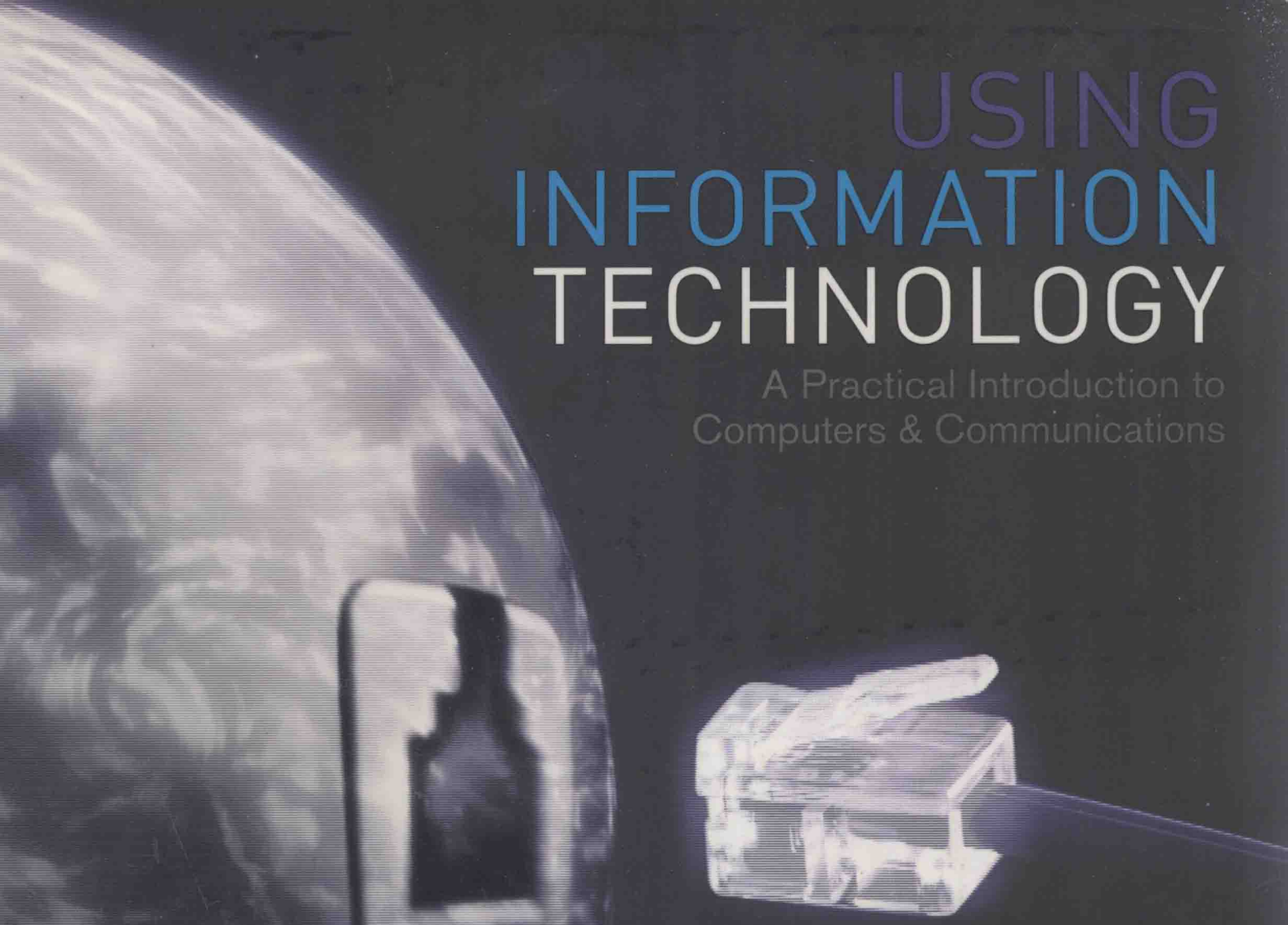
USING INFORMATION TECHNOLOGY

A Practical Introduction to Computers & Communications



WILLIAMS
SAWYER

Eighth Edition

Using Information Technology

A Practical Introduction to Computers & Communications

Brian K. Williams

Stacey C. Sawyer

Mc Graw Hill **Higher Education**

Boston Burr Ridge, IL Dubuque, IA New York San Francisco St. Louis
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Higher Education

USING INFORMATION TECHNOLOGY: A PRACTICAL INTRODUCTION TO COMPUTERS & COMMUNICATION

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Information You Can Use: Practical Topics for the Practical Reader

Experience Boxes

Practical Action Boxes

Survival Tips

Praise from Reviewers for Previous Editions

"I would rate the writing style as superior to the book I am currently using and most of the books I have reviewed . . . I found this book much easier to read than most books on the market."

