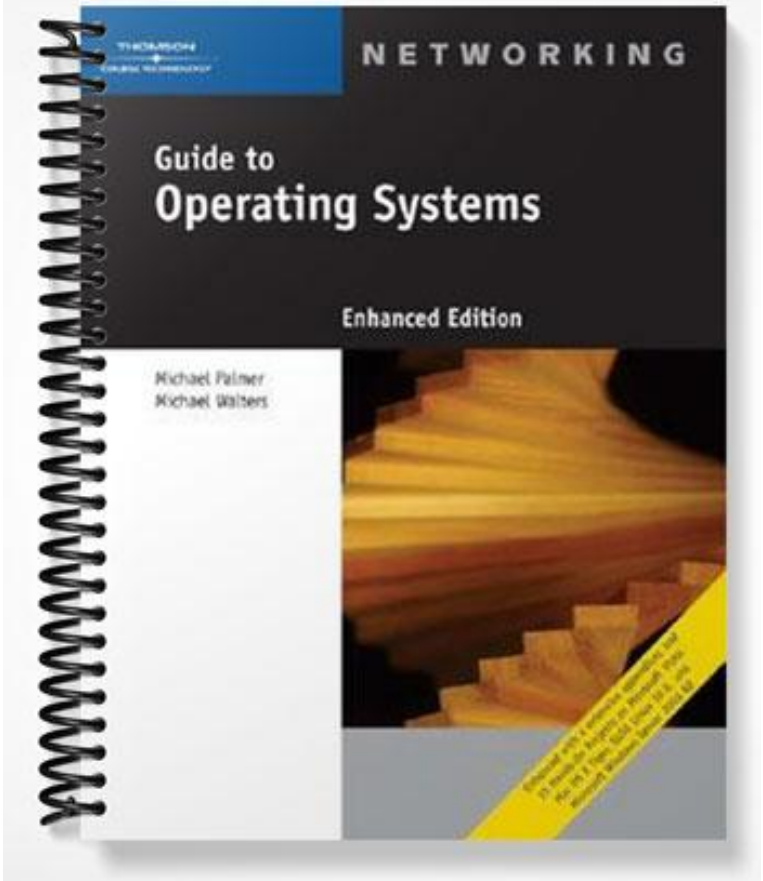
SOLUTIONS MANUAL



Chapter 2:
Current Hardware and PC Operating Systems

Chapter 2 Answers to Review Questions

1. An EPIC CPU design:
   a. evolved from the CISC processor
   b. was created in a joint project between Apple and IBM
   c. allows a single processor to execute 20 or more operations at a time
   d. uses a companion chip with a built-in compiler
   Answer: c.

2. True or False? Instruction pipelining is a processing technique which allows the processor to operate on one instruction at a time with the pipeline keeping the instructions in order?
   Answer: False

3. A specialized piece of hardware call the _____ predicts what data will be needed and makes that it available in cache before it is needed.
   Answer: cache controller

4. The most recent, graphical Microsoft Windows server family of operating systems is the _____ family.
   Answer: Windows Server 2003

5. The _____ bus is used to keep the CPU informed of the status of resources and devices connected to the computer.
   Answer: control

6. True or False? Hyper-Threading Technology enables two separate processors to appear to the operating system as a single processor?
   Answer: False

7. The first widely used personal computer CPU was manufactured by Intel and their model number was:
a. 68040 b. 80286 c. 8086 d. 8088
   Answer: d.

8. In Windows 95, Microsoft introduced a way to add hardware to a computer in a much easier way than had been available before. This feature is called _____.
   Answer: Plug and Play or PnP

9. A virtual private network (VPN) is:
   a. a standalone virtual network
   b. a virtual network residing within one computer
   c. a private network that is like a tunnel through a larger network
   d. a network that can only be observed from the outside on rare occasions
   Answer: c.

