

# CMSC 412

## Fall 2004

### Operating Systems Structures

## Announcements

- Project #1
  - Posted. Due Friday.
- Reading
  - Chapter 3, 4

## Common System Components

- Process Management
- Main Memory Management
- File Management
- I/O System Management
- Secondary Storage Management
- Networking
- Protection System
- Command-Interpreter System

## Process Management

- A *process* is a program in execution. A process needs certain resources, including CPU time, memory, files, and I/O devices, to accomplish its task.
- The operating system is responsible for the following activities in connection with process management.
  - Process creation and deletion.
  - process suspension and resumption.
  - Provision of mechanisms for:
    - process synchronization
    - process communication

## Main-Memory Management

- *Memory* is a large array of words or bytes, each with its own address. It is a repository of quickly accessible data shared by the CPU and I/O devices.
- Main memory is *volatile* storage.
  - It loses its contents on power-loss.
- OS memory-related activities:
  - Track which parts of memory are being used and by whom.
  - Decide which processes to load when memory space becomes available.
  - Allocate and deallocate memory space.

## File Management

- A *file* is a collection of related information defined by its creator. Commonly, files represent programs and data.
- OS file-related activities:
  - Provide primitives to create, delete, and manipulate files (and directories).
  - Map files onto secondary storage.