—Susan Fry, Boise State University

"The easy-to-understand way of speaking to the readers is excellent. You put computer terminology into an easily understandable way to read. It's excellent."

—Ralph Caputo, Manhattan College, New York

"The major difference that I notice between your text and other texts is the informal tone of the writing. This is one of the main reasons we adopted your book—the colloquial feel."

—Todd McLeod, Fresno City College, California.

"[The text] is written in a clear and non-threatening manner, keeping the student's interest through the use of real, colorful anecdotes and interesting observations. The authors' emphasis on the practical in the early chapters gets the students' interest by centering on real-life questions that would face everyone purchasing a new personal computer."

—Donald Robertson, Florida Community College – Jacksonville

"Williams-Sawyer . . . is the most readable textbook that deals with computer terminology in a meaningful way without getting into tech jargon. The concepts are clearly presented and the [photos], illustrations, and graphics become part of the reading and enhance the ability of the reader to comprehend the material. . . . I think the level of difficulty is perfect. I find very few students, even international students, who have difficulty comprehending the book."

—Beverly Bohn, Park University, Parkville, Missouri

"[UIT is] geared toward a generation that grew up with computers but never thought about how they work. Should appeal to a younger audience."

—Leleh Kalantari, Western Illinois University, Macomb

"This text is written at a level that is fine for most of my students. I have many students for whom English is a second language. These students may have difficulty with certain phrasing. . . . As I read this chapter [Chapter 3], however, I found very little that I thought might cause confusion, even for those ESL students. . . . I have selected previous editions of this text in large part because it is very 'readable.'"

—Valerie Anderson, Marymount College, Palos Verdes, California

"The treatment of MP3 players, satellite radio, digital photography, SDTV, HDTV, and cellphones [in Chapter 7, the new Personal Technology chapter] will enhance my classes."

—Charles Brown, Plymouth State University, New Hampshire

"I really liked the fact that you updated the text with items that would be important to students when they are looking to purchase a PC."

—Stephanie Anderson, Southwestern Community College, Creston, Iowa

"I like the authors' writing style very much. I found it to be almost conversational, which is good, in my opinion. . . . I truly looked for unclear areas and did not find any at all."

—Laurie Eakins, East Carolina University, Greenville, North Carolina

"I like how [the writing] is personalized. It seems as if the writer is speaking directly to the student—not the normal textbook emphasis."

—Tammy Potter, Western Kentucky Community & Technical College, Paducah

"The author[s] did a good job taking something that could be considered a complex topic and made it easy to understand."

—Jennifer Merritt, Park University, Parkville, Missouri

"[The authors'] writing style is clear and concise. [They have] taken some very technical topics and explained them in everyday language while not 'dumbing down' the material. The text flows smoothly. The inclusion of quotes from real people lends a conversational tone to the chapter [Chapter 6], making it easier to read and comprehend."

—Robert Caruso, Santa Rosa Junior College, California

"[The writing] flows very well. Touches on most of the important points, but doesn't bog down in too many details."

—Morgan Shepherd, University of Colorado at Colorado Springs

"The level of difficulty is perfect for an intro level computer applications course taught at a 2- or 4-year college."

—Jami Cotler, Siena College, Loudonville, New York

"Chapter 2 is written in a readable, motivating style. I found it to be concise, and introducing topics in a proper sequence, defining terms accurately and effectively. I found myself thinking of topics to be added, and then THERE THEY WERE!"

—Mike Michaelson, Palomar College, San Marcos, California

"Strong writing style. This chapter [Chapter 8] was extremely thorough. And covered many subjects in depth. . . . Writing style has always been quite clear and concise with these two authors."

—Rebecca Mundy, UCLA and University of Southern California

"I think the writing style is good and will work well with the students."

—Michelle Parker, Indiana University–Purdue University, Fort Wayne

"I think the level [of difficulty] is just right. The author[s] did not include a lot of technology lingo, but enough for the typical student who will be reading this book."

—Anita Whitehill, Foothill College, Los Altos Hills, California

"In general, the level of difficulty is fine."

—Alfred Zimermann, Hawai'i Pacific University, Honolulu

"[Chapter 9] presents a nice mix of theory, research results, and real-life examples to cover the relevant issues."

—Janos Fustos, Metropolitan State College, Denver

"Williams and Sawyer do a consistently good job of explaining material. The graphics and examples are well done."

