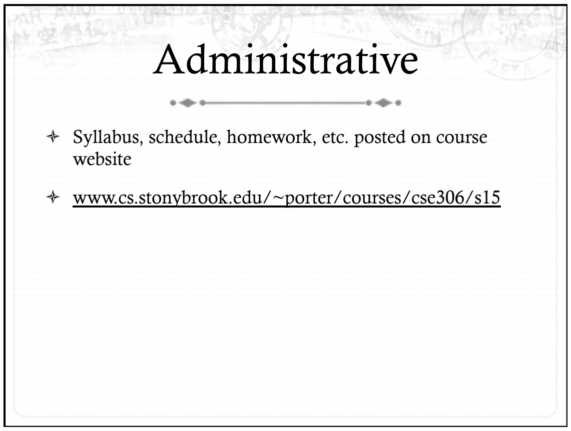
Lab Teams

- Can work alone, but better with help
  - No need to be a hero
- Choose your own partners
  - Course mailing list good for finding them
- Same for entire course
  - Changes only with instructor permission
  - For lab 4, you can only join with another team



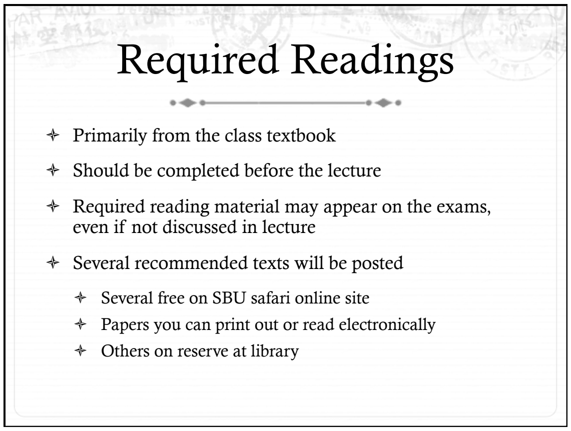
Challenge Problems

- Each lab may include challenge problems, which you may complete for bonus points (generally 5—10 points out of 100)
  - Unwise to turn in a lab late to do challenge problems
  - Can complete challenge problems at any point in the semester---even on old labs
- Indicate any challenge problems completed in challenge.txt file



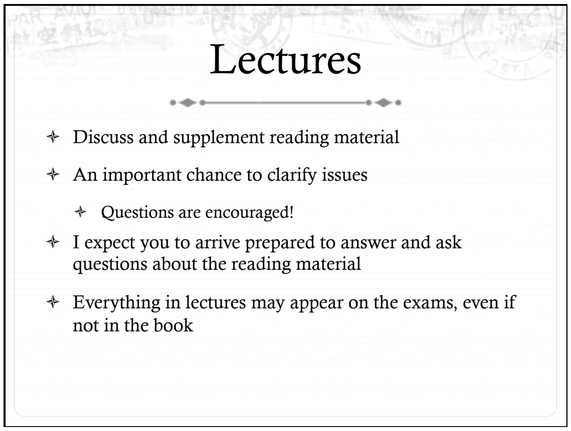
Administrative

- Syllabus, schedule, homework, etc. posted on course website
- www.cs.stonybrook.edu/~porter/courses/cse306/s15



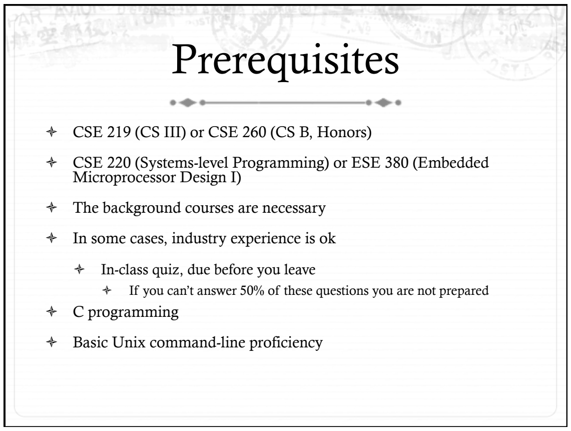
Required Readings

- Primarily from the class textbook
- Should be completed before the lecture
- Required reading material may appear on the exams, even if not discussed in lecture
- Several recommended texts will be posted
  - Several free on SBU safari online site
  - Papers you can print out or read electronically
  - Others on reserve at library



