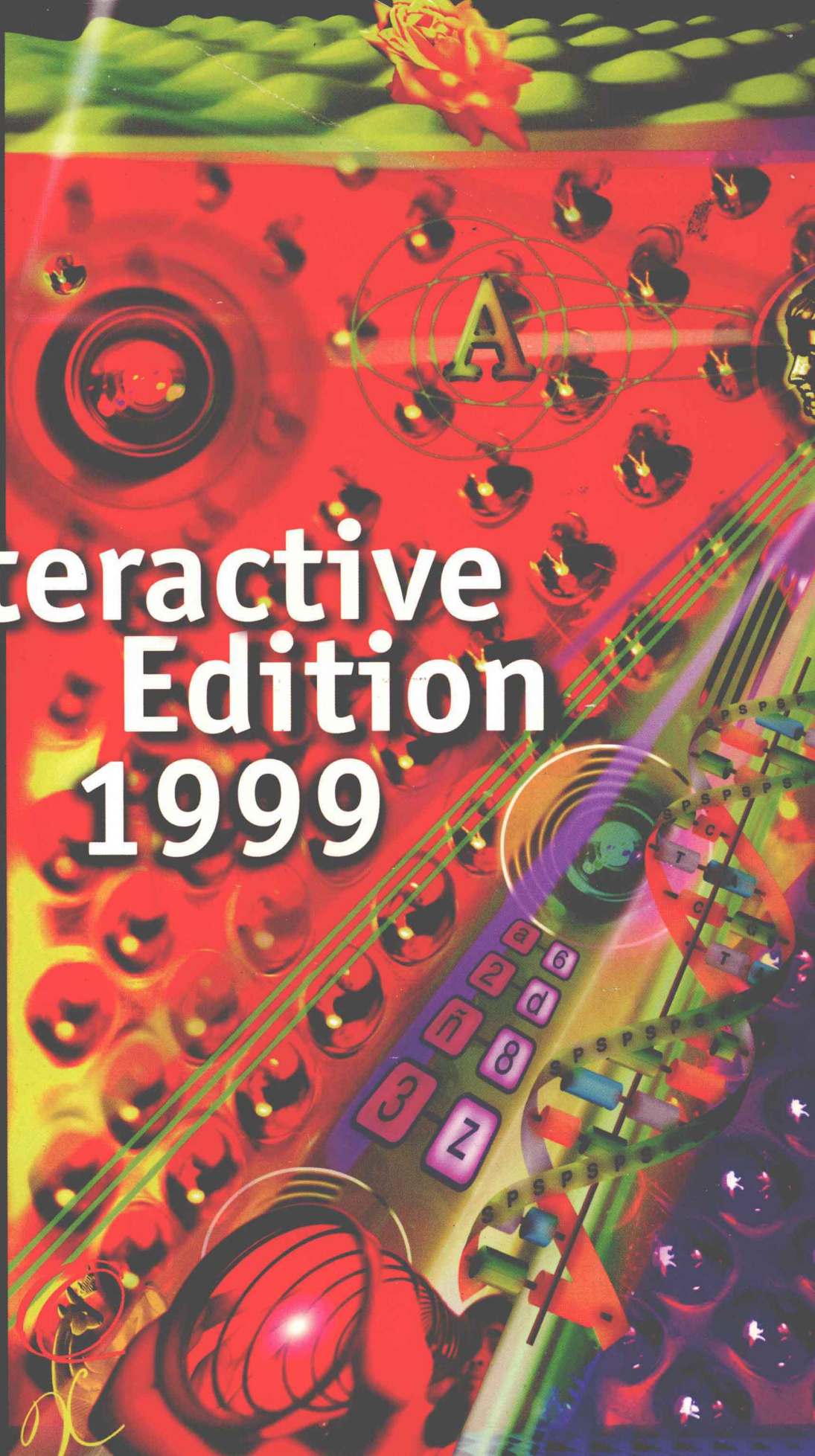


# Understanding Computers

Charles S. Parker

## Interactive Edition 1999



UNDERSTANDING  
**COMPUTERS**

TODAY & TOMORROW

**98**

edition



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# Preface

We are living at a time when the key to success in virtually every profession depends on the skillful use of information. Whether one is a teacher, lawyer, doctor, politician, manager, or corporate president, the main ingredient in the work involved is information—knowing how to get it, how to use it, how to manage it, and how to disseminate it to others.

At the root of information-based work activities are computers and the systems that support them. There are millions of computer systems in the world today, and collectively, they are capable of doing thousands of different tasks. Some of the tasks that computer systems can now handle, such as creating virtual worlds and beating a reigning world chess champion at his own game, were thought impossible not too long ago. Few professions remain untouched by computers today or will remain so in tomorrow's world. No matter who you are or what you do for a living, it is highly likely that computers somehow impact both the way you work and your success at your work.

The importance of computers in virtually every profession brings us to the purpose of this book. *Understanding Computers: Today and Tomorrow*, 98 Edition, has been written with the user of computers in mind. This nontechnical, introductory text explains in straightforward terms the importance of learning about computers, types of computer systems and their components, principles by which computer systems work, practical applications of computers and related technologies, and ways in which the world is being changed by computers. The goal of the text is to provide students both with a solid knowledge of computer basics and with a framework for using this knowledge effectively in the workplace.

As the newest addition to Dryden's EXACT custom publishing program, *Understanding Computers: Today and Tomorrow*, 98 Edition, is available in a customized format that includes a choice of multichapter modules from the text as well as software applications and programming manuals. This textbook is but one component of a complete and flexible instructional package—one that can easily be adapted to virtually any teaching format. Supplementing the textbook is a comprehensive set of student and teacher support materials.

## The Textbook

*Understanding Computers: Today and Tomorrow*, 98 Edition, is designed for students taking a first course in computers. The text meets the requirements proposed for the first course in computing by both the Data Processing Management Association (DPMA) and the Association for Computing Machinery (ACM). It provides a comprehensive introduction to the world of computers, with coverage given to both commercial and personal applications of computers and both large and small computer systems.

## KEY FEATURES

Like previous editions, *Understanding Computers: Today and Tomorrow*, 98 Edition, offers a flexible teaching organization and a readable and engaging presentation. Learning tools in each chapter help students master important concepts. Sidebars on a variety of topics provide insight on current issues of interest. The thematic “Windows,” each of which highlights a major aspect of information technology, bring the world of computers to life. A bottom-of-page running glossary and a glossary at the end of the book give concise definitions of important terms.

**Flexible Organization** In order to make the 98 edition as flexible as possible to meet a wide variety of classroom needs, the book is available in customized