—David Burris, Sam Houston State University, Huntsville, Texas

"Practicality is in the title of the book and is definitely practiced in each chapter. Readability means clear writing, and that is also evident in the text."

—Nancy Webb, San Francisco City College

"The practical approach to information technology, along with the book's superior readability, make this a strong text. The book's emphasis on being current and a three-level learning system are great."

—DeLyse Totten, Portland Community College, Oregon

"I enjoyed the writing style. It was clear and casual, without trivializing. I think the examples and explanations of Williams and Sawyer are excellent."

—Martha Tillman, College of San Mateo, California

"Ethics topics are far superior to many other textbooks."

—Maryann Dorn, Southern Illinois University

"[The critical thinking emphasis is important because] the facts will change, the underlying concepts will not. Students need to know what the technology is capable of and what is not possible. . ."

—Joseph DeLibero, Arizona State University

Using Information Technology

Brief Contents

To the Instructor

Introduction: Teaching the "Always On" Generation

If there is anything we have learned from our many years of writing computer concepts books, it is this: *not only does the landscape of computer education change, but so do the students.*

USING INFORMATION TECHNOLOGY was written and revised around three important benchmarks:

- **The impact of digital convergence:** The First Edition was the first text to foresee and define the impact of digital convergence—the fusion of computers and communications—as the new and broader foundation for the computer concepts course.
- **The importance of cyberspace:** The Fourth Edition was the first text to acknowledge the new priorities imposed on computer education by the Internet and World Wide Web and bring discussion of them from late in the course to near the beginning (to Chapter 2).
- **The ascendancy of the "Always On" generation:** The Seventh Edition addressed another paradigm change: because of the mobility and hybridization of digital devices, **an "Always On" generation of students has come of age that's at ease with digital technology but—and it's an important "but"—not always savvy about computer processes, possibilities, and liabilities.**

The appearance of this new generation imposes additional challenges on professors: **instructors are expected to make the course interesting and challenging to students already at least somewhat familiar with information technology while teaching people of widely varying computer sophistication.**

Addressing Instructors' Two Most Important Challenges

Quotes
What instructors say is the most significant challenge in teaching this course:

"Keeping the students interested."
—Evelyn Lulis, DePaul University

"Keeping a wide variety of students on the same page."
—Donald Robertson, Florida Community College–Jacksonville

As we embark on our fifteenth year of publication, we are extremely pleased at the continued reception to *USING INFORMATION TECHNOLOGY,* which has been used by well more than a half million students and adopted by instructors in over 800 schools. One reason for this enthusiastic response may be that we've tried hard to address professors' needs. We've often asked instructors—in reviews, surveys, and focus groups—**"What is your most significant challenge in teaching this course?"**

The First Most Frequent Answer: "Trying to Make the Course Interesting and Challenging"

One professor at a state university seems to speak for most when she says: "Making the course interesting and challenging." Others echo her with remarks such as "Keeping students interested in the material enough to study" and "Keeping the students engaged who know some, but not all, of the material." Said one professor, "Many students take the course because they must, instead of because the material interests them." Another speaks about the need to address a "variety of skill/knowledge levels while keeping the course challenging and interesting"—which brings us to the second response.

Quote
"This will always be a difficult course to teach, since the students . . . come from very different backgrounds and have vastly different levels of computer expertise."
—Laurie Eakins, East Carolina University

The Second Most Frequent Answer: "Trying to Teach to Students with a Variety of Computer Backgrounds"

The most significant challenge in teaching this course "is trying to provide material to the varied levels of students in the class," says an instructor at a large Midwestern university. Another says the course gets students from all backgrounds, ranging from "Which button do you push on the mouse?" to "Already built and maintain a web page with html." Says a third, "mixed-ability classes [make] it difficult to appeal to all students at the same time." And a fourth: "How do you keep the 'techies' interested without losing the beginners?"

Motivating the Unmotivated & Teaching to a Disparity of Backgrounds

As authors, we find information technology tremendously exciting, but we recognize that many students take the course reluctantly. And we also recognize that many students come to the subject with attitudes ranging from complete apathy and unfamiliarity to a high degree of experience and technical understanding.

To address the problem of **motivating the unmotivated and teaching to a disparity of backgrounds,** UIT offers unequaled treatment of the following:

1. **Practicality**
2. **Readability**
3. **Currentness**
4. **Three-level critical thinking system.**

We explain these features on the following pages.