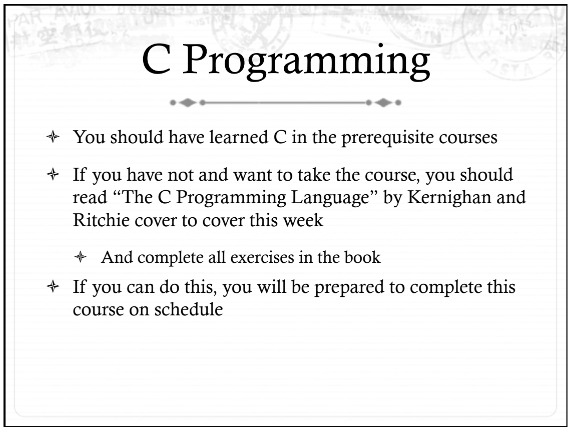
Lectures

- Discuss and supplement reading material
- An important chance to clarify issues
  - Questions are encouraged!
- I expect you to arrive prepared to answer and ask questions about the reading material
- Everything in lectures may appear on the exams, even if not in the book



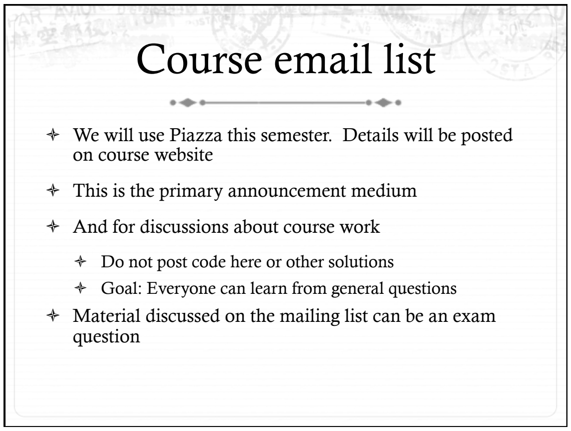
Prerequisites

- CSE 219 (CS III) or CSE 260 (CS B, Honors)
- CSE 220 (Systems-level Programming) or ESE 380 (Embedded Microprocessor Design I)
- The background courses are necessary
- In some cases, industry experience is ok
  - In-class quiz, due before you leave
    - If you can't answer 50% of these questions you are not prepared
- C programming
- Basic Unix command-line proficiency



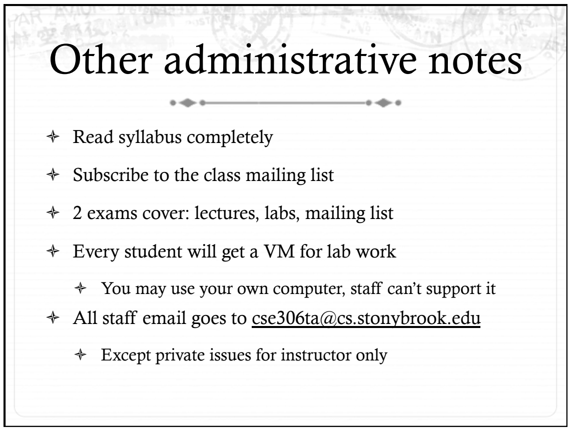
C Programming

- You should have learned C in the prerequisite courses
- If you have not and want to take the course, you should read “The C Programming Language” by Kernighan and Ritchie cover to cover this week
    - And complete all exercises in the book
- If you can do this, you will be prepared to complete this course on schedule



