

Discovering Computers 2003 Chapter 8 Objectives

Concepts for a Digital World  
Web and XP Enhanced

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

Next  
8.2

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### What is an operating system (OS)?

- Set of programs that coordinates all activities among computer hardware resources

Operating System

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8.3

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### What are the functions of an operating system?

Next  
p.83 Fig. 8-1

- start up the computer
- monitor performance and provide housekeeping services
- manage memory
- administer security
- manage programs
- control a network
- schedule jobs and configure devices
- access the Web
- provide user interface

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### Where is the operating system located?

operating system resides on ROM in handhelds

operating system resides on hard disk in most cases

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### What is a cross-platform application?

- One that runs identically on multiple operating systems

runs on Windows 95, 98, 2000, ME, and XP

Next  
8.4 Fig. 8-2

Ketabton.com

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## Operating System Functions

### 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

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## Operating System Functions

### What messages display on the screen when you boot the computer?

BIOS version and copyright notice

total amount of memory

devices detected and tested

Windows message

sound card and CD-ROM drivers loaded

ROM BIOS Version 2.10 A05  
Copyright BIOS Tech Inc. 2003  
All rights reserved

0065536 KB

Keyboard.....Detected  
Mouse.....Detected  
Hard Disk Installed WCV AC41600H  
Floppy A: Installed

Starting Windows

SoundUTIL TSR Version 1.20  
Copyright SoundCard Technology 2002-03

IDE CD-RW Device Driver Version V2.33 (4/20/03)  
Copyright Gajin Electric Co.  
1 drive(s) selected

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8.4 Fig. 8-3

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## Operating System Functions

### 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 2

Processor

BIOS

Next  
8.5 Fig. 8-4

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## Operating System Functions

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

Step 3

processor

BIOS

expansion cards

CD-ROM drive

Next  
8.5 Fig. 8-4

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## Operating System Functions

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

Step 4

processor

BIOS

expansion cards

CD-ROM drive

CMOS

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8.5 Fig. 8-4

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## Operating System Functions

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

Step 5

processor

BIOS

expansion cards

CD-ROM drive

hard disk

floppy disk drive

CMOS

Drive that contains operating system is called **boot drive**

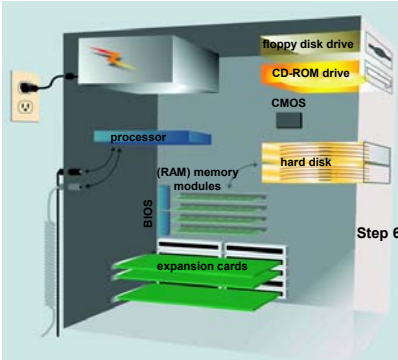
Next  
8.5 Fig. 8-4

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Operating System Functions

Step 6: Boot program loads kernel of operating system into RAM from boot drive

Operating system in memory takes control of computer



Step 6

Next

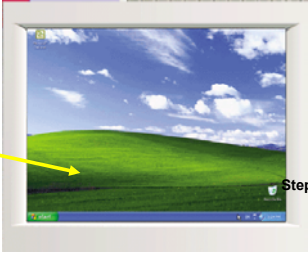
8.5 Fig. 8-4

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Operating System Functions

Step 7: Operating system loads configuration information and displays desktop on screen

Operating system executes programs in StartUp folder



Step 7

Next


8.5 Fig. 8-4

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Operating System Functions

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**



Next

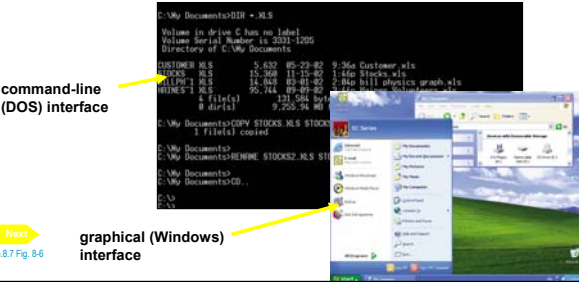
8.6 Fig. 8-5

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Operating System Functions

What is a **user interface**?