Feature #1: Emphasis on Practicality

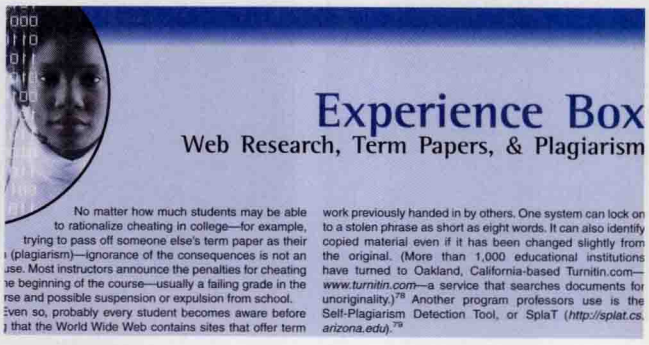
Quote
About *UIT*'s practicality:

"The practical approach to information technology, along with the book's superior readability, make this a strong text."
—DeLyse Totten, Portland Community College, Oregon

This popular feature received overwhelming acceptance by both students and instructors in past editions. **Practical advice,** of the sort found in computer magazines, newspaper technology sections, and general-interest computer books, is expressed not only in the text but also in the following:

The Experience Box

Appearing at the end of each chapter, the Experience Box is optional material that may be assigned at the instructor's discretion. However, students will find the subjects covered are of immediate value.


Experience Box
Web Research, Term Papers, & Plagiarism

No matter how much students may be able to rationalize cheating in college—for example, trying to pass off someone else's term paper as their (plagiarism)—ignorance of the consequences is not an se. Most instructors announce the penalties for cheating e beginning of the course—usually a failing grade in the rse and possible suspension or expulsion from school. Even so, probably every student becomes aware before that the World Wide Web contains sites that offer term work previously handed in by others. One system can lock on to a stolen phrase as short as eight words. It can also identify copied material even if it has been changed slightly from the original. (More than 1,000 educational institutions have turned to Oakland, California-based Turnitin.com—*www.turnitin.com*—a service that searches documents for unoriginality.)[78] Another program professors use is the Self-Plagiarism Detection Tool, or SplaT (*http://splat.cs.arizona.edu*).[79]

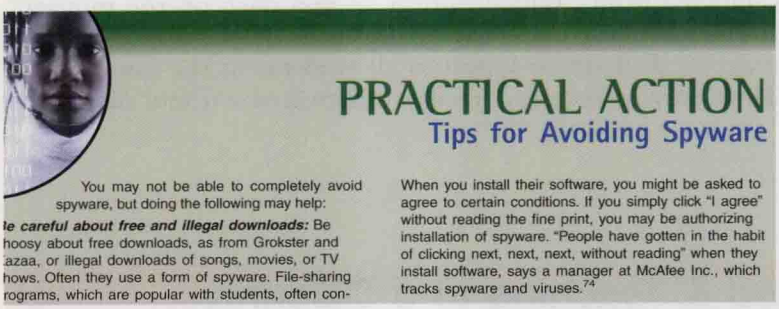
Examples: "Web Research, Term Papers, & Plagiarism." "The Mysteries of Tech Support." "How to Buy a Laptop." "Preventing Your Identity from Getting Stolen." "Virtual Meetings: Linking Up Electronically." "The 'Always On' Generation."

See the list of Experience Boxes and Practical Action Boxes on the inside front cover.

Practical Action Box

This box consists of optional material on practical matters.

Examples: "Serious Web Search Techniques." "Preventing Problems from Too Much or Too Little Power to Your Computer." "When the Internet Isn't Productive: Online Addiction & Other Timewasters." "Evaluating & Sourcing Information Found on the Web." "Tips for Fighting Spam." "Tips for Avoiding Spyware." "Utility Programs." "Help in Building Your Web Page." "Starting Over with Your Hard Drive: Erasing, Reformatting, & Reloading." "Buying a Printer." "Telecommuting & Telework: The Nontraditional Workplace." "Ways to Minimize Virus Attacks." "How to Deal with Passwords." "Online Viewing & Sharing of Digital Photos." "Buying the Right HDTV."



PRACTICAL ACTION

Tips for Avoiding Spyware

You may not be able to completely avoid spyware, but doing the following may help:

Be careful about free and illegal downloads: Be choosy about free downloads, as from Grokster and Kazaa, or illegal downloads of songs, movies, or TV shows. Often they use a form of spyware. File-sharing programs, which are popular with students, often con-

When you install their software, you might be asked to agree to certain conditions. If you simply click "I agree" without reading the fine print, you may be authorizing installation of spyware. "People have gotten in the habit of clicking next, next, next, without reading" when they install software, says a manager at McAfee Inc., which tracks spyware and viruses.[74]

See the list of Survival Tips on the inside front cover.

