Brief Edition

Computers in your Future 2004

Bryan Pfaffenberger

Bill Daley

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PEARSON
Prentice Hall

Upper Saddle River, New Jersey

Library of Congress Cataloging-in-Publication Data

Pfaffenberger, Bryan, 1949-
Computers in your future 2004. Brief edition / Bryan Pfaffenberger, William Daley.
p. cm.
ISBN 0-13-140452-0
1. Computers. I. Daley, William, 1953- II. Title.

QA76.5.P398258 2003
004--dc21 2002192981

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Cover Design: Quorum Creative Services
Composition: Quorum Creative Services
Full Service Management: Pre-Press Company Inc.
Photo Research: Shirley Webster
Printer/Binder: R.R. Donnelly and Sons Company/ Willard
Cover Printer: Phoenix Color

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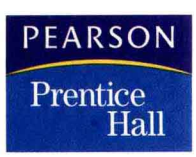

10 9 8 7 6 5 4 3 2
ISBN 0-13-140452-0

ACKNOWLEDGMENTS

We are grateful for the assistance of the following reviewers of the fifth edition:

Judith F. Bennett, Sam Houston State University
Judy Clark, Northwest Missouri State University
Mark DuBois, Illinois Central College
Gina M. Dunatov, DeVry College
Alan D. Evans, Montgomery County Community College
Michelle M. Hansen, Davenport University
Shelly Hawkins, Western Washington University
Cheryl Jordan, San Juan College
Bhushan Kapoor, California State University at Fullerton
Emilio A. Laca, University of California at Davis

We are grateful for the assistance of the following reviewers of the fourth edition:

Beverly Amer, Northern Arizona University
Dennis Anderson, Pace University
Bob Bretz, Western Kentucky University
Joseph DeLibero, Arizona State University
Mark DuBois, Illinois Central College
Said Fares, Valdosta State University
Nancy Grant, Community College of Allegheny County
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John Ross, Fox Valley Technical College
Ray Smith, Salt Lake City Community College
Steve Smith, El Paso Community College
Lynn Wermers, North Shore Community College
Linda Woolard, Southern Illinois University

(continues)

I'd like to recognize Jodi McPherson, Executive Editor, for believing in me and for her unabashed support of my work. Special thanks go to Shannon Leuma, Development Editor, for her expert advice and her keen eye for detail. She pushed me very hard at times, and the book reflects her dedication to excellence. April Montana, Project Manager, once again saw the book through the complex production process with the coolness and calmness that comes only from a consummate professional. I sincerely appreciate the artistic flair with which Debbie Iverson of Quorum Creative Services composed the text, photos, and artwork seen in this book. Jennifer Carley and the dedicated workers at Pre-Press provided the best copyediting and proofreading an author could hope for. Their attention to detail has helped ensure that you are reading the cleanest textbook on the market today. Shirley Webster, Photo Researcher, worked long and hard hours in researching the photos. She was a joy to work with and provided photos that accurately depict the topics in the text. I'd also like to acknowledge Caleigh McPherson for her timely delivery during the project. Her arrival was much anticipated, and it is with great pleasure that I welcome her to the team. Finally, I would like to express my deepest appreciation to everyone in my Prentice Hall family. Quality comes from caring, and Prentice Hall is a company full of people who care.

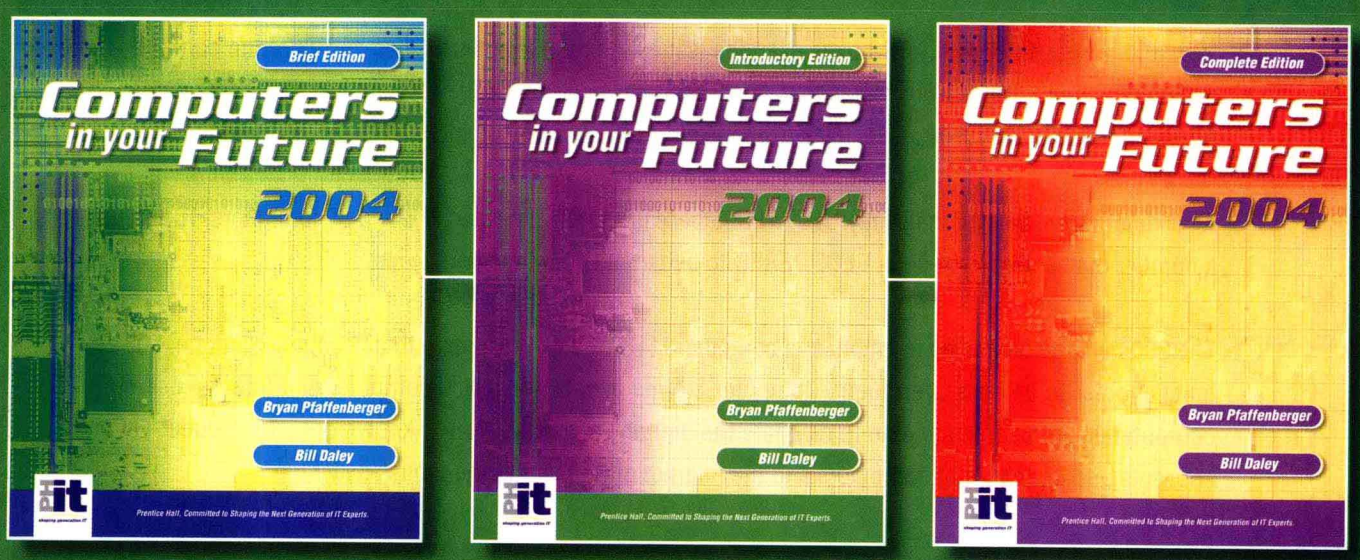
—Bill Daley

About This Edition

You've made suggestions, and we've listened.

- You want the new edition of ***Computers in your Future*** to be more current and streamlined than the fifth edition—but without forcing changes in the way you're teaching the course.
- You want choices in how much coverage is included in the book.
- You want a concepts book with great learning tools that hold your students' interest and reinforce critical material—but without causing them to lose focus.
- You want a text-specific, interactive Web site that enhances your students' learning ability—as long as they are lead intuitively to key information that is concise, intelligent, and clearly laid out.
- You want a Web site with additional resources and practice exercises that are valuable for your students.