9. Kerberos security was introduced in Windows _____.
   Answer: 2000

10. The five versions of Windows XP are: _____, _____, _____, _____, and _____ Editions.

Answer: Windows XP Home, Windows XP Professional, Windows XP Tablet, Windows XP Media Center, and Windows XP 64-Bit

11. Windows 2000 resolved some of the security problems in Windows NT by not turning on any of the services by default. True or False?
Answer: False

12. Unix versions adhere to one of the two main design standards which are the _____ or the _____.
Answer: Berkeley Software Distribution (BSD) or System V Release 4 (SVR4)

13. The X Windows type GUI interface in Red Hat Linux is called _____.
Answer: GNOME

14. Novell's Netware 6.5 shipped with major open-source enhancements?
Answer: True

15. One benchmark of the speed of a CPU is the number of instructions it can perform with each clock cycle. How many clock cycles will a 3.06 GHz computer have? *Answer:* 3,060,000,000 or 3.06 billion

16. What version of the Mac OS provides personal video conferencing where one can have video conversations with another Mac in full screen video?
Answer: Mac OS X Version 10.3 Panther

17. What relatively high-speed input/output port was first supported in Windows 98?
a. firewire
b. USB
c. parallel
d. ethernet
Answer: b. USB

18. In which operating system(s) might you find the utility, Microsoft Windows Journal?
Answer: on a Tablet PC

19. The latest generation of the Apple processor is called the _____.
Answer: G5

20. The Intel Itanium processor family is built on what architecture?
Answer: The RISC-based EPIC processor

Hands-On Projects Tips and Solutions for Chapter 2

Project 2-1

In Step 2, the System Monitor displays the Kernel processor usage as a percent. Note that the default monitor display is different, depending on the operating system. For example, it is a simple horizontal bar graph in Windows 95, but is a more sophisticated vertical bar graph in Windows 98/Me.

In Step 3, students should notice how the percent usage changes while they are monitoring.

Project 2-2

In Step 3, students should report how the graphs are changing, such as if CPU usage is going up or down – or remains the same.

In Step 4, students will find memory usage can be monitored in Windows 2000. In Windows XP and Windows Server 2003, the page file usage is monitored. Also, the allocation of memory is displayed in four categories:

- Totals
- Commit Charge (K)
- Physical Memory (K)
- Kernel Memory (K)

Additionally in Step 4, the amount of physical memory is shown as the Total figure under the Physical Memory box. The amount of memory used by the Kernel is shown as the Total figure under the Kernel Memory (K) box.

Project 2-3

In Step 5 of the first set of steps, students will see many devices, such as whether there is power management support, whether there is a memory access controller, the processor, motherboard resources, numeric processor, PCI bus, Plug and Play BIOS, system timer, and others, depending on the hardware.

In Step 6 of the first set of steps, the device status should be: "This device is working properly."

In Step 7 of the first set of steps, students will likely find that there are options to check the status of the math/numeric coprocessor and of the PnP BIOS.

In Step 4 of the second set of steps, the number of processors displayed for Windows XP and Windows Server 2003 will match the number of processors in the computer. In Windows 2000, the devices under System Devices will be similar to those found in Step 5 of the first set of steps in this project.

In Step 7 of the second set of steps, the processor status should be "This device is working properly."

Project 2-4

In Step 2, students should notice the Windows 95/98 desktop icons, such as My Computer, Network Neighborhood, My Briefcase, Internet Explorer, My Documents, Recycle Bin, Inbox or Outlook, and so on.

In Step 3, the Start button options will vary, depending on how the Start button menu has been customized (and whether students are using Windows 95 or 98). However, typical options include Windows Update (for Windows 98), Programs folder, Favorites folder, Documents folder, Settings, Find, Help, Run, Logoff, and Shutdown.

In Step 5, students should notice that the Windows XP and Windows Server 2003 desktops (out of the box) are free of icons, because Microsoft intended to remove clutter from the desktop. The Start button and Taskbar, though are similar between the two operating systems, although the Windows XP and Windows Server 2003 Taskbars also have less clutter.

