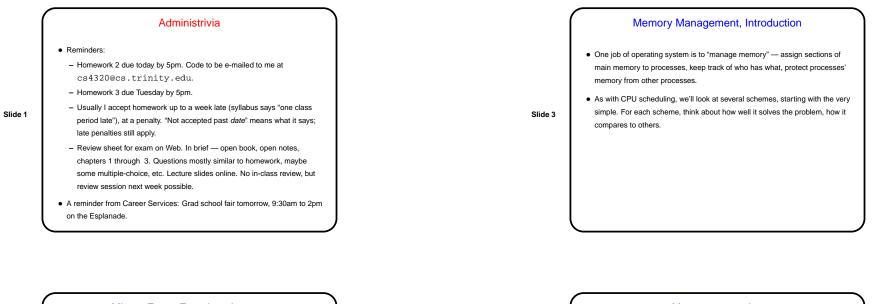
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Minute Essay From Last Lecture

- What questions do you have about the homeworks and exam? (Answered in previous slide.)
- Also, a comment about a Homework 1 question:
- One proposed answer to "when would you not want an operating system?" was "for better security" well, maybe!

Monoprogramming

- Idea only one user program/process at a time, no swapping or paging.
 Only decision to make is how much memory to devote to o/s itself, where to put it.
- · Consider tradeoffs complexity versus flexibility, efficient use of memory.
- Slide 4 Used in very early mainframes, MS-DOS; still used in some embedded systems.

Slide 2

Multiprogramming With Fixed Partitions • Idea - partition memory into fixed-size "partitions" (maybe different sizes), one for each process. memory and free-space "chunks". • Limits "degree of multiprogramming" (how many processes can run concurrently). it's free. Slide 5 Slide 7 • Probably necessitates admissions scheduling — either one input queue per partition, or one combined queue. • How big should allocation units be? If one combined queue, how to choose from it when a partition becomes available? first job that fits? largest job that fits? etc. • Consider tradeoffs - complexity versus flexibility, efficient use of memory. · Used in early mainframes.

Multiprogramming With Variable Partitions —Bitmaps

- One solution to problem of keeping track of locations/sizes of processes'
- Idea divide memory into "allocation units"; for each, one bit says whether
- Tradeoffs simple? easy/quick to find free space of size N?

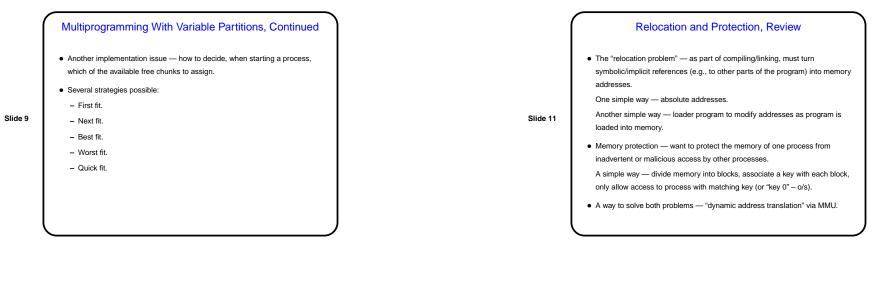
Multiprogramming With Variable Partitions Multiprogramming With Variable Partitions -Free List Another solution to problem of keeping track of locations/sizes of processes' • Idea — separate memory into partitions as before, but allow them to vary in size and number. memory and free-space "chunks". I.e., "contiguous allocation" scheme. • Idea — keep linked list with one entry for each process or free-space chunk (We'll consider swapping separately, unlike textbook.) ("hole"), sorted by address. When we allocate/free memory, possibly split/merge entries. Slide 8 · Like previous scheme, necessitates admissions scheduling. • Tradeoffs - simple? space requirements compared to bitmap? · Requires that we keep track of locations and sizes of processes' partitions, free space. Notice potential for memory fragmentation. • Consider tradeoffs - complexity versus flexibility, efficient use of memory. · Used in early mainframes.

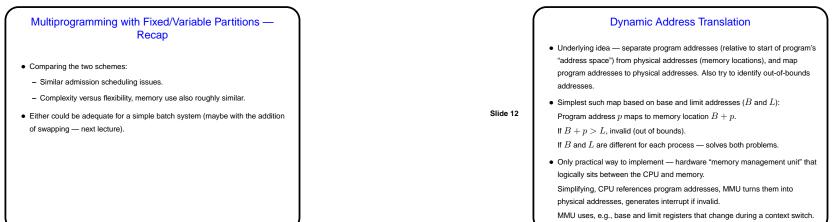
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Slide 6

Slide 10

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Minute Essay

• What if anything did you find difficult about the programming part of the homework? What if anything did you find interesting/useful about it?

Slide 13