Now available as an annual edition, ***Computers in your Future 2004*** brings an improved design, updated coverage, updated end-of-chapter materials, and a revised accompanying Web site. This text is ready for the challenge of teaching even your most diversified class—without sacrificing quality, integrity, or choice. ***Computers in your Future 2004*** comes in three versions—Brief, Introductory, or Complete—to meet the needs of your classroom.



The 2004 edition offers you the flexibility and currency that were hallmarks of the previous edition, plus a range of significant improvements:

- As was the case in the previous edition, *Computers in your Future 2004* is available in three options to better suit your teaching needs. Our **Brief** version contains Chapters 1–9, our **Introductory** version contains Chapters 1–12, and, for the full breadth of coverage, our **Complete** version offers Chapters 1–16.

- Electronic commerce Web case videos, E-COMMERCE IN ACTION, are available on the book's companion Web site. In our six videos, students follow PFSWeb, Inc., a company based in Plano, Texas, that helps e-commerce companies keep up with the online buying and selling marketplace. Each video is designed to introduce students to electronic commerce strategies and issues, including privacy, security, and ethics.

- New and improved SPOTLIGHT "minichapters" highlight innovative thinking in various subject areas. This edition's Spotlights include in-depth looks at file management, buying and upgrading a computer system, Microsoft Office XP, multimedia and virtual reality, Information Age ethics, and emerging technologies.

- New and improved IMPACTS boxes offer chapter-by-chapter insights into the societal implications of computing. Students are introduced to thought-provoking ideas to stimulate class discussion or team debates on all aspects of the impact technology is having on life today.

- New and improved CURRENTS boxes examine issues in computing as well as cutting-edge computer technology. Topics range from robots to national security issues to stopping spam. Like IMPACTS, CURRENTS boxes offer you and your students a chance to explore and discuss a topic relevant to technology today.

- All chapters have been significantly UPDATED, a necessity in the fast-paced world of computers. In addition, a number of chapters have been REORDERED to better suit your teaching needs.

- The 2004 edition continues to emphasize computer FLUENCY. It's one thing to be computer literate, but it's quite another to be computer fluent. Computer-literate people are skilled computer and Internet users; computer-fluent people are able to navigate the digital world easily. Their knowledge of the underlying concepts and principles of computers and the Internet gives them tremendous advantage.

For the Instructor

Instructor Resources

The new and improved Prentice Hall Instructor's Resource CD-ROM includes the tools you expect from a Prentice Hall Computer Concepts text, such as:

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- Solutions to all questions and exercises from the book and Web site
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- A Windows-based test manager and the associated test bank in Word format with over 1,500 questions
- Computer concepts animation videos
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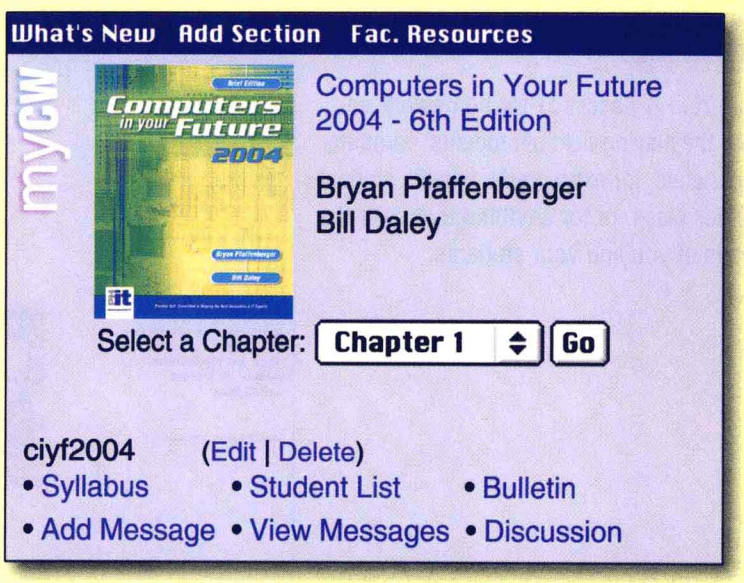
...and the brand new **Present IT software** with a user-friendly, browser-based interface, organized by chapter, with search and sort functions and prebuilt PowerPoint slides. The Present IT software also gives you the ability to build a presentation from scratch incorporating any of the Instructor's Resources, and includes browse and preview functions. This software allows you to present directly from the CD or collect and save your custom presentations to disk for later use in the classroom or to upload to your online course.

My Companion Website www.prenhall.com/ciyf2004

This text is accompanied by My Companion Website at **www.prenhall.com/ciyf2004**. Features of this site include the ability to customize your home page with technology updates, Internet exercises, e-commerce case videos, an interactive study guide, downloadable supplements, and much more. My Companion Website also offers the option to answer end-of-chapter materials online.



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Prentice Hall train & assess it generation

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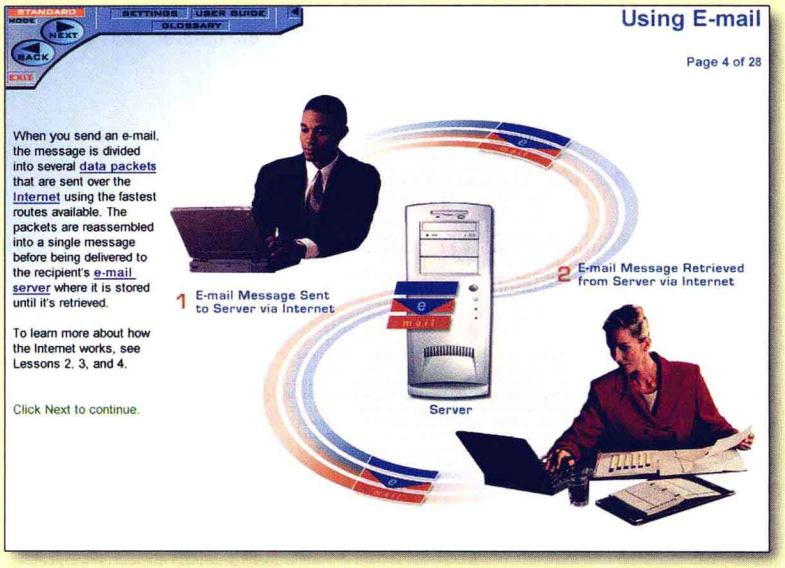

