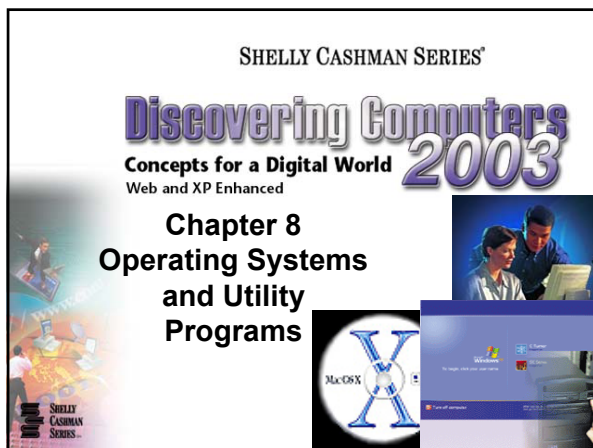




Discovering Computers 2003 Chapter 8 Objectives

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

Discovering Computers 2003 Operating Systems

Concepts for a Digital World
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What is an operating system (OS)?

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

Operating System

Next
8.3

Discovering Computers 2003 Operating Systems

Concepts for a Digital World
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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

Discovering Computers 2003 Operating Systems

Concepts for a Digital World
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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

Next
8.3

Discovering Computers 2003 Operating Systems

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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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Concepts for a Digital World
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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

Next
8.4

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Operating System Functions

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

Labels on the left side of the screenshot:

- BIOS version and copyright notice
- total amount of memory
- devices detected and tested
- Windows message
- sound card and CD-ROM drivers loaded

Messages on the right side of the screenshot:

- 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

Next
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 accesses 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: BIOS checks components such as mouse, keyboard connectors, and expansion cards

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

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)

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**

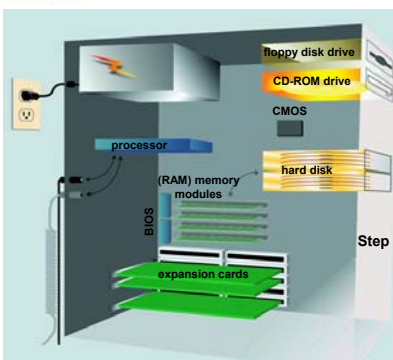
Next
8.5 Fig. 8-4

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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

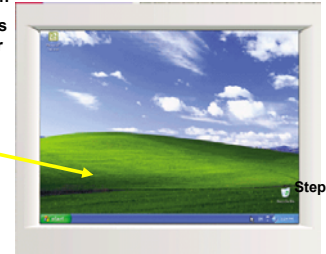
Next
8.5 Fig. 8-4

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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



click Start to display list of applications you can run

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**



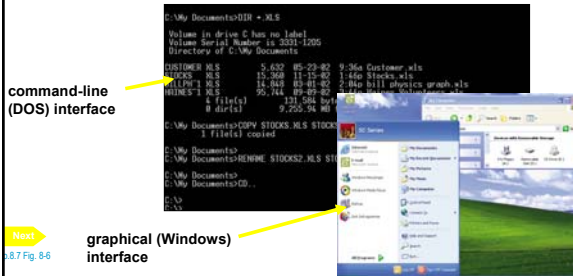
Next
8.6 Fig. 8-5

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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

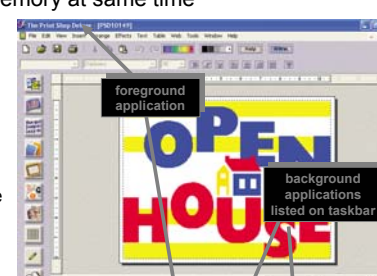
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Concepts for a Digital World
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Operating System Functions

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

Next
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

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What is **memory management**?

- Optimizes the use of random access memory (RAM)

The diagram shows three overlapping purple circles. The left circle contains the text 'allocates, or assigns, data and instructions to area of memory while they are being processed'. The top circle contains 'monitors contents of memory'. The right circle contains 'clears items from memory when processor no longer requires them'. A yellow arrow labeled 'Next' points to the right.

Next
8.10

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What is **virtual memory (VM) management**?

