CMSC 412
Fall 2004

Processes and Threads

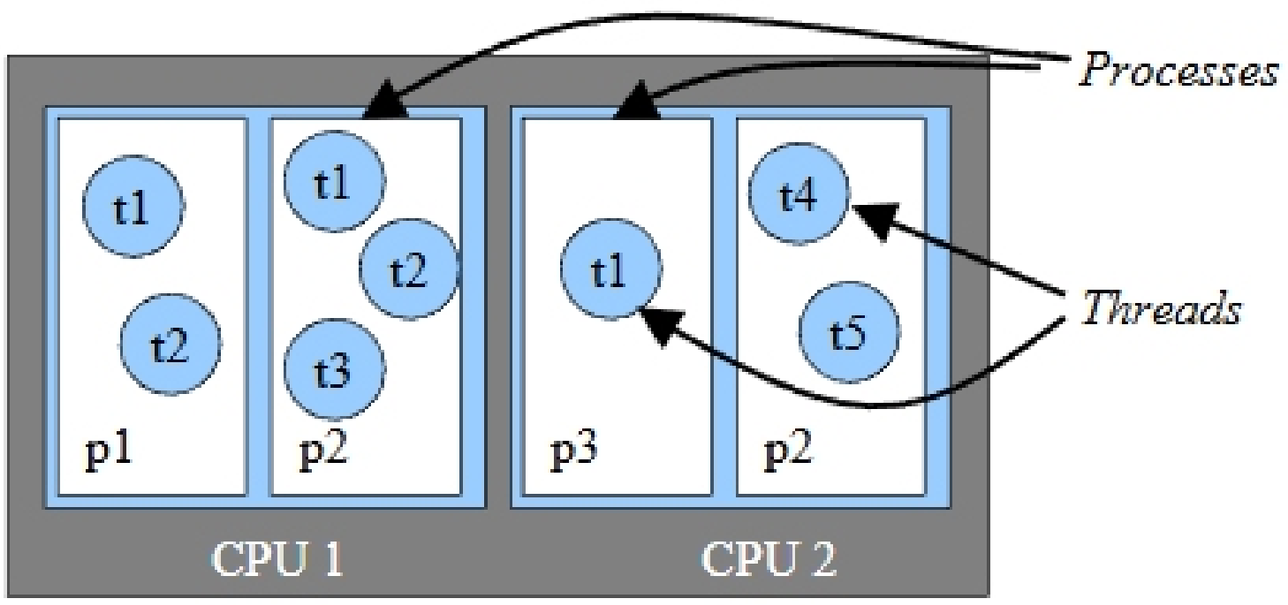
Announcements

- Project #1
  - Due Friday
- Reading
  - Chapter 4 (parts), 5 (parts)
  - Chapter 7 (for Monday)

Processes

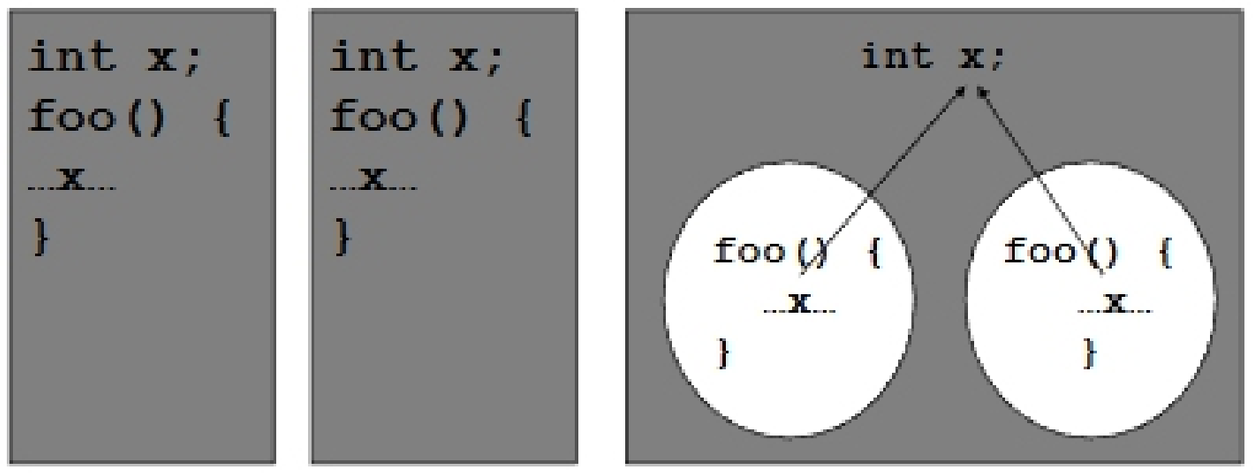
- What is a process?
  - A program in execution
    - Either sequentially or with multiple "threads of control."
- What's not a process?
  - A program on a disk - a process is an active object, but a program is just a file

Computation Abstractions



A dual-processor computer

Processes vs. Threads



Processes do not share data

Threads share data within a process

More on threads later …

Process State

- Processes switch between different states based on internal and external events
- Each process is in exactly one state at a time
- Typical States of Processes (varies with OS)
  - New: just been created
  - Running: instructions are being executed
    - only one process per processor may be running
  - Waiting: waiting for an event to occur
    - examples: I/O events, signals
  - Ready: waiting to be assigned the CPU
  - Terminated: finished execution