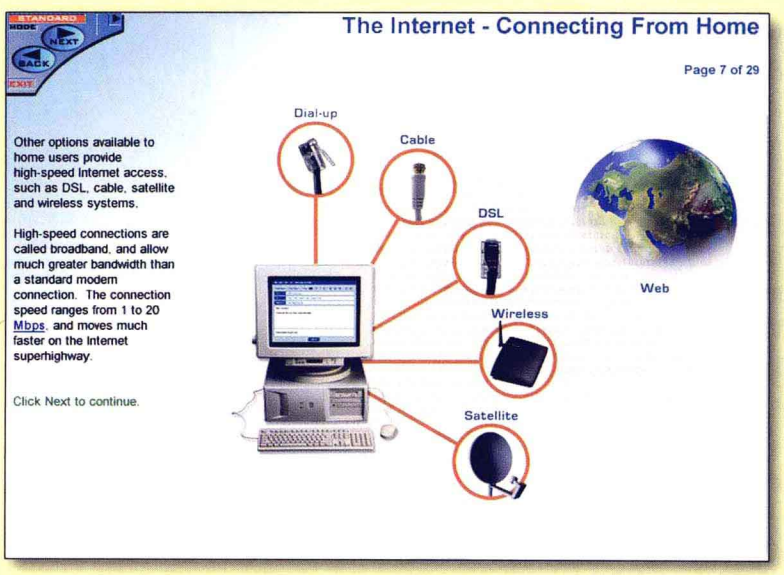

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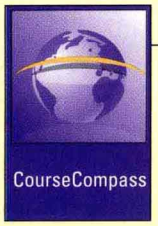

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For the Student

Welcome to ***Computers in your Future 2004!*** The following pages are designed to help you get the most out of the material in this book and to make your learning process rewarding. We call your attention to areas that may help you as you read through the book.

SPOTLIGHT sections highlight important ideas about computer-related topics, and provide in-depth useful information to take your learning to the next level.

SPOTLIGHT

Buying and Upgrading Your Computer System

Many college students already own a computer. At a typical state university, as many as 80 percent of students own a computer and make full use of high-speed network connections available in their dorm rooms. Increasing numbers of colleges are even expecting students to purchase a computer upon entering the university.

Owning a computer is the best way to ensure computer literacy, because when you own a computer, you have the opportunity to manage it. And employers are demanding higher levels of computer literacy than ever before. According to a recent study, more than 83 percent of surveyed employers described computer literacy as "important" or "very important" in a hiring decision. Particularly attractive to employers were the following skills: word processing (96 percent), e-mail (93 percent), spreadsheet analysis (86 percent), database entry and editing (83 percent), use of presentation software (75 percent), and Internet searching (63 percent). If you're in the market for a new computer, you'd be wise to buy a system that can run all this software, and then to try to use as much of it as you can while you're still in school.

Get Started the Right Way ✔

There's a right way and a wrong way to select a computer. The right way involves understanding the terminology and relative value of the components that make up a computer system. You then determine your software needs and choose the computer that runs this software in the most robust way. What's the wrong way? Buying strictly based on price, being influenced by sales hype, and buying a system you know nothing about.

For these reasons, this section begins by introducing you to the hardware-first approach. Then we'll move on to system configurations and software.

Choose the Right Hardware ✔

Computer systems are made up of many components. The following are the components you need to understand in order to make a good decision about which computer you should buy.

- processors
- memory
- hard disks
- internal drives
- video cards and monitors
- network cards
- modems
- sound cards and speakers
- keyboards and mice
- an uninterruptible power supply

This section will introduce you to these components. Keep in mind as you read that one of the best ways to prepare yourself for buying a computer is to peruse newspaper and magazine ads listing computer systems for sale. Another great source is the Internet. To research particular computer manufacturers (such as Apple, Dell, IBM, Gateway, and so on) simply type the computer manufacturer's name in the address bar of your Internet browser and add the .com extension. Several good comparison sites are also out there, such as CNET, MySimon, Yahoo!, ZDNet, and PCWorld. On these sites you can perform side-by-side comparisons of different systems.

Let's start our discussion of hardware components by looking at the processor.

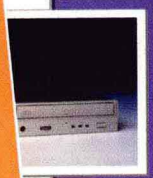
PROCESSORS

Of all the choices you make when you buy a computer, the microprocessor is the most important. Strictly speaking, the microprocessor (called a processor or CPU for short) is the computer, which is why it's the most important component in terms of shaping the system's overall performance. In general, the higher the processor's **clock speed**, the faster the computer (see Figure 4A).

4.A

4A
Computer systems are named after their processors and clock speed.

4.C



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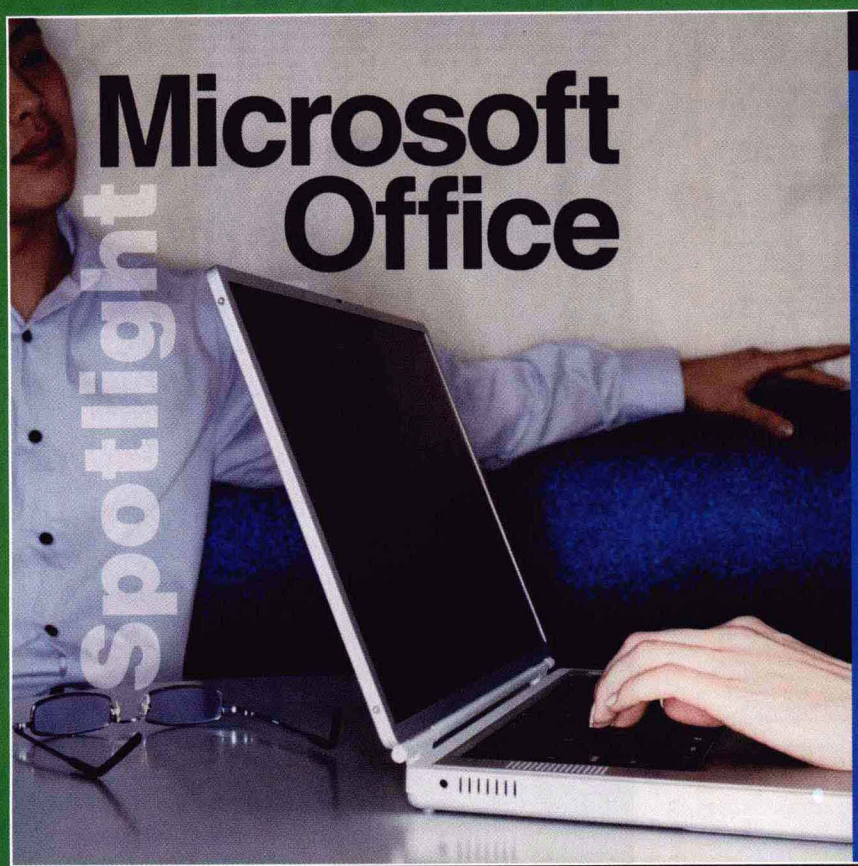