- Operating system allocates portion of hard disk to function like RAM
- Paging
- Thrashing

The diagram illustrates the process of virtual memory management. It shows a 'disk (virtual memory)' represented by a stack of disks and 'RAM (physical memory)' represented by a memory module. A green arrow labeled 'page swapped out' points from the RAM to the disk. A blue arrow labeled 'page swapped in' points from the disk back to the RAM.

Next
8.10 Fig. 8-9

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How does an operating system schedule jobs?

- Adjusts schedule based on job's priority

The diagram shows a central box labeled 'job' with the text 'An operation the processor manages'. Four arrows point towards this central box from surrounding boxes: 'receiving data from an input device' (top left), 'sending information to an output device' (bottom left), 'processing instructions' (bottom right), and 'transferring items from storage to memory and from memory to storage' (top right).

Next
8.10

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What is **spooling**?

- Print jobs sent to buffer instead of directly to printer, where print jobs wait their turn

The diagram illustrates the spooling process. It shows a 'server' connected to a 'laser printer' via a 'disk'. A 'print queue' window is shown on the server, listing print jobs. A 'print spooler application' is also shown. Arrows indicate the flow of 'jobs to be printed' from the server to the disk, and 'jobs being printed' from the disk to the laser printer.

Next
8.11 Fig. 8-10

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What is a **device driver**?

- Small program that tells operating system how to communicate with a device
- Each device requires its own specific driver

The diagram shows a printer on the left and a computer tower on the right. A large purple double-headed arrow labeled 'device driver' connects the printer to the computer.

Next
8.11

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How do you install a device driver?

- Use the Printers and Other Hardware link in Control Panel

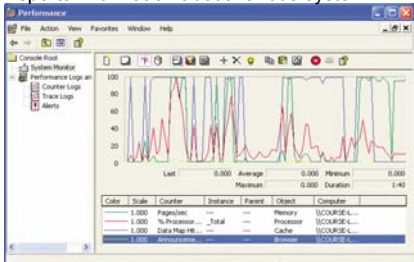
The screenshot shows the Windows XP Control Panel. The 'Printers and Other Hardware' link is highlighted in the 'Pick a category' section.

Next
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

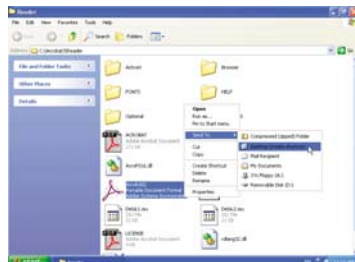


Next
8.14 Fig. 8-14

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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

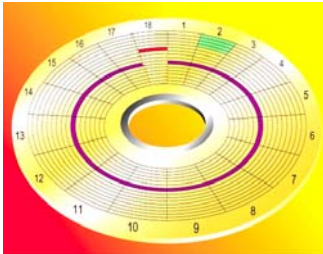


Next
8.15 Fig. 8-15

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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



Next
8.15

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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**



Next
8.15 Fig. 8-16

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How do operating systems administer security?

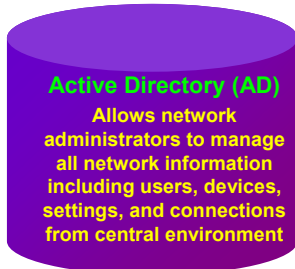
- Most multiuser operating systems allow each user to log on



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
8.16

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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



Next
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



Next
8.25

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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

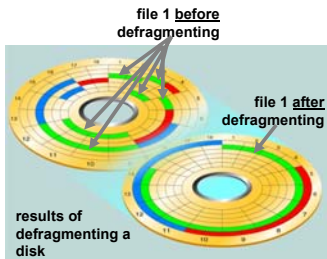
Next
8.25

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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

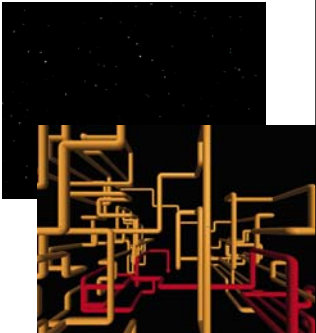
Next
8.27

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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



Next
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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