

Administrivia

Slide 1

- Reminder: All written homework due now; programming problems due at 5pm.
- Solutions to written problem in hardcopy now; solutions to required programming problems on Web soon (today or tomorrow).
- Homework 4 written problems graded; more graded work coming soon, I hope! Watch your e-mail for grades (including summary with tentative letter grade — I hope late this week).

More Administrivia

Slide 2

- Review sheet for final on Web.
- Extra-credit problems to be on Web later today or tomorrow, to be due 5pm on the 12th (after the final). Can only help your grade; maximum of 20 (?) points.
- Office hours this week to be announced by e-mail.
- Review session next Monday at noon. (Location TBA via e-mail.)
- Questions about grading, final, anything else?

Slide 3

Course Recap

- Four key areas (the gospel according to Pitts):
 - Process management.
 - Memory management.
 - I/O management.
 - Filesystem management.
- Two views of operating systems:
 - “Virtual machine” that provides useful abstractions for applications programs, end users.
 - Resource manager.
- Also a little about history, a little about security.

Slide 4

Process Management

- O/S as virtual machine — process abstraction, “concurrent” execution, IPC, concurrent algorithms.
- O/S as resource manager — implementation of above, including interrupts and context switches, CPU scheduling.

Memory Management

- O/S as virtual machine — memory protection, virtual memory, “multiprogramming”.
- O/S as resource manager — implementation of above, including page replacement algorithms.

Slide 5

I/O Management

- O/S as virtual machine — layered abstractions for working with I/O devices (user-level s/w, device-independent s/w).
- O/S as resource manager — implementation of above, plus a little about lower-level interaction with devices (programmed versus interrupt-driven I/O versus DMA).

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Filesystem Management

- O/S as virtual machine — filesystem abstractions (files, file attributes, directory structures).
- O/S as resource manager — implementation of above, disk-space management, reliability and consistency.

Slide 7

Recap, Continued

- Some recurring themes:
 - Interaction between h/w and s/w — some h/w features are there to support o/s features; o/s influenced by what's available in h/w.
 - Trade-offs — often the answer to “which is best?” is “it depends”.
- We didn't cover the whole book, but if you look at the ACM's guidelines for an undergrad o/s course — we pretty much did what they said.

Slide 8

Recap, Continued

- A very smart person I know once said the only interesting part of an o/s course was concurrent algorithms (to be covered soon), and the rest is “just details”.

A student a few years ago said “a lot of this just seems like common sense” (once you understand the basic ideas).

Both sort of right . . .

- Goal of this course is to learn/retain basic ideas. Details may help with that — and can be interesting in themselves — but should not be the focus.

Slide 9

Minute Essay

- How did the course compare to your expectations/goals? Did you learn what you hoped to learn?

Slide 10