6.A

You're at work and your boss tells you she needs you to create a presentation for her to deliver at the annual stockholders' meeting in two days. Although you know creating a professional presentation is a challenge, this is the opportunity you've been waiting for---you were hired in part because of your abilities to use productivity software programs.

You get started right away by using Microsoft Access to generate reports that provide you with important information regarding your company's activities throughout the year. You then import the data you have extracted from Access into Microsoft Excel so that you can perform some statistical analysis and produce a number of key charts and graphs for stockholders. Now that you've got the background materials covered, you open Microsoft Word. Into your Word document, you copy your Excel charts and a number of the Access reports you have generated. You also type and format the meeting agenda that your boss will distribute to the attendees. Now comes the fun part: you open PowerPoint and create a professional, visually appealing presentation using the Word, Excel, and Access documents you've already created. As you put the finishing touches on your presentation—embedding an MP3 file into the introduction slide—you realize you've finally been able to use the skills you've worked so hard to acquire.

FIGURE 6A
Being able to use software programs such as those in Microsoft Office will help you gain a competitive edge in many careers.

All of the programs you've used to help you create your presentation are components of a suite of software programs called ***Microsoft Office****. This Spotlight explores the various programs, features, and uses of Microsoft Office (see Figure 6A).*

IMPACTS boxes in each chapter illustrate thought-provoking cultural, ethical, and societal implications of computing you may face.

IMPACTS

EMERGING TECHNOLOGIES

How "Human" Can Robots Become?

Robots have come a long way since the term was first used to describe man-made laborers in a 1921 play by Czech author Karel Capek. Once found only in scientific labs, today robots paint cars for auto manufacturers, help surgeons conduct surgery, and make trips to outer space.

Robots are entering our homes, too. Can't have a pet in your dorm room? How about AIBO, the dog-like "Entertainment Robot" from Sony (see Figure 1.4a)? According to Sony, AIBO has "the five instincts of love, curiosity, movement, hunger, and sleep" as well as the "emotions of happiness, sadness, anger, surprise, fear, and dislike." How can you tell what AIBO is "feeling"? According to the Japanese company, AIBO conveys its "feelings" through melodies, body language, and lights in its eyes and on its tail. You can even train AIBO to do tricks. Best of all, AIBO doesn't need to be house-trained!

Even more human-like is the Japanese-made PaPeRo (short for **Pa**rtner-type **Pe**rsonal **Ro**bot) (see Figure 1.4b). PaPeRo's colorful, rounded canister shape may not look huggable at first, but when treated with kindness, it's irresistible. PaPeRo can welcome you home after a long day, and when you're away, it wanders around looking for human companionship. If it doesn't find any, it takes a nap. PaPeRo even has the ability to recognize voice patterns; if these patterns are unfriendly, it runs away.

While AIBO and PaPeRo are human-like toys, robots are taking the place of humans in industry in many ways. In 2001, IBM conducted an experiment in which robots participated in simulated trading of commodities such as pork bellies and gold. By using specially designed algorithms, the robots performed the same tasks as human commodity brokers—and made seven percent more money than their human counterparts! Can you imagine a future in which robots make economic decisions? It would certainly give the stock exchange floor a new look. (And speaking of which, are robots capable of insider trading?)

Figure 1.4
(a) AIBO and (b) PaPeRo are popular home robots.

Researchers are also working on a robot that changes its shape to accomplish a specific task. The shape-changing robot has moving pieces similar to a Rubik's cube, and a computer uses an algorithm to move about the various pieces. Such shape-changing robots will one day walk, crawl, carry tools, and fit into tight spaces humans can't.

Lockstep logic is wonderful for a machine, but humans rely on intuitive and often illogical decisions. Will robots ever act nonrationally? A team of researchers at MIT is working on a "sociable humanoid robot" able to learn from and interact with humans. Called Kismet, the big-eyed robot uses algorithms based on what we know about child development to react in a human way. According to MIT's research team, Kismet can perceive a variety of social cues from its "parent" through its eyes and ears, and can then deliver feedback through its facial expression, posture, and "voice." So will robots ever act illogically? With humans as surrogate parents, anything is possible.

high speeds. To check your document's spelling, a word processing program uses a simple but reasonably effective algorithm. Here's how it works: The program begins by constructing a list of all the words in your document. Then it compares these words, one by one, with a huge list of correctly spelled words. (If you tried to do this manually, it would take many hours.) If you've used a word that isn't in the dictionary, the program puts the word into a list of suspect words.

Output The result of the processing operation is a list of apparent misspellings. The word "apparent" is important here because the program doesn't actually know whether the word is misspelled. It is able to tell only that these words aren't in its massive, built-in dictionary. But many correctly spelled words, such as proper nouns (the names of people and places), aren't likely to be found in the computer's dictionary. For this reason, the program won't make any changes without asking you to confirm them.

CURRENTS

EMERGING TECHNOLOGIES

Wearables: The Fashion of Technology

It's a new day and you're trying to decide what to wear. Yesterday you wore your video glasses, but today you want to make more of a statement. How about a green- or rose-tinted Internet-enabled monocle? That would go perfectly with the ring controlling your computer. Or maybe you should wear your computerized suspenders. Your cell-phone vest needs a cleaning, so it looks like it'll be a backpack day.