In Step 6, the Windows XP and Windows Server 2003 Start button menus contain many of the options that were desktop icons in Windows 95/98, such as My Computer, My Recent Documents, and My Network Places. Other new options include options to go directly to Control Panel and Printers and Faxes. Also, there are new options that reflect the multimedia emphasis of Windows XP, such as My Pictures, My Music, Windows Media Player, and Windows Movie Maker. Also, in Windows XP and

Windows Server 2003 programs are accessed via All Programs. However, some old options are left in Windows XP, such as Help and Support (more enhanced than the Windows 95/98 Help), Run, and Search (more enhanced than the Windows 95/98 Find).

Project 2-5

In Step 2, the general categories include:
- Pick a Help Topic
- Ask for Assistance
- Pick a Task

In Step 3, Windows basics provides information on all types of topics to help users get acquainted with Windows:
- Core Windows tasks
- Searching for information
- Protecting your computer
- Keeping Windows up-to-date
- Tips for using Help

In Step 6, the "Hardware and system device problems" topic provides help with hardware problems; and for software problems, there is the "Application and software problems" selection.

In Step 8, the Troubleshooters include:
- System setup
- Startup/Shutdown
- Display
- Home networking
- Hardware
- Multimedia and games
- Digital Video Disks (DVDs)
- Input Devices
- Drives and Network Adapters
- USB
- Sound
- Modem
- Internet connection sharing
- Internet Explorer
- Outlook Express (Messaging)
- File and Print Sharing
- Printing

Also, in Step 8, students should try one of the troubleshooters.

Project 2-6

In Step 3, students will see three options:
- I want to choose from a list of programs
- I want to use the program in the CD-ROM drive
- I want to locate the program manually

In Step 7, the compatibility modes are:
- Microsoft Windows 95
- Microsoft Windows NT 4.0
- Microsoft Windows 98 / Windows Me
- Microsoft Windows 2000

- Do not apply a compatibility mode

In Step 11, the program starts so that students can take it for a test run.

Project 2-7

As the text says, students should be able to determine the shell they are in by looking at the prompt and by viewing the results of the $SHELL command: /bin/sh is the Bourne shell, /bin/bash is the Bourne Again shell, and /bin/ksh signifies the Korn shell.

Project 2-8

In this project students learn about the Red Hat Linux 9.x Gnome interface.

In Step 2, students will see the desktop icons that may include (depending on their set up)
- root's Home
- Start Here
- Trash

In Step 4, the options on the Main menu include:
- Start Here
- Programs
- Favorites
- Applets
- Run
- Panel
- Lock screen
- Log out

In Step 5, the options on the Program menu include:
- Applications
- Utilities
- Development
- Games
- Graphics
- Internet
- Multimedia
- Settings
- System
- Help

In Step 6, the options on the Applications menu include:
- Calendar
- Dia
- Address Book
- gedit
- Time tracking tool
- Nautilus
- Gnumeric
- AbiWord
- Emacs
- Ical

Project 2-9

This project will walk the student through the steps to download an evaluation copy of Netware 6.5 for use in later chapters of this book.

Project 2-10

In Step 2, the desktop features include, the menu bar options:

- Finder
- File
- Edit
- View
- Go
- Window
- Help

In addition to the menu bar there is an icon for Macintosh HD, a control strip at the bottom of the desktop (with new icons), and an Applications window open on the desktop.

In Step 3, the options will vary according to the menu that is selected. For example, the File menu contains options for accessing files, such as opening a file or creating a new folder. The Edit menu contains edit functions, such as copying and cutting.

In Step 4, some of the applications include:

- Address Book
- Apple Script
- Calculator
- Chess
- Clock
- Dock Extras
- Image Capture
- Internet Connect
- Internet Explorer
- Mail
- Preview
- Quick Time Player
- Sherlock
- Stickies
- System Preferences
- TextEdit
- Utilities

In Step 5, click the application in the Applications window to run it.

