

Administrivia

Slide 1

- One purpose of the syllabus is to spell out policies, especially about:
 - Course requirements and grading.
 - Exam dates (can only be changed if you all agree). “Please plan accordingly” means “don’t schedule something else for these dates”.
 - Late work.
 - Academic integrity.
- Most other information will be on the Web, either on my home page (office hours) or the course Web page.

More Administrivia

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- Part of my job is to answer your questions outside class, so if you need help, please ask! in person or by e-mail or phone.

Slide 3

A Few Words About Computer Use in Class

- Checking your e-mail when you first get here is okay.
- Taking notes online is okay.
- Surfing the Web or playing games during lecture is not okay.
- Remember that I can lock all screens, project what's on one student's screen, etc. — and I will if need be. But I'd rather you'd all be responsible enough to resist this distraction!

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Why Is This Course Required?

- “ACM says so” (i.e., curriculum recommendations include course on operating systems). Why? Well . . .
- To be a “computer scientist”, need to have a broad understanding of computer systems — and operating system is a key part of a computer system.
- Knowing something about how operating systems work helps you write efficient code.
- Many of our courses “demystify” parts of computer systems (e.g., PAD I/II and Computer Design); so does this course.
- It might even be fun . . .

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What Is An Operating System?

- Definition by example:
 - Windows, Linux, Unix, BeOs, OS X (Mac), ...
 - VMS, MVS, VM/370, ...
 - (Also special-purpose o/s's for special-purpose hardware — e.g., video-conferencing system.)
- Definition(s) from operating systems textbooks:
 - Something that provides “virtual machine” for application programs and users (“top down”).
 - Something that manages computer's resources (“bottom up”).
- Another view — key part of bridging gap between what hardware can do (not much, but very fast) and what users want.

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What The Hardware Can Do

- CPU: fetch machine instruction from memory, execute; repeat.
- Disk: read data from / write data to location on disk.
- And so forth — very primitive.

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What The Software Must Do

- Programs students usually write in PAD I/II:
 - Define and manipulate data structures.
 - Do arithmetic/logical calculations.
 - Read stdin / write stdout.
 - Call GUI/graphics library routines.
- The magic cloud (operating system):
 - Read from keyboard, write to screen.
 - Manage what's on screen — windows, taskbar, etc.
 - Run multiple applications “at the same time”.
 - Manage disk contents — files, directories/folders.
 - Share the machine with other users.

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Course Overview

- Brief history of operating systems.
 - Review of what hardware can do, what operating system must/should do.
 - Discussion of major functions of operating system — problem(s) to be solved, solutions:
 - Process management.
 - Memory management.
 - I/O management.
 - Filesystem management.
- Focus on principles rather than details.

Minute Essay

- What are your goals for this course?
- What operating systems have you used/installed/experienced?
- Anything else you want to tell me? about the course, what you did this summer, ...?

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