All dressed, you head down the street in your "wearables." As you walk to the library, you e-mail a friend on your wrist pad, asking her to meet you for lunch later. At the library, the network automatically recognizes you from your ring. You search your pocket for your stylus, find it, and point to a library computer screen. The computer acknowledges you, and viewing through your monocle, you access your documents, open one, and begin jotting down notes by waving your pen in the air. Leaving the library, you call three of your friends. You visually chat together through your monocle and earpiece until your next class. You are seamlessly network-connected throughout your day through your wearable fashions.

Sound intriguing but unbelievable? While not all of this is possible just yet, some of it is. Take the Xybernaut company's "Poma," which combines a head-mounted display with a portable, lightweight CPU and an optical pointing device. Selling for about $1500, Poma gives you wearable computer access to the Internet, e-mail, Word files, and games. It's also compatible with wearable keyboards and other input devices.

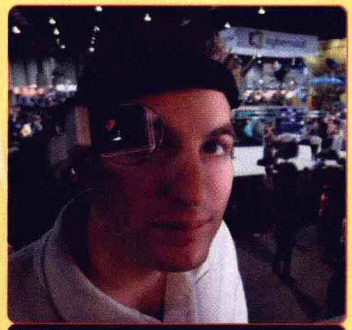


Figure 3.42
Xybernaut equipment is helping would-be Mars explorers learn to use hands-free computing technology.

In fact, Xybernaut wearable computers may one day be used by astronauts in space (see Figure 3.42). They were already selected to be used in field tests for a research project dedicated to exploring the planet Mars. It is hoped that the equipment will enable the one-day Mars explorers to learn how to use hands-free computing in their work. The wearable computers may also someday be used to enable two-way video- and audio-conferencing from Mars to the Earth.

Most wearable technologies to date have been incorporated into headsets and glasses, backpacks and fanny packs, rings and wristbands, and multipocketed pants. Recently, however, Santa Fe Science and Technologies created a commercial fiber that is similar to nylon but conducts electricity. Called "Smart Thread," this fiber can be woven into clothing like traditional threads, but it gives clothing computer-like abilities. The possibilities of Smart Thread are limitless. No more heavy packs for soldiers, who will instead be able to wear lightweight computers. Emergency search and rescue teams may one day wear computers that could seamlessly connect them to a command center. Smart Thread could also be woven into a child's clothing to act as a tracking device. The list goes on and on.

Products using Smart Thread are still two or three years away, but soon you may be wearing your computer, cell phone, music device, and other technologies as if they were a sweater, avoiding those unflattering bulges. Get ready for wearables with style!

CURRENTS boxes in each chapter examine cutting-edge issues in computing and computer technology.

2.4 COMPUTERS IN YOUR FUTURE 2004: CHAPTER 2

mounting internal components, protects these components from physical damage, and keeps them cool. A good case also provides room for system upgrades, such as additional disk drives.

System units come in a variety of styles. In some desktop computing systems, the system unit is a separate metal or plastic box that's designed to sit on top of a desk. Ideally, the case should have a small **footprint** (the amount of room taken up by the case on the desk). However, a small case may not have enough room for add-on components. One solution to this problem is the **tower case**, a large system unit case that is designed to sit on the floor next to a desk. Smaller versions of tower cases are called **minitower cases**.

Notebook computers and personal digital assistants (PDAs) are called **all-in-one computers** because the system unit contains all of the computer's components, including input components (such as a keyboard or pen interface) and the display. Some desktop computers, such as Apple's iMac, contain the display within the system unit (see Figure 2.3).

System units also vary in what is called their **form factor**. A form factor is a specification for how internal components, such as the motherboard, are mounted in the system unit. Early desktop computers used the **AT form factor**, a system unit case design that was introduced with IBM's Personal Computer AT (short for Advanced Technology) in 1984. More recent desktop systems use **ATX form factor** cases. Developed by Intel, the ATX form factor provides better accessibility to system components, better cooling, more full-sized expansion slots, and a more convenient layout for system upgrades.

The following sections explore the system unit of a typical desktop computer, beginning with the most important component: the computer's motherboard.

Techtalk

ATX form factor
The form factor of today's standard personal computer case. The previous design, called the AT case, didn't handle ventilation very well. It drew air in from anywhere and expelled it by means of a fan mounted on the case's back cover. The result? Dust, dirt, and grime were drawn into the case, coating the components with a layer of greasy fuzz, which insulated them from the cooling fan. The ATX case solves this problem. It reverses the fan and adds a filter—which means that clean air is drawn into the case. If you're using a personal computer with an ATX case, be sure to keep the cover tightly sealed so the fan can do its work.

INSIDE THE SYSTEM UNIT

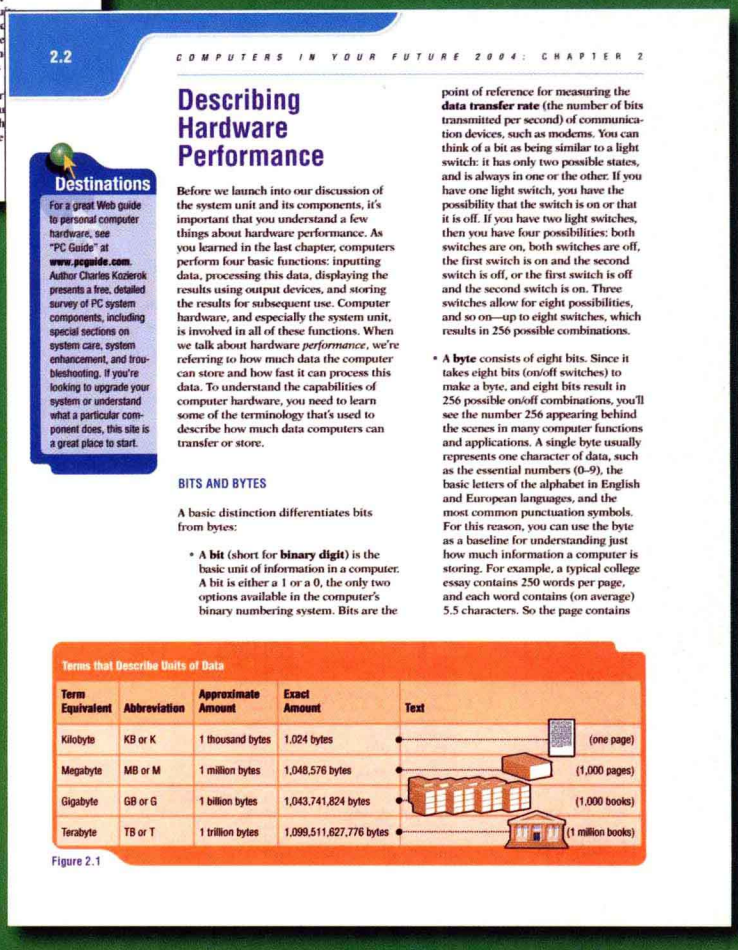
Most computer users don't need to open their system unit: they receive their computer in a ready-to-use package. However, if you ever do need to open your system unit, for example, to install more memory, bear in mind that the computer's components are sensitive to static electricity. If you touch certain components while you're charged with static electricity, you could destroy them. Always disconnect the power cord before removing your computer's case, and discharge static electricity by touching something that's well grounded, such as a water faucet. If it's one of those dry days when you're getting shocked every time you touch a doorknob, don't work on your computer's internal components.