Survival Tips

In the margins throughout we present utilitarian **Survival Tips** to aid students' explorations of the infotech world.

Examples: "Test the Speed of Your Internet Connection." "Some Free ISPs." "Do Home Pages Endure?" "Look for the Padlock Icon." "Keeping Windows Security Features Updated." "New Software & Compatibility." "Where Do I Get a Boot Disk?" "Is Your Password Guessable?" "Update Your Drivers." "Service Packs 1 & 2." "Two Versions of Windows XP." "Compressing Web & Audio Files." "Try Before You Buy." "Setting Mouse Properties." "Digital Subscriptions." "Cellphone Minutes." "Reformat Your Memory Card to Avoid Losing Your Photos." "Keeping Track of Your Cellphone." "Fraud Baiters." "Alleviating Info-Mania."

Survival Tip

Look for the Padlock Icon

To avoid having people spying on you when you are sending information over the web, use a secure connection. This is indicated at the bottom of your browser window by an icon that looks like a padlock or key.

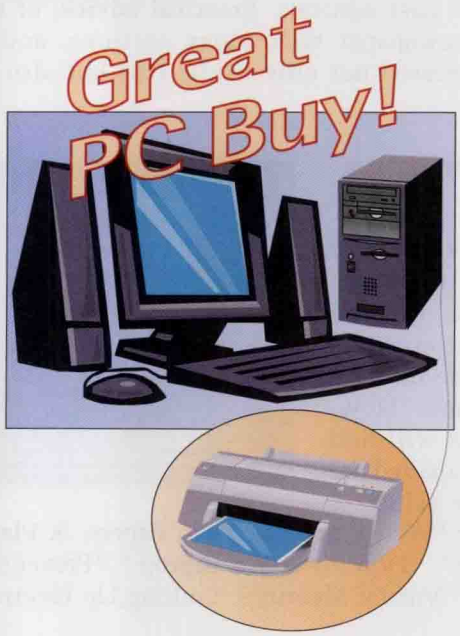
Quote

About *UIT*'s practicality

"The authors' emphasis on the practical in the early chapters gets the students' interest by centering on real-life questions that would face everyone purchasing a new personal computer."
—Donald Robertson, Florida Community College–Jacksonville

How to Understand a Computer Ad

In the hardware chapters (Chapters 4 and 5), we explain important concepts by showing students **how to understand the hardware components in a hypothetical PC ad.**



- 7-Bay Mid-Tower Case
- Intel Pentium Dual-Core Processor 2.80 GHz
- 1 GB DDR2 SDRAM
- 1 MB L2 Cache
- 6 USB 2.0 Ports
- 3-D AGP Graphics Card (64 MB)
- Sound Blaster Digital Sound Card
- 56 Kbps Internal Modem
- 160 GB SATA 7200 RPM Hard Drive
- 24X DVD/CD-RW Combo Drive
- 104-Keyboard
- Microsoft IntelliMouse
- 17" Flat Panel Display
- HP Officejet Pro K5400

Details of this ad are explained throughout this chapter and the next. See the little magnifying glass:

Feature #2: Emphasis on Readability & Reinforcement for Learning

We offer the following features for reinforcing student learning:

Quotes
About *UIT*'s readability

"Well written and great for an [introductory] text. I believe all audiences should be able to follow the text."
—Norman Hahn, Thomas Nelson Community College

"The writing style . . . is very user friendly."
—Pamela Luckett, Barry University

Interesting Writing—Based on Good Scholarship

Where is it written that textbooks have to be boring? Can't a text have personality?

Actually, studies have found that textbooks **written in an imaginative style** significantly improve students' ability to retain information. Both instructors and students have commented on the distinctiveness of the writing in this book. We employ a number of journalistic devices—colorful anecdotes, short biographical sketches, interesting observations in direct quotes—to make the material as interesting as possible. We also use real anecdotes and examples rather than fictionalized ones.

Finally, **unlike most computer concepts books, we provide references for our sources—see the endnotes in the back of the book—with a great many of them from the year preceding publication.** We see no reason why introductory computer books shouldn't practice good scholarship by revealing their sources of information. And we see no reason why good scholarship can't go hand in hand with good writing. That is, scholarship need not mean stuffiness.

