Administrivia

Slide 1

- Reading for last week updated to reflect that I do want you to at least skim the chapter on security.

- Homework 7 graded. Scores disappointing! (Indeed, scores overall are disappointing. I'm not sure what to do about that.)

- Reminder (as if you needed one!): Final next Monday. Review sheet on the Web. Should there be a review session? I could *probably* do one Wednesday or Friday. I'll take a poll as one of the minute-essay questions and announce the results by e-mail.

- Solutions to homework problems and midterm distributed in copy; ask me if you missed one.

- I will send out a "grade summary", similar to what I sent out at midsemester, soon.

Slide 2

- Extra-credit problems posted. Can only help your grade. Turn in by Wednesday the 14th by 5pm.

Course Recap

- Four key areas (the gospel according to former chair Pitts):

    - Process management.

    - Memory management.

    - Filesystem management.

    - I/O 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 3

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.

Slide 4

Memory Management

- O/S as virtual machine — "address space" abstraction, memory protection, virtual memory, "multiprogramming".

- O/S as resource manager — implementation of above, including page replacement algorithms.

Slide 5

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 6

I/O Management

Slide 7

- O/S as virtual machine — layered abstractions for working with I/O devices (user-level s/w, device-independent s/w, etc.).

- 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).

Recap, Continued

Slide 8

- 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 I think we addressed the topics most crucial for an undergraduate course in operating systems. I haven't looked at recent ACM guidelines, but the ones in effect a few years ago — we pretty much did what they said about this subject.

Recap, Continued

- A very smart person I know once said the only interesting part of an O/S course was concurrent algorithms, 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

- Would you be interested in a review session Wednesday or Friday? Friday might be better, and I should be available between 3pm and 7pm. Wednesday is iffier but probably any time between noon and 6pm could work. Do you have a preference as to day, and what times could you *not* attend?

- Any parting remarks?

Slide 10