If you do open your system unit, you'll see the following components (see Figure 2.4):

- **Motherboard** The **motherboard** is a large **printed circuit board (PCB)**, a flat piece of plastic or fiberglass that contains thousands of electrical circuits that are etched into the board's surface. They connect numerous plug-in receptacles, which accommodate the computer's most important components (such as the microprocessor). The motherboard contains the computer's **central processing unit (CPU)**. You'll learn more about the CPU later in this chapter; for now remember that the

Figure 2.3 a&b
(a) The Apple iMac's system unit sits on the desktop and also contains the computer's display. (b) The Macintosh G4 uses a tower case that sits on the floor next to the desk.

TECHTALK margin notes define commonly used computer jargon.



2.2 COMPUTERS IN YOUR FUTURE 2004: CHAPTER 2

Describing Hardware Performance

Destinations
For a great Web guide to personal computer hardware, see "PC Guide" at **www.pcguide.com**. Author Charles Kozierok presents a free, detailed survey of PC system components, including special sections on system care, system enhancement, and troubleshooting. If you're looking to upgrade your system or understand what a particular component does, this site is a great place to start.

Before we launch into our discussion of the system unit and its components, it's important that you understand a few things about hardware performance. As you learned in the last chapter, computers perform four basic functions: inputting data, processing this data, displaying the results using output devices, and storing the results for subsequent use. Computer hardware, and especially the system unit, is involved in all of these functions. When we talk about hardware *performance*, we're referring to how much data the computer can store and how fast it can process this data. To understand the capabilities of computer hardware, you need to learn some of the terminology that's used to describe how much data computers can transfer or store.

BITS AND BYTES

A basic distinction differentiates bits from bytes:

- A **bit** (short for **binary digit**) is the basic unit of information in a computer. A bit is either a 1 or a 0, the only two options available in the computer's binary numbering system. Bits are the point of reference for measuring the **data transfer rate** (the number of bits transmitted per second) of communication devices, such as modems. You can think of a bit as being similar to a light switch: it has only two possible states, and is always in one or the other. If you have one light switch, you have the possibility that the switch is on or that it is off. If you have two light switches, then you have four possibilities: both switches are on, both switches are off, the first switch is on and the second switch is off, or the first switch is off and the second switch is on. Three switches allow for eight possibilities, and so on—up to eight switches, which results in 256 possible combinations.
- A **byte** consists of eight bits. Since it takes eight bits (on/off switches) to make a byte, and eight bits result in 256 possible on/off combinations, you'll see the number 256 appearing behind the scenes in many computer functions and applications. A single byte usually represents one character of data, such as the essential numbers (0–9), the basic letters of the alphabet in English and European languages, and the most common punctuation symbols. For this reason, you can use the byte as a baseline for understanding just how much information a computer is storing. For example, a typical college essay contains 250 words per page, and each word contains (on average) 5.5 characters. So the page contains

Terms that Describe Units of Data

Term Equivalent	Abbreviation	Approximate Amount	Exact Amount	Text
Kilobyte	KB or K	1 thousand bytes	1,024 bytes	(one page)
Megabyte	MB or M	1 million bytes	1,048,576 bytes	(1,000 pages)
Gigabyte	GB or G	1 billion bytes	1,043,741,824 bytes	(1,000 books)
Terabyte	TB or T	1 trillion bytes	1,099,511,627,776 bytes	(1 million books)

Figure 2.1

DESTINATIONS margin notes direct you to related Web sites where you can explore chapter topics in more depth.

END-OF-CHAPTER MATERIAL

includes updated multiple choice, matching, fill-in, and short answer questions as well as Web research projects so you can prepare for tests.

COMPUTERS IN YOUR FUTURE 2004 1.23

HOME | Takeaway Points | Key Terms and Concepts | Matching | Multiple Choice | Fill-In | Short Answer | Exercises/ Projects | Web Research | CHAPTER REVIEW

TAKEAWAY POINTS

- Computer fluency refers to the ease with which people are able to navigate the digital world successfully. Computer-literate people are able to adapt to new computer technologies with ease and grasp the risks as well as the benefits of these new technologies.
- A computer is a machine that, under a program's direction and control, performs the following four operations: input, processing, output, and storage. These four operations are called the information processing cycle.
- In batch processing, the four basic computer operations are performed in a rigid sequence: input, processing, output, and storage. In interactive processing, the user can initiate and repeat information processing cycles without beginning a new session for each one.
- Spell-checking a word processing document exemplifies the information processing cycle. The input consists of the original document, which contains spelling mistakes. In processing, the computer detects and flags possible spelling errors by checking every word in the document against a massive spelling dictionary. Output consists of a list of words that the spell-checker doesn't find in its library. User interaction is required to confirm whether the apparent misspelling needs to be corrected. The user saves the corrected document to storage for future use.
- A computer system is a collection of related components that have been designed to work together. It includes both the computer's hardware (its physical components) and its software (the programs that run on it).
- In a typical desktop personal computer, a keyboard and a mouse provide input capabilities, while the processing is done by the microprocessor (CPU) and RAM (random access memory). You see the results (output) on a monitor, and you typically use a hard disk for long-term storage.
- System software refers to the programs that help the computer function properly, such as the operating system and system utilities. Application programs enable users to perform useful tasks.
- The Internet is "the" network of networks. The more the Internet grows, the richer its resources become.
- Popular Internet services include e-mail, the Web, instant messaging systems, e-commerce, peer-to-peer data exchange networks, and FTP file transfer.

