Chapter 8
Operating Systems and Utility Programs

Describe the two types of software
Understand the startup process for a personal computer
Describe the term user interface
Explain features common to most operating systems
Know the difference between stand-alone operating systems and network operating systems
Identify various stand-alone operating systems
Identify various network operating systems
Recognize devices that use embedded operating systems
Discuss the purpose of the following utilities: file viewer, file compression, diagnostic, uninstaller, disk scanner, disk defragmenter, backup, and screen saver

What is an operating system (OS)?
• Set of programs that coordinates all activities among computer hardware resources

What are the functions of an operating system?
• start up the computer
• administer security
• control a network
• access the Web
• monitor performance and provide housekeeping services
• schedule jobs and configure devices
• manage memory
• manage programs
• provide user interface

What is a cross-platform application?
• One that runs identically on multiple operating systems

Where is the operating system located?
• Operating system resides on hard disk in most cases
• Operating system resides on ROM in handhelds

What is a cross-platform application?
• runs on Windows 95, 98, 2000, ME, and XP
What is booting?

- Process of starting or restarting a computer

**cold boot**
Process of turning on a computer after it has been powered off completely

**warm boot**
Process of restarting a computer that is already powered on

How does a personal computer boot up?

1: Power supply sends signal to components in system unit

2: The processor accesses BIOS to start computer

Step 1: Power supply sends signal to components in system unit

Step 2: The processor accesses BIOS to start computer

Step 3: BIOS checks components such as mouse, keyboard connectors, and expansion cards

Step 4: Results of POST are compared to data in the CMOS chip

Step 5: BIOS looks for system files in drive A (floppy disk drive) and then drive C (hard disk)

Drive that contains operating system is called **boot drive**
Step 6: Boot program loads kernel of operating system into RAM from boot drive. Operating system in memory takes control of computer.

Step 7: Operating system loads configuration information and displays desktop on screen. Operating system executes programs in StartUp folder. Click Start to display list of applications you can run.

What is an emergency recovery disk?
- Floppy disk that contains system files that will start computer when hard disk becomes damaged and computer cannot boot.
- Also called repair disk, boot disk, or rescue disk.

What is a user interface?
- Controls how you enter data and instructions and how information displays on screen.

What is multitasking?
- Allows single user to work on two or more applications that reside in memory at same time.
  - Foreground contains active application - the one you currently are using.
  - Background contains inactive programs that are running but are not in use.

What are other program management features of operating systems?
- Multiuser: Operating system enables two or more users to run a program simultaneously.
- Multiprocessing: Operating system can support two or more processors running programs at the same time.
- Fault-tolerant computer: Continues to operate even if one of its components fails. Computer has duplicate components such as processors, memory, and disk drives.
What is memory management?
• Optimizes the use of random access memory (RAM)

What is virtual memory (VM) management?
• Operating system allocates portion of hard disk to function like RAM
  • Paging
  • Thrashing

What is spooling?
• Print jobs sent to buffer instead of directly to printer, where print jobs wait their turn

What is a device driver?
• Small program that tells operating system how to communicate with a device
  • Each device requires its own specific driver

How does an operating system schedule jobs?
• Adjusts schedule based on job’s priority

How do you install a device driver?
- Use the Printers and Other Hardware link in Control Panel
Operating System Functions

How does an operating system monitor performance?

- Provides a program, called performance monitor, that assesses and reports information about various system resources and devices.

Operating System Functions

How does an operating system manage files?

- Includes a program called file manager, such as Windows Explorer.
  - Commands include Copy, Rename, Delete, Move, Format, and New Folder.

Operating System Functions

What is a file allocation table (FAT)?

- A table of information that operating system uses to locate files on a disk.
- Reformatting disk usually erases only file allocation table and leaves actual files on disk.

Operating System Functions

What are features of a network operating system?

- Server is computer that controls access to network and provides centralized storage area.
- Other computers on network are called clients.

Operating System Functions

How do operating systems administer security?

- Most multiuser operating systems allow each user to log on.

Operating System Functions

What is Active Directory (AD)?

- Active Directory (AD) allows network administrators to manage all network information including users, devices, settings, and connections from central environment.
**Types of Operating Systems**

What are some characteristics of operating systems?

- **Device-independent**
  - Runs on many manufacturers’ computers

- **Device-dependent**
  - One that runs only on specific type of computer

- **Upward-compatible**
  - Written for earlier version of operating system, but also runs with new version

- **Downward-compatible**
  - Recognizes and works with application software written for earlier version of operating system

- **Proprietary software**
  - Privately owned and limited to specific vendor or computer model

**What are three categories of operating systems?**

- Stand-alone
  - DOS
  - FAT32
  - Registry Checker

- Network
  - UNIX
  - Windows

- Embedded
  - Mac OS
  - Pocket PC

**Stand-Alone Operating Systems**

What is DOS (Disk Operating System)?

- Refers to several single user operating systems developed in the early 1980s for personal computers

**What is Mac OS?**

- Multitasking operating system available only for computers manufactured by Apple
  - Apple’s Macintosh operating system was first commercially successful GUI

**Network Operating Systems**

What is UNIX?

- Command-line multitasking operating system
**Network Operating Systems**

**What is Linux?**
- Popular, free, open-source multitasking UNIX-type operating system
- **Open-source software** means code is available to the public

**What is Solaris?**
- UNIX-type operating system designed specifically for e-commerce applications
- Can manage high-traffic accounts
- Incorporates security necessary for Web transactions
- Developed by Sun Microsystems

**Embedded Operating Systems**

**What is an embedded operating system?**
- Operating system found on most handheld computers and small devices
- Resides on a ROM chip

**Utility Programs**

**What is a screen saver?**
- Causes monitor's screen to display a moving image or blank screen if there is no activity for a specified time period
- Prevents ghosting
- Popular for security, business, or entertainment purposes

**Summary of Operating Systems and Utility Programs**

- System software
- Operating systems
- Operating system functions
- Types of operating systems
- Stand-alone operating systems
- Network operating systems
- Embedded operating systems
- Utility programs

Chapter 8 Complete