Key Terms AND Definitions Emphasized

To help readers avoid any confusion about which terms are important and what they actually mean, we print each key term in ***bold italic underscore*** and its definition in **boldface.** ***Example*** (from Chapter 1): "***Data*** **consists of raw facts and figures that are processed into information.**"

Material in Easily Manageable Portions

Major ideas are presented in **bite-size form,** with generous use of advance organizers, bulleted lists, and new paragraphing when a new idea is introduced. Most **sentences have been kept short,** the majority not exceeding 22–25 words in length.

"What's in It for Me?" Questions—to Help Students Read with Purpose

We have **crafted the learning objectives as Key Questions** to help readers focus on essentials. These are expressed as "I" and "me" questions, of the type students ask. These questions follow both first-level and second-level headings throughout the book.

Eight Timelines to Provide Historical Perspective

Some instructors like to see coverage of the history of computing. Not wishing to add greatly to the length of the book, we decided on **a student-friendly approach: the presentation of eight pictorial timelines showing the most significant historical IT events** (see p. xii). These timelines, which occur in most chapters, appear along the bottom page margin. Each timeline repeats certain "benchmark" events to keep students oriented, but **each one is modified to feature the landmark discoveries and inventions appropriate to the different chapter material.** ***Examples:*** In Chapter 4, "System Software," the timeline features innovations in operating systems. In Chapter 7, "Telecommunications," the timeline highlights innovations in data transmission.

See timelines beginning on pp. 14, 50, 162, 192, 258, 310, 412, 516

See Ethics examples on pp. 37, 91, 100, 235, 276, 346, 442, 443, 445, 459, 474

Emphasis Throughout on Ethics

Many texts discuss ethics in isolation, usually in one of the final chapters. We believe this topic is too important to be treated last or lightly, and users have agreed. Thus, **we cover ethical matters throughout the book,** as indicated by the special icon shown at right. ***Example:*** We discuss such all-important questions as copying of Internet files, online plagiarism, privacy, computer crime, and netiquette.

Emphasis Throughout on Security

See Security icons on pp. 37, 100, 277, 291, 339, 342, 462

In the post 9-11 era, security concerns are of gravest importance. Although we devote several pages (in Chapters 2, 6, and 9) to security matters, we also reinforce student awareness by **highlighting with page-margin Security icons instances of security-related material throughout the book.** ***Example:*** On p. 100, we use the special icon shown at right to highlight the advice that one should pretend that every email message one sends "is a postcard that can be read by anyone."

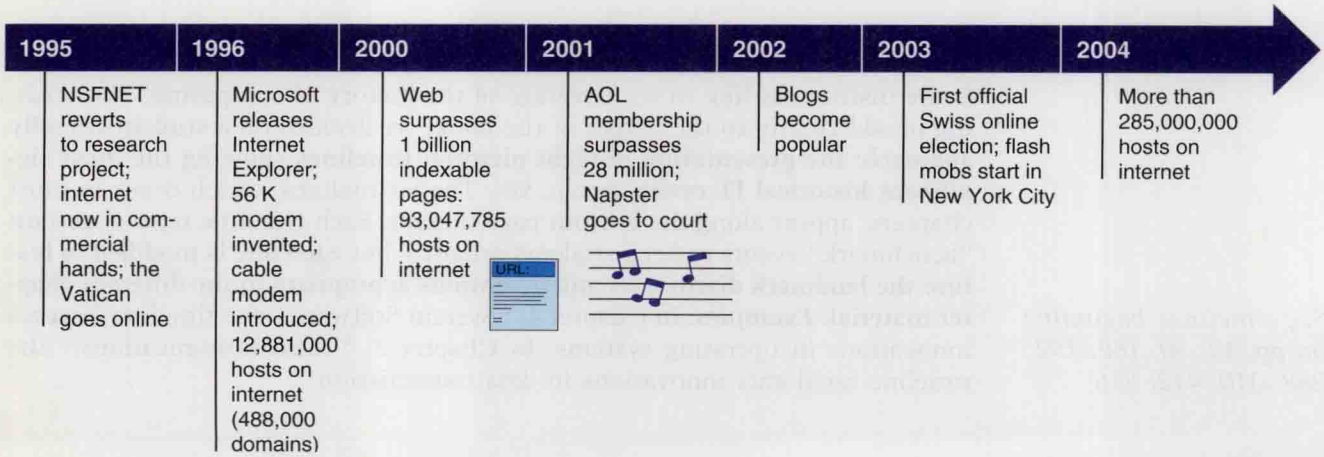
Feature #3: Currentness

Quote
About *UIT*'s currentness

"Very knowledgeable, very good research."
—Maryann Dorn, Southern Illinois University

Reviewers have applauded previous editions of UIT for being **more up to date than other texts.** For example, we have traditionally ended many chapters with a forward-looking section that offers a preview of technologies to come—some of which are realized even as students are using the book.