Go to **www.prenhall.com/ciyf2004** to review this chapter, answer the questions, and complete the exercises and Web research questions.

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CHAPTER REVIEW | Takeaway Points | Key Terms and Concepts | Matching | Multiple Choice | Fill-In | Short Answer | Exercises/ Projects | Web Research | HOME

KEY TERMS AND CONCEPTS

algorithm
antivirus program
application software
arrow keys
attribute
batch processing
business-to-business (B2B)
cathode ray tube (CRT)
CD-ROM drive
central processing unit (CPU)
character
character set
chip
click-and-brick
clients
client/server computing
command
command-line interface
communications device
compiler
computer
computer fluency
computer literate
computer network
computer system
computer virus
confirmation
cursor
custom software
data
database program
desktop computer
dot-com
DVD-ROM drive
e-commerce (electronic commerce)
e-mail (electronic mail)
error message
e-tailer
execute
expansion card
expansion slot
file
File Transfer Protocol (FTP)
flat-panel display
floppy disk
floppy disk drive
gigabyte (GB)
graphical user interface (GUI)
handheld computer
hard disk drive
hardware
IBM-compatible personal computer
icon
impact printer
information
information overload
information processing cycle
inkjet printer
input
input device
insertion point
instant messaging system
interactive processing
Internet
Internet service provider (ISP)
Internet services
keyboard
laser printer
laptop computer
LCD display
loading
local area network (LAN)
magnetic storage media
mainframe
megabytes (MB)
memory
microcomputer
microphone
microprocessor
minicomputer
modem
module
monitor
motherboard
mouse
network interface card (NIC)
network computer (NC)
network medium
nonimpact printer
notebook computer
object code
off-the-shelf software
office application
office suite
operating system (OS)
optical storage media
output
output device
package
packaged software
peer-to-peer (P2P) data exchange network
pen computer
peripheral
personal computer
personal digital assistant (PDA)
pointer
pointing device
printer
presentation graphics program
processing
processor
professional workstation
program
programmer
programming language
random access memory (RAM)
reading
read-only device
read/write device
server
software
source code
speakers
speech recognition software
spreadsheet program
storage
storage device
storage media
subnotebook
supercomputer
syntax
system software
system unit
terminal
user interface
utility program
volatile
Web browser
Web site
word processing program
World Wide Web (Web or WWW)
writing
Zip disk
Zip drive

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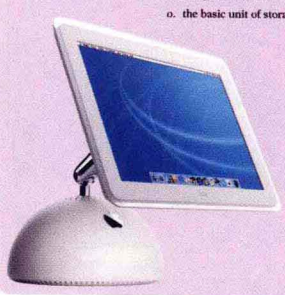
COMPUTERS IN YOUR FUTURE 2004 1.25

CHAPTER REVIEW | Takeaway Points | Key Terms and Concepts | Matching | Multiple Choice | Fill-In | Short Answer | Exercises/ Projects | Web Research | HOME

MATCHING

Match each key term in the left column with the most accurate definition in the right column.

____ 1. program	a. the most important type of system software
____ 2. processing	b. a utility software application
____ 3. hardware	c. an error or defect in an electrical or electronic system
____ 4. software	d. a software application that enables Internet users to send and receive messages
____ 5. modem	e. an exaggerated fear of computers
____ 6. server	f. a list of instructions that describes how to perform input, processing, output, and storage operations to accomplish a task
____ 7. operating system	g. includes all the programs that give the computer its instructions
____ 8. electronic mail	h. the computer's physical components
____ 9. antivirus	i. connects a computer to a local area network
____ 10. file	j. a pointing device that moves an on-screen pointer
____ 11. bug	k. a computer that is used by large companies or government agencies
____ 12. mouse	l. the operation that describes the computer performing arithmetic or comparison operations
____ 13. NIC	m. enables a computer to access other computers and the Internet via a telephone line
____ 14. cyberphobia	n. makes programs and data available for people connected to a computer network
____ 15. mainframe	o. the basic unit of storage in a computer system



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MULTIPLE CHOICE

Circle the correct choice for each of the following.

1. What are the four basic operations performed by a computer?
   a. Processing, communication, storage, data creation
   b. Input, processing, output, storage
   c. Input, output, storage, communication
   d. Input, printing, storage, retrieval
2. Which of the following is a common input device?
   a. Keyboard
   b. Printer
   c. Disk drive
   d. Monitor
3. Which of the following is not a type of output device?
   a. Monitor
   b. Speakers
   c. Printer
   d. Mouse
4. Which of the following is not a type of storage?
   a. Floppy drive
   b. DVD-ROM
   c. Microphone
   d. Zip disk
5. When referring to memory, what does the acronym RAM mean?
   a. Read and manipulate
   b. Random access memory
   c. Refreshable auxiliary memory
   d. Read alone memory
6. Which of the following is an example of the earliest computer?
   a. Supercomputer
   b. Mainframe computer
   c. Minicomputer
   d. Personal computer
7. What does the acronym PDA stand for?
   a. Personal data aid
   b. Professional digital attachment
   c. Personal digital assistant
   d. Programmable data acquisition
8. Which of the following is not considered application software?
   a. Operating system software
   b. Project management software
   c. Word processing software
   d. Presentation graphics software
9. This application is not typically included in an office suite.
   a. Word processor
   b. Spreadsheet
   c. Database
   d. Antivirus
10. Which of the following characterizes local area networks?
    a. Often use high-speed fiber-optic cables and satellites
    b. Create point-to-point connections between widely separated computers
    c. A network capable of spanning the globe
    d. Limited in geographic scope, creating a community of computers

FILL-IN

In the blanks provided, write the correct answer for each of the following.

