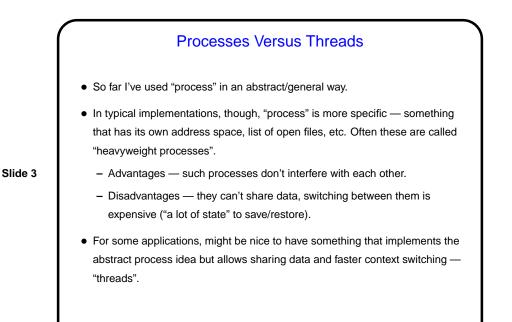
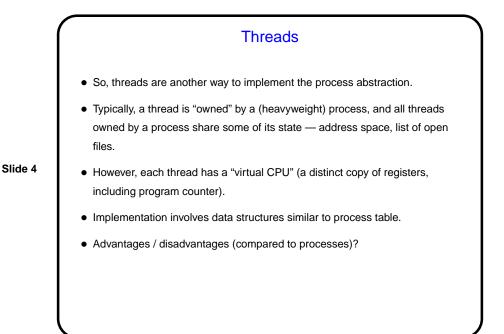
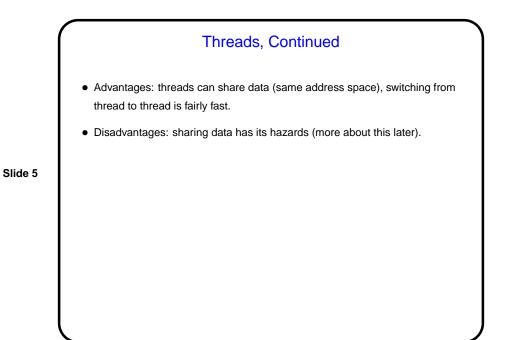
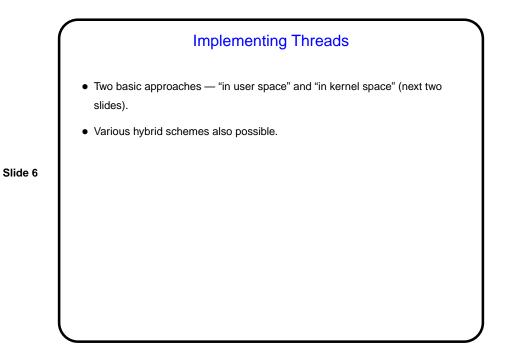


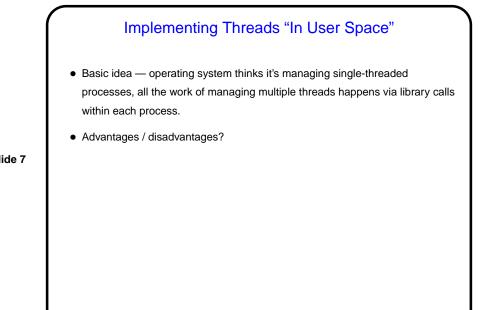
Slide 1











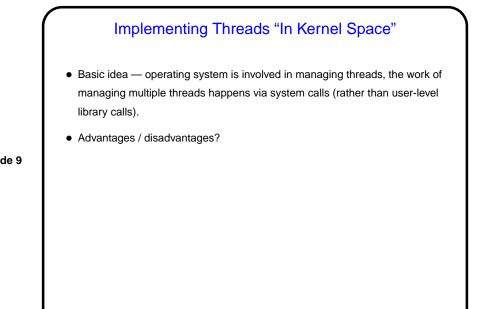
Slide 7

## Implementing Threads "In User Space", Continued

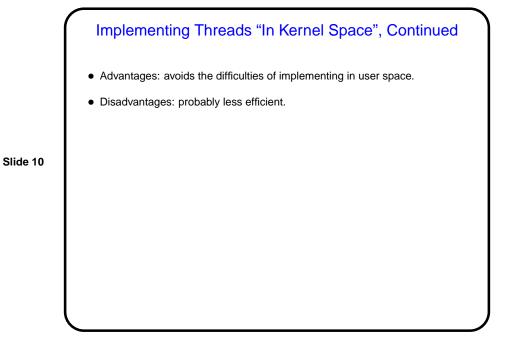
- Advantages: fewer system calls, hence probably more efficient.
- Disadvantages:
  - If a thread blocks, it may do so in a way that blocks the whole process.
  - Preemptive multitasking is difficult/impossible.

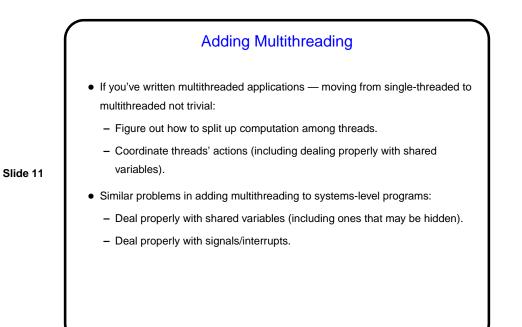
Slide 8

- Using multiple CPUs is difficult/impossible.



Slide 9





## Threads — Example Implementations

UNIX systems vary as to which they use (see chapter 10 for more info). Early
versions of Linux provided no support for kernel-space threading, but there
were libraries for the user-space version. Kernel now provides support, but
threads apparently basically processes with some different flags allowing
them to share memory, etc.

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• Windows NT/2000 apparently is such that *all* processes have at least one thread, and the basic scheme is either kernel-space or a hybrid (see chapter 11 for more info).