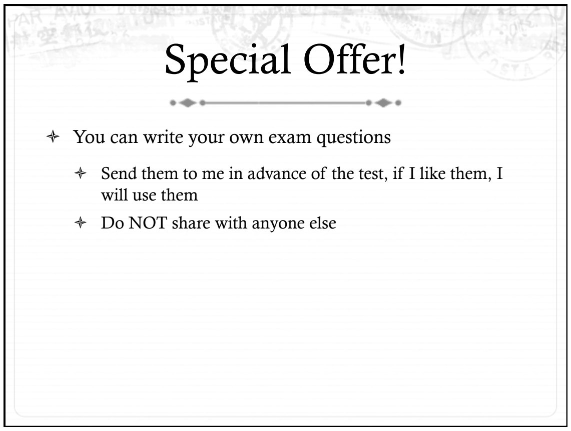
Course email list

- We will use Piazza this semester. Details will be posted on course website
- This is the primary announcement medium
- And for discussions about course work
    - Do not post code here or other solutions
    - Goal: Everyone can learn from general questions
- Material discussed on the mailing list can be an exam question



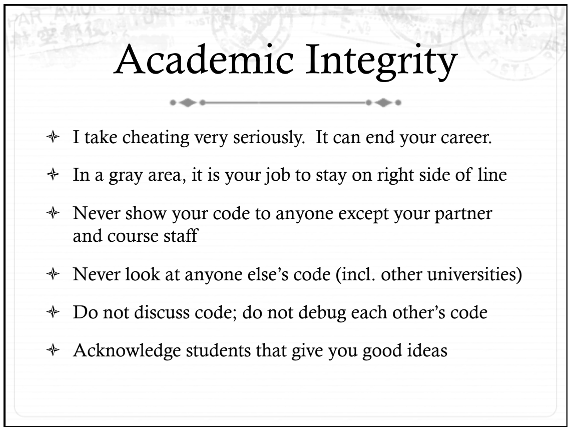
Other administrative notes

- Read syllabus completely
- Subscribe to the class mailing list
- 2 exams cover: lectures, labs, mailing list
- Every student will get a VM for lab work
    - You may use your own computer, staff can’t support it
- All staff email goes to cse306ta@cs.stonybrook.edu
    - Except private issues for instructor only



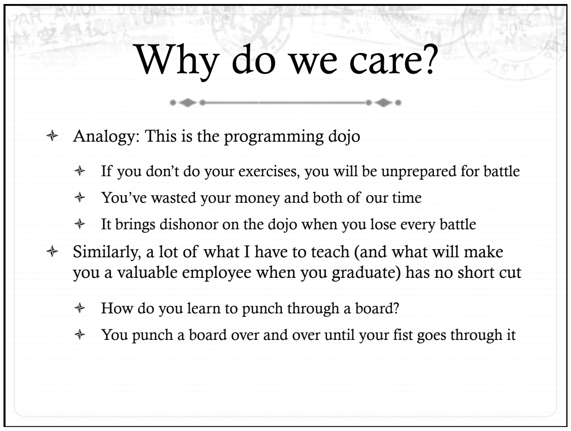
Special Offer!

- You can write your own exam questions
    - Send them to me in advance of the test, if I like them, I will use them
    - Do NOT share with anyone else



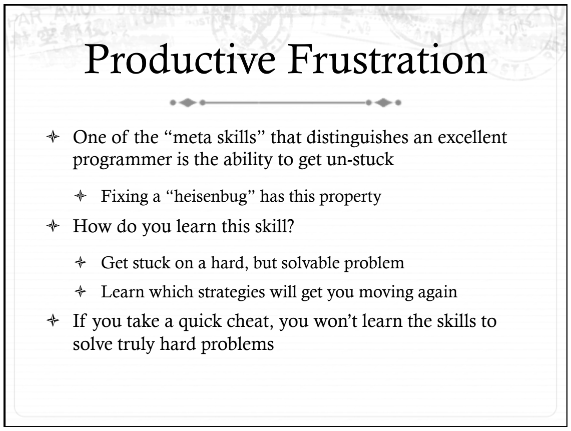
Academic Integrity

- I take cheating very seriously. It can end your career.
- In a gray area, it is your job to stay on right side of line
- Never show your code to anyone except your partner and course staff
- Never look at anyone else’s code (incl. other universities)
- Do not discuss code; do not debug each other’s code
- Acknowledge students that give you good ideas