1. A _____ allows users to interact with the computer by choosing items from menus or clicking on icons.
2. An _____ refers to the overall, step-by-step procedure used to solve a problem.
3. _____ are also known as flat-panel displays.
4. Trained experts who create computer programs are called _____.
5. Professional _____ are tools for professionals who need powerful processing and output capabilities.
6. Before a program can be used, a _____ must translate the source code into object code.
7. A type of notebook computer that is actually smaller that a notebook computer is called a _____.
8. The two basic types of storage media are _____ and _____.
9. The _____ is the computer's main circuit board.
10. _____ software enables users to exchange files via the Internet.
11. The bulk of e-commerce involves _____, which links corporations with suppliers, research labs, and industrial customers.
12. _____ software transcribes spoken words into on-screen text, or allows a user to control a computer by giving spoken commands.
13. A _____ is rogue programming code that can attach itself to programs on a computer.
14. Program instructions as they are actually written by a programmer must be translated into _____, which the computer can read.
15. Most users connect to the Internet using an _____.

SHORT ANSWER

1. Define computer fluency. Why is it important to be computer-fluent?
2. What is the difference between hardware and software?
3. What is the difference between system software and application software? Provide an example of each.
4. Explain the difference between packaged software and custom software. Which type of software would a typical individual user buy? Give an example of such a purchase.
5. Describe your experiences with the Internet. Specifically, identify the browser and e-mail software applications that you have used. Have you used other Internet-related software? If you have, describe these applications.
6. Select a course that you are taking this semester. List two course activities that could require the use of a computer, and identify two different software applications that would be needed to complete these activities.

EXERCISES/PROJECTS

1. What type of network do you use in your lab at school? How are the computers connected? What effect does the network have on the work you do at school? Can you connect to the campus network from off-campus?
2. Institutions usually provide on-campus Internet connections. Contact your institution's computing services and see if they provide off-campus Internet connections. If they do provide this connectivity, do students pay an extra fee for this service, or is it funded from general student fees? If your school does not provide off-campus Internet access, how do you connect to the Internet, and what are the monthly fees?
3. For various reasons, most individuals use either a desktop or, if they want or need more portability, a laptop computer. Use the Internet or contact a local vendor and compare the prices for comparably equipped desktop and laptop computers. Based on your needs and finances, explain which computer you would buy, and give reasons to support your purchase. Why or why would you not consider purchasing a subnotebook or handheld computer in place of a desktop or laptop?
4. Have you ever made a copy of software that you've bought for yourself? Did you ever give a copy of it away? Although purchasers are permitted to make a backup copy of software that they have purchased, they are not allowed to make additional copies and distribute them to others. What are your feelings about software piracy, that is, making illegal copies of software? Originally, software applications were installed from a series of floppy disks. However, since most software is now supplied on CD-ROMs, copies must be created using a "CD burner." Do you own or have access to one of these burners?
5. Contact a faculty member in the department of your current or intended major and determine what software applications are needed by professionals in this discipline. List these applications, and explain how they are used.

WEB RESEARCH

1. The speed at which the Internet is growing is phenomenal, and the number of users can only be estimated. To compare the growth of the Internet with that of other media, visit the Computer Almanac site at **www-2.cs.cmu.edu/afs/cs.cmu.edu/user/bam/www/numbers.html**. This site is an online treasury of statistical information about computers. How many years did it take radio to have 50 million listeners? How many years did it take television to achieve 50 million viewers? How many years did it take the Web to reach 50 million U.S. users? (This is a lengthy Web site, so use your browser's *find on page* feature, and search for "50 million.")
2. Major software companies frequently release new versions of their popular software packages. At the time you read this book, Microsoft should have just released or be near release of its new Office product. To see if this software is worth its several hundred-dollar price tag, visit Microsoft's comparison site at **http://microsoft.com/office/evaluation/indepth/compare.asp** and identify a new feature in each of the following areas:
   - Productivity and Efficiency
   - Access to Information
   - Reliability, Data Recovery, and Security
   - Collaborative Document Review
   - Collaborating with Others: Integration with SharePoint Team Services
   - Connecting and Coordinating with Others

   Which two of the new features are most important to you? Explain why you would or would not purchase or upgrade this product.
3. Easter eggs are special, fun screens or information that software developers put into commercial versions of software. Many different programs include Easter eggs. You can find out about some existing Easter eggs at The Easter Egg Archive at **www.eggs.com**. How difficult is it to display Easter eggs in some programs? Using the information from the Web site, can you locate any Easter eggs in the programs on your computer? Which Easter eggs surprised you the most?
4. Compared with the other types of computers, supercomputers are very small in number. Some major universities (such as the University of Tokyo), specialized governmental organizations (such as NASA), and businesses (such as Verizon) use these extremely fast and expensive computers. Visit the list of the world's most powerful computing sites to see some other types of organizations, agencies, and companies that have supercomputers. Begin your search at: **www.top500.org**.
   - What is the minimum processing speed needed to be included in this list?
   - What are the type and speed of the supercomputer that is used by George Lucas's Industrial Light and Magic (ILM) company to make movie special effects?
   - What are the types of supercomputers that CitiBank uses to maintain its many accounts?
   - What are the types and speeds of supercomputers that AOL uses to maintain its vast databases?
   - What are the types and speeds of supercomputers that the FBI uses to maintain its enormous number of records?
5. Using media such as radio, television, newspapers, and, of course, the Internet, people are able to obtain information about current events. The Internet Public Library maintains a worldwide list of newspapers at **www.ipl.org**. This site allows international students attending schools in the United States to read (in their native languages) about events that are happening in their countries. This site also allows U.S. students to read (in English) about global political, financial, or cultural events from the perspective of other nations. Can you think of other reasons why someone would read "foreign" newspapers?

   Find the headline or lead story from the following newspapers:
   - The *Cape Argus*, published in Cape Town, South Africa
   - The *Viet Nam News*, published in Hanoi, Vietnam
   - The *Buenos Aires Herald*, published in Buenos Aires, Argentina
   - The *Moscow Times*, published in Moscow, Russia
   - The *Kuwait Times*, published in Kuwait City, Kuwait

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