Among the new topics and terms covered in this edition are: *browser market shares, cellphone viruses, cellular radio, cloud computing, directed-sound technology output, driving with cellphone, 4G wireless, how to choose a scanner, matchmaking websites, media-sharing websites, mobile internet devices, mobile TV, processors for MIDs, replacing passwords, risks of nanotubes, Roadrunner supercomputer, social network aggregator websites, social networking websites, telepresence, Web 2.0, WXGA, WUXGA, XO laptop.* In this edition, we have updated the PC advertisement on p. 197 and we have also updated the screen shots of software in Chapter 3. Material has also been updated on the following: *Apple iTunes store, Apple Leopard OS, audio and video search engines, black-hat hackers, Blue Gene/L supercomputer, Bluetooth, brainwave input devices, classes of bandwidth, common browser functions, cyber threats, cyberbullying, desktop search tools, digital cameras, digital pens, dual-core and quad-core chips, encryption, electromagnetic fields, environmental challenges, e-waste, Explorer 7 browser, favorites, flash memory chips, flash memory cards and drives, gesture recognition, HD radio, higher-density disks, history list, how to buy a laptop, ICANN and new domain names, input help for the disabled, instant messaging systems, Insteon, Intel and AMD chips, Internet 2, internet fraud, internet radio, internet telephony and VoIP, IT graduates' salaries, keyword indexes, memory chips, metasearch engines, methods of*



going online, Moore's law, multimedia search engines, nanotechnology, number of Web pages worldwide, pagers, PC cards, pen-based computing systems, podcast audiences, pornography, privacy, processor chips, PS3, recycling technology, rentalware, rise in cellphone calls, rise in email, rise in Americans' use of internet, satellite radio, sensors, shoplifting and employee fraud, smart phones, sophisticated touch devices, spam, statistics on telecommuting, subject directories, tablet PCs, terrorism, touchscreens, wax-transfer printers, U.S. rank in use of broadband, user-generated content, value of computer data, videogames, Web portals, webmail programs, Wii, Windows Vista, Window Washer, worms, X-box, ZigBee, Z-wave. We deleted material on *entertainment TVs, fiber-optic overcapacity, one-click option, personalized TV, Photo CD, Smart Display wireless flat panel, Symbian OS, Ultracard, Windows CE.NET, Windows Media Player, XM radio, and zip drives,* as well as obsolete material on *biometric authentication, broadband network connections, content shifting, GPS, HDTV, internet access via satellite, MP3 players, pagers, passwords, short-range wireless technologies, space shifting, time shifting, two-way wireless, 2G wireless, 2.5G wireless, 3G wireless, wireless upgrades,*

See inside back cover for pages on which MoreInfo! icons appear.

"More Info!" Icons Help Students Find Their Own Answers to Questions

more info!

Finding Wi-Fi Hot Spots

www.wififreespot.com/
www.wifihotspotlist.com/
www.wifinder.com/

In addition, **we have taken the notion of currentness to another level through the use of the "MoreInfo!" feature to encourage students to obtain their own updates** about material.

Examples: "Finding Wi-Fi Hot Spots." "Finding ISPs." "Do Home Pages Endure?" "Do You Need to Know HTML to Build a Website?" "Urban Legends & Lies on the Internet." "Blog Search Engines." "Some Online Communities." "Links to Security Software." "Where to Learn More about Freeware & Shareware." "More about Watermarks."

Feature #4: Three-Level System to Help Students Think Critically about Information Technology

Quote
About *UIT*'s critical thinking emphasis

"[It] is very important because it helps students comprehend and make sound decisions."
—Maryann Dorn, Southern Illinois University

"A critical thinking emphasis is very important because . . . it represents a higher level of understanding."
—Evelyn Lulis, DePaul University

This feature, which has been in place for the preceding four editions, has been warmly received. More and more instructors seem to have become familiar with **Benjamin Bloom's *Taxonomy of Educational Objectives,*** describing a hierarchy of six critical-thinking skills: (a) two lower-order skills—*memorization* and *comprehension;* and (b) four higher-order skills—*application, analysis, synthesis,* and *evaluation.* Drawing on our experience in writing books to guide students to college success, we have implemented Bloom's ideas in a three-stage pedagogical approach, using the following hierarchical approach in the Chapter Review at the end of every chapter:

Stage 1 Learning—Memorization: "I Can Recognize & Recall Information"

Using self-test questions, multiple-choice questions, and true/false questions, we enable students to test how well they recall basic terms and concepts.

