Operating System Overview

Chapter 2
Operating System

• A program that controls the execution of application programs
• An interface between applications and hardware
Operating System Objectives

• Convenience
  – Makes the computer more convenient to use

• Efficiency
  – Allows computer system resources to be used in an efficient manner

• Ability to evolve
  – Permit effective development, testing, and introduction of new system functions without interfering with service
Layers of Computer System

Figure 2.1   Layers and Views of a Computer System
Services Provided by the Operating System

- Program development
  - Editors and debuggers
- Program execution
- Access to I/O devices
- Controlled access to files
- Memory management
- System access
- Network support
Services Provided by the Operating System

- Error detection and response
  - Internal and external **hardware** errors
    - Memory error
    - Device failure
  - **Software** errors
    - Arithmetic overflow
    - Access forbidden memory locations
  - Operating system cannot grant request of application
Services Provided by the Operating System

• Accounting
  – Collect usage statistics
  – Monitor performance
  – Used to anticipate future enhancements
  – Used for billing purposes
  – check out the log files of a unix system
    • where do you find this information?
Operating System

- Responsible for managing resources
- An OS is just a program that is executed
Figure 2.2  The Operating System as Resource Manager
Kernel

- Portion of operating system that is in main memory
- Contains most frequently used functions
- Also called the nucleus
Linux

- Brief discussion on linux
- What is in the distributions:
  - http://lxr.linux.no/source/
Why does an OS need to evolve?

- Hardware upgrades plus new types of hardware
- New services
- Fixes