- Controls how you enter data and instructions and how information displays on screen



command-line (DOS) interface

graphical (Windows) interface

Next

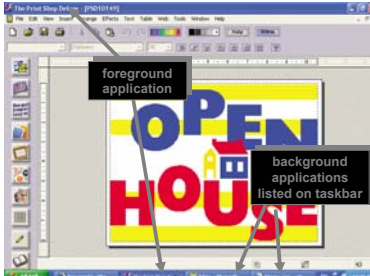
8.7 Fig. 8-6

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Operating System Functions

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



foreground application

background applications listed on taskbar

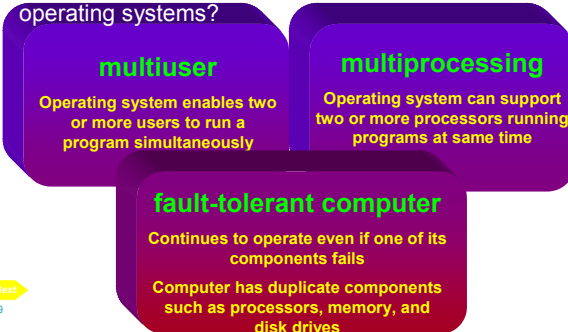
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8.9 Fig. 8-8

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Operating System Functions

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 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

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## Operating System Functions

### How do you install a device driver?

- Use the Printers and Other Hardware link in Control Panel



The screenshot shows the Windows XP Control Panel window. The title bar reads 'Control Panel'. The address bar shows 'Address Control Panel'. The main content area is titled 'Pick a category' and lists several categories: Appearance and Themes, Printers and Other Hardware (highlighted with a red box and a red arrow), User Accounts, Date, Time, Language, and Regional Options, Accessibility Options, Sounds, Speech, and Audio Services, and Performance and Maintenance. A red box is also drawn around the 'Printers and Other Hardware' link in the left-hand navigation pane.

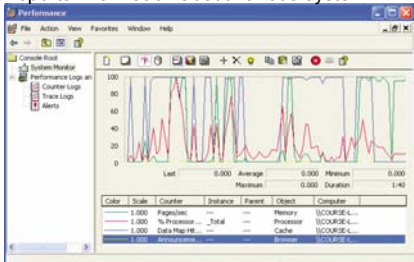
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8.12 Fig 8-11

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How does an operating system monitor performance?

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

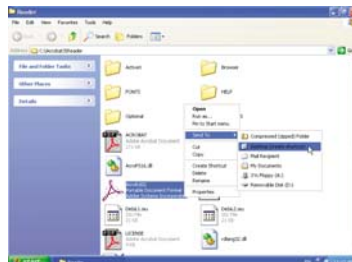


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8.14 Fig. 8-14

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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

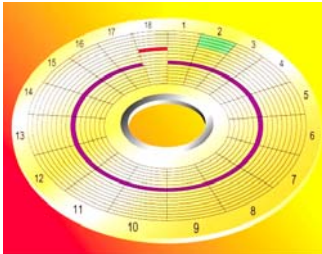


Next  
8.15 Fig. 8-15

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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




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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**

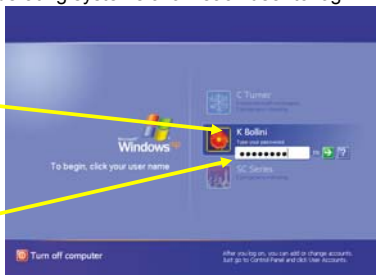


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8.15 Fig. 8-16

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How do operating systems administer security?

- Most multiuser operating systems allow each user to log on



Next  
8.16 Fig. 8-17

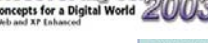
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What is **Active Directory (AD)**?



**Active Directory (AD)**  
Allows network administrators to manage all network information including users, devices, settings, and connections from central environment

Next  
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# Types of Operating Systems

## What are three categories of operating systems?

<b>Stand-alone</b>	<ul style="list-style-type: none"> <li>• DOS</li> <li>• Windows 3.x</li> <li>• Windows 95</li> <li>• Windows NT Workstation</li> <li>• Windows 98</li> <li>• Windows 2000 Professional</li> <li>• Windows Millennium Edition</li> <li>• Windows XP Home Edition</li> <li>• Windows XP Professional Edition</li> <li>• Mac OS X</li> <li>• OS/2 Warp Client</li> <li>• UNIX</li> <li>• Linux</li> </ul>
<b>Network</b>	<ul style="list-style-type: none"> <li>• NetWare</li> <li>• Windows NT Server</li> <li>• Windows 2000 Server</li> <li>• Windows .NET Server</li> <li>• OS/2 Warp Server for E-business</li> <li>• UNIX</li> <li>• Linux</li> <li>• Solaris</li> </ul>
<b>Embedded</b>	<ul style="list-style-type: none"> <li>• Windows CE</li> <li>• Pocket PC 2002</li> <li>• Palm OS</li> </ul>

Next

4.8.17 Fig. 8-18

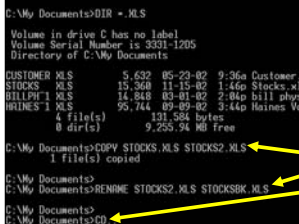
# Stand-Alone Operating Systems

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### What is DOS (Disk Operating System)?

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



The screenshot shows a DOS command prompt window with the following text:

```
C:\My Documents>DIR -MLS

Volume in drive C has no label
Volume Serial Number is 3331-1205
Directory of C:\My Documents

CUSTOMER.XLS          9,632   05-23-02   9:36a  Customer.xls
STOCKS.XLS            10,368   11-16-02   1:46p  Stocks.xls
BILLPL1.XLS          14,848   03-01-02   2:04p  bill physics graph.xls
WHILNS1.XLS           95,744   09-09-02   3:44p  Haines Volunteers.xls
               4 file(s)          121,584 bytes
               0 dir(s)
               9,255.94 MB free

C:\My Documents>COPY STOCKS.XLS STOCKS2.XLS
1 file(s) copied

C:\My Documents>
C:\My Documents>RENAME STOCKS2.XLS STOCKSRK.XLS
C:\My Documents>
C:\My Documents>CD \
C:\>
```

Arrows point from a box labeled "commands entered by user" to the commands: `COPY STOCKS.XLS STOCKS2.XLS`, `RENAME STOCKS2.XLS STOCKSRK.XLS`, and `CD \`.

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## Stand-Alone Operating Systems

What are features of most Windows operating systems?

- Active Desktop™
- Registry Checker
- FAT32
- Taskbar/toolbars
- Windows Explorer has a Web browser look and feel
- Increased speed
- Update Wizard
- Tune-Up Wizard
- Multiple display support
- Universal Serial Bus
- Hardware support
- Accessibility Settings Wizard

**Next**

3.8.18

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## Stand-Alone Operating Systems

### What is Mac OS?

- Multitasking operating system available only for computers manufactured by Apple

➤ Apple's Macintosh operating system was first commercially successful GUI



The screenshot displays the Mac OS X desktop. At the top is the menu bar with 'Apple' and 'System Preferences' menus, and a clock showing 12:22 PM on 10/22/03. Below the menu bar is the Dock, containing icons for Finder, Mail, Safari, and iPhoto. The main desktop area features a 'My Computer' window showing the contents of the hard drive, including folders like 'Applications', 'Library', and 'System', and files like 'Mac OS X Install DVD'. A 'My Recent Items' window is also open, showing a list of recently used files and folders. The desktop background is a scenic landscape image.

Next

8.2.1 Fig. 8-22



[illegible]

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## 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




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8.24 Fig. 8-25

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## Network Operating Systems

### 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




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## Embedded Operating Systems

### What is an embedded operating system?

- Operating system found on most handheld computers and small devices
- Resides on a ROM chip



Pocket PC 2002  
Palm OS®  
Windows CE

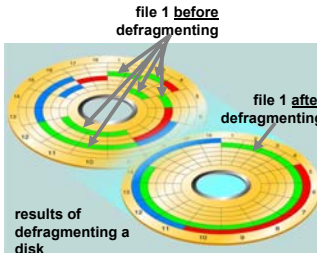
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8.25

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## Utility Programs

### What is a utility program?

- System software that performs a specific task
- Examples include:
  - File viewer
  - File compression
  - Diagnostic utility
  - Uninstaller
  - Disk scanner
  - Disk defragmenter
  - Backup utility
  - Screen saver



file 1 before defragmenting  
file 1 after defragmenting  
results of defragmenting a disk

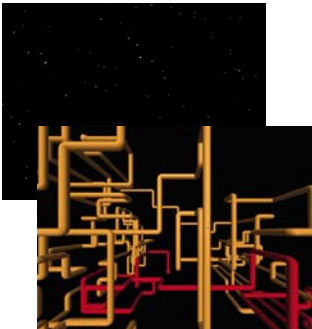
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## Utility Programs

### 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



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8.31 Fig. 8-35

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## 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

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