Stage 2 Learning—Comprehension: "I Can Recall Information in My Own Terms & Explain Them to a Friend"

Using open-ended short-answer questions, we enable students to re-express terms and concepts in their own words.

Stage 3 Learning—Applying, Analyzing, Synthesizing, Evaluating: "I Can Apply What I've Learned, Relate These Ideas to Other Concepts, Build on Other Knowledge, & Use All These Thinking Skills to Form a Judgment"

In this part of the Chapter Review, we ask students to put the ideas into effect using the activities described. The purpose is to help students take possession of the ideas, make them their own, and apply them realistically to their own ideas. **Our web exercises are also intended to spur discussion in classroom and other contexts.**

Examples: "Using Text Messaging in Emergencies." "What's Wrong with Using Supermarket Loyalty Cards?" "Are You in the Homeland Security Database?"

Resources for Instructors

Instructor's Manual

The electronic Instructor's Manual, available as part of the Instructor's Resource Kit, helps instructors to create effective lectures. The Instructor's Manual is easy to navigate and simple to understand. Each chapter contains a chapter overview, lecture outline, teaching tips, additional information, and answers to end-of-chapter questions and exercises.

Testbank

The Testbank format allows instructors to effectively pinpoint areas of content within each chapter on which to test students. The text questions include learning level, answers, and text page numbers.

EZ Test

McGraw-Hill's EZ Test is a flexible and easy-to-use electronic testing program. The program allows instructors to create tests from book-specific items. It accommodates a wide range of question types, and instructors may add their own questions. Multiple versions of the test can be created, and any test can be exported for use with course management systems such as WebCT, BlackBoard, or PageOut. EZ Test Online is a new service and gives you a place to easily administer your EZ Test-created exams and quizzes online. The program is available for Windows and Macintosh environments.

PowerPoint Presentation

The PowerPoint presentation includes additional material that expands upon important topics from the text, allowing instructors to create interesting and engaging classroom presentations. Each chapter of the presentation includes important illustrations, and animations to enable instructors to emphasize important concepts in memorable ways.

Figures from the Book

All of the photos, illustrations, screenshots, and tables are available electronically for use in presentations, transparencies, or handouts.

Online Learning Center

The Online Learning Center *(www.mhhe.com/uit8e)* is designed to provide students with additional learning opportunities. The website includes PowerPoint presentations for each chapter. For the convenience of instructors, all Instructor's Resource CD material is available for download.

Resources for Instructors

PageOut

PageOut is our Course Web Site Development Center and offers a syllabus page, URL, McGraw-Hill Online Learning Center content, online exercises and quizzes, gradebook, discussion board, and an area for student Web pages.

PageOut requires no prior knowledge of HTML, no long hours of coding, and a way for course coordinators and professors to provide a full-course website. PageOut offers a series of templates—simply fill them with your course information and click on one of 16 designs. The process takes under an hour and leaves you with a professionally designed website. We'll even get you started with sample websites, or enter your syllabus for you! PageOut is so straightforward and intuitive, it's little wonder why over 12,000 college professors are using it. For more information, visit the PageOut website at *www.pageout.net*

The Online Learning Center can be delivered through any of these platforms:

- **Blackboard.com**
- **WebCT (a product of Universal Learning Technology)**

Web CT & Blackboard Partnerships

McGraw-Hill has partnerships with WebCT and Blackboard to make it even easier to take your course online and have McGraw-Hill content delivered through the leading internet-based learning tools for higher education.

McGraw-Hill has the following service agreements with WebCT and Blackboard:

- **SimNet Concepts:** This is the TOTAL solution for training and assessment in computer concepts. SimNet Concepts offers a unique, graphic-intensive environment for assessing student understanding of computer concepts. It includes interactive labs for 77 different computer concepts and 160 corresponding assessment questions. The content menus parallel the contents of the McGraw-Hill text being used for the class, so that students can cover topics for each chapter of the text you are using.

  SimNet Concepts also offers the only truly integrated learning and assessment program available today. After a student has completed any SimNet Concepts Exam, he or she can simply click on one button to have SimNet assemble a custom menu that covers just those concepts that the student answered incorrectly or did not attempt. These custom lessons can be saved to disk and loaded at any time for review.

  Assessment Remediation records and reports what the student did incorrectly for each question on an exam that was answered incorrectly.

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