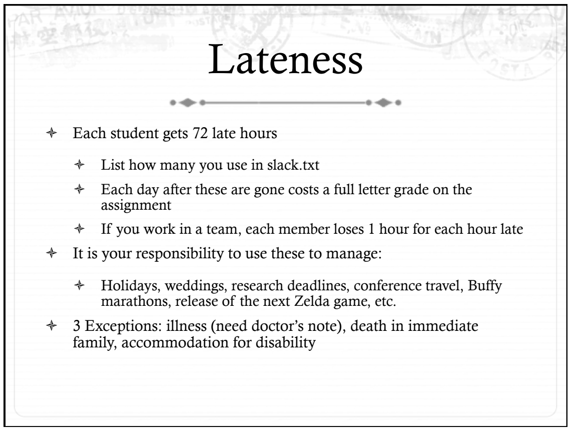
Why do we care?

- Analogy: This is the programming dojo
    - If you don’t do your exercises, you will be unprepared for battle
    - You’ve wasted your money and both of our time
    - It brings dishonor on the dojo when you lose every battle
- Similarly, a lot of what I have to teach (and what will make you a valuable employee when you graduate) has no short cut
    - How do you learn to punch through a board?
    - You punch a board over and over until your fist goes through it



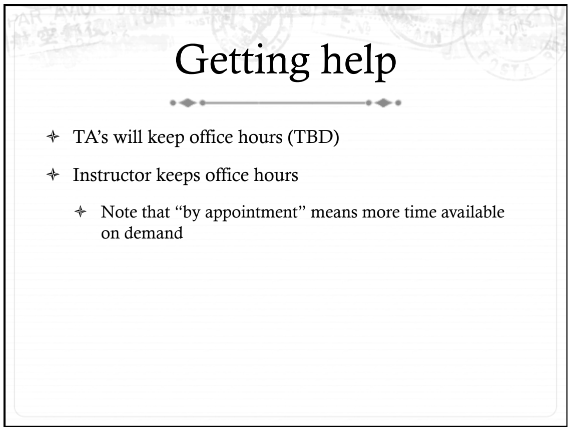
Productive Frustration

- One of the “meta skills” that distinguishes an excellent programmer is the ability to get un-stuck
  - Fixing a “heisenbug” has this property
- How do you learn this skill?
  - Get stuck on a hard, but solvable problem
  - Learn which strategies will get you moving again
- If you take a quick cheat, you won’t learn the skills to solve truly hard problems



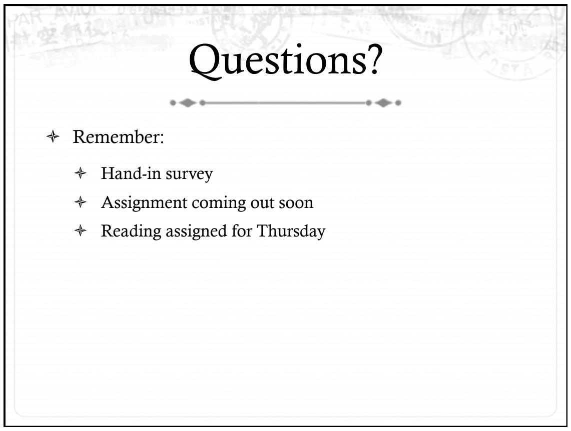
Lateness

- Each student gets 72 late hours
  - List how many you use in slack.txt
  - Each day after these are gone costs a full letter grade on the assignment
  - If you work in a team, each member loses 1 hour for each hour late
- It is your responsibility to use these to manage:
  - Holidays, weddings, research deadlines, conference travel, Buffy marathons, release of the next Zelda game, etc.
- 3 Exceptions: illness (need doctor’s note), death in immediate family, accommodation for disability



Getting help

- TA’s will keep office hours (TBD)
- Instructor keeps office hours
  - Note that “by appointment” means more time available on demand



Questions?

- Remember:
  - Hand-in survey
  - Assignment coming out soon
  - Reading assigned for Thursday