Case Projects

"Darts" is a sporting goods company with outlets in most of the western status. This company has a network of 278 computers consisting ofthe following hardware:

- Eight Windows NT 4.0 servers
- Two red hat Enterprise Linux 3.0 servers
- 20 computers running Mac OS 8.1
- 32 computers running Windows 95
- 216 computers running Windows 98

Darts has experienced record profits and now wants to upgrade all of their computers.

1) The accounting department has all of the Windows 95 computers that are running on 90 MHz Pentium hardware. The accounting director wants to upgrade to Windows XP. What are the advantages of upgrading for this department in terms of the enhanced operating system functions that are available in Windows XP?

Answer: The Windows XP operating system is a more stable operating system and has better help and support documentation. Additional features, such as, keeping photo albums, playing music, running video and audio files, playing games, and using other multimedia applications are probably not important to the accounting director.

2) If the accounting department does upgrade to Windows XP, will they have to upgrade the processors, and if so, to what? Also, will the department be able to run a legacy 16-bit billing program that was designed for Windows 95?

Answer: The minimum system requirements for Windows XP Professional are: 233 MHz processor (300 MHz recommended), 64 MB RAM (128 MB recommended), Super VGA display, 1.5 GB of disk space, CD-ROM or DVD drive, and a mouse or pointing device.

Programs written for Windows 95 and earlier operating systems may not run in Windows XP without using the new Program Compatibility Wizard. The Program Compatibility Wizard is used by first selecting the program that you want to run and then selecting the operating system, such as Windows 95, that the program is designed to run under.

3) The marketing department uses the Mac OS 8.1 computers, which are G3 machines. Since they plan to purchase new computers, what is the newest Mac operating system to which they can upgrade and what new processor can they upgrade to? What would be the advantage of this upgrade for their department?

Answer: They can upgrade to G4 machines with either the Mac OS 9 or Mac OS X operating system. Mac OS 9 introduces features for better hardware and Internet access. Out of the box, Mac OS X is already configured so that different users can access the operating system in their own workspace, without affecting other users. If one user wants to logout, so that another user can access Mac OS X, the first user can now select the new Log Out option from the Apple menu, instead of turning off the computer and then rebooting.

4) The President of Darts is convinced that the processor on his Windows 98 system is overloaded. How can you help him determine if there is a problem with the processor?

Answer: One option is to check out the type of processor, memory, etc. The minimum system requirements for Windows 98 are: 80486DX computer with a 66 MHz or faster processor, 16 MB of memory, 120 MB or higher of disk space, VGA monitor, mouse or pointing device. It is important to remember that these are minimum requirements and Windows 98 will run much better if the recommended requirements are used as discussed in Chapter 4.

5) The new chief financial officer (CIO) believes that all of the Windows 98 computers should be upgraded to Windows Me, because Windows XP Professional is too new. What are the advantages and disadvantages of upgrading to Windows Me compared to Windows XP Professional or Windows 2000 Professional?

Answer: Many users, including office and professional users, have chosen to use Windows Me because they have older 16-bit MS-DOS and Windows applications for which there is no 32-bit equivalent. The

limitation in using Windows Me on a corporate network is that there can be problems in getting it to communicate with a Windows NT or Windows 2000 domain – and thus such computers may have to be used as standalone machines that cannot fully communicate with others.

6) What would be the advantage of upgrading the Windows NT servers, and if you recommend upgrading them, what operating system do you recommend? Why?

Answer: Windows NT servers should be upgrade to Windows 2000. It is built on the Windows NT technology, but Windows 2000 is a more robust operating system than Windows NT. Windows 2000 runs about 30 % faster than Windows NT. Windows 2000 uses preemptive multitasking, multithreading, and the Kernel runs in the privileged mode.