

Discovering Computers 2003 Chapter 8 Objectives

Concepts for a Digital World  
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- 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

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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

CD-ROM drive

processor

BIOS

expansion cards

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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

CD-ROM drive

CMOS

processor

BIOS

expansion cards

Step 4

Next  
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)

floppy disk drive

CD-ROM drive

CMOS

hard disk

processor

BIOS

expansion cards

Step 5

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

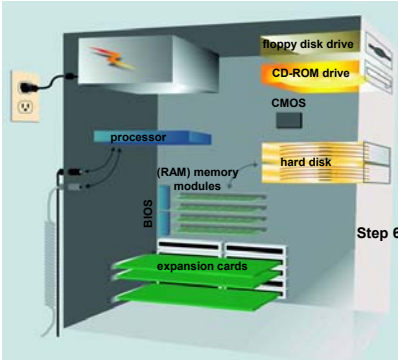
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8.5 Fig. 8-4

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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

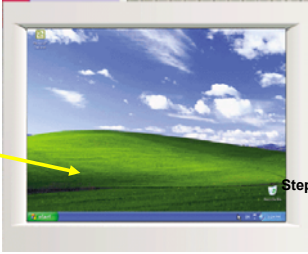
8.5 Fig. 8-4

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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

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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

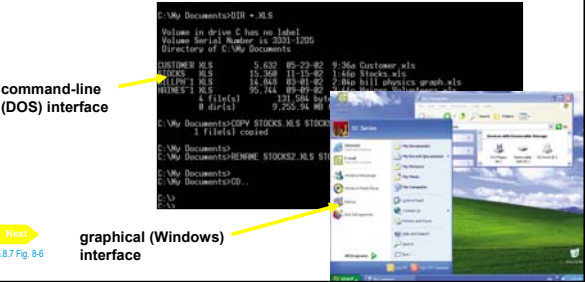
8.6 Fig. 8-5

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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

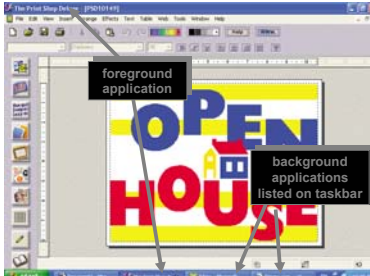
8.7 Fig. 8-6

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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

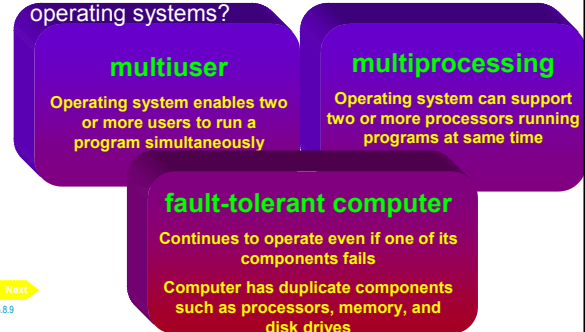
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8.9 Fig. 8-8

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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

Next


8.9



# Operating System Functions

How do you install a device driver?

- ❖ Use the Printers and Other Hardware link in Control Panel

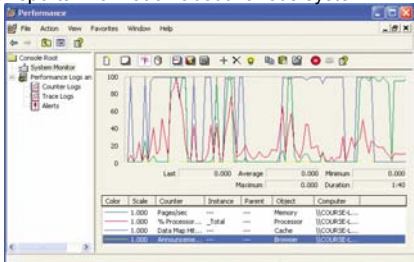


The screenshot shows the Windows XP Control Panel window. The title bar reads 'Control Panel'. The menu bar includes 'File', 'Edit', 'View', 'Favorites', 'Tools', and 'Help'. The address bar shows 'Address Control Panel'. The main content area is titled 'Pick a category' and displays several icons: 'Appearance and Themes', 'Printers and Other Hardware' (highlighted with a red arrow), 'User Accounts', 'Date, Time, Language, and Regional Options', 'Accessibility Options', 'Performance and Maintenance', 'Network and Internet Connections', 'Windows Update', 'Help and Support', and 'Other Control Panel Options'. A sidebar on the left contains 'Control Panel' and 'Switch to Classic View'. A black box with the text 'Printers and Other Hardware link' is overlaid on the bottom of the 'Printers and Other Hardware' icon.

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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

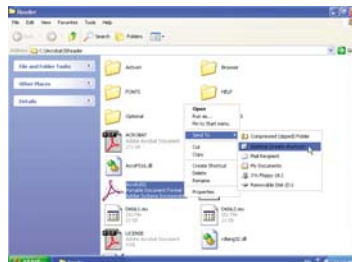


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8.14 Fig. 8-14

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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

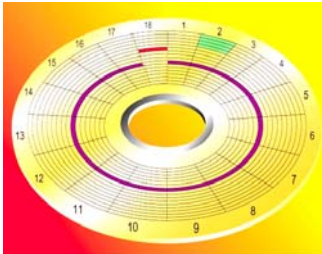


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8.15 Fig. 8-15

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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**

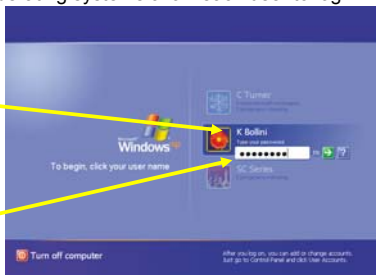


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8.15 Fig. 8-16

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How do operating systems administer security?


- Most multiuser operating systems allow each user to log on



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8.16 Fig. 8-17

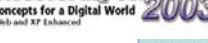
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What is **Active Directory (AD)**?



**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

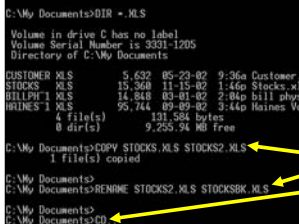
# Stand-Alone Operating Systems

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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
BILLPLT1.XLS         14,848  03-01-02  2:04p  bill physics graph.xls
HAINES1.XLS           95,744  09-09-02  3:44p  Haines Volunteers.xls
               4 file(s)      121,504 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



[illegible][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

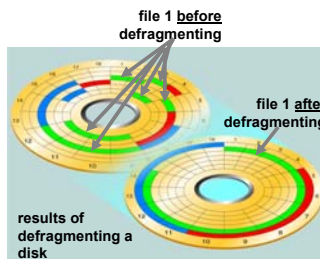
Next  
8.25

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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

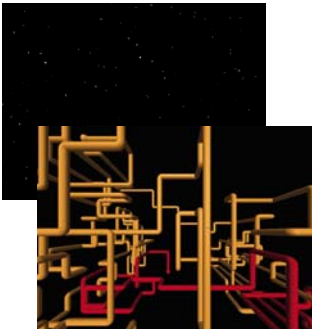
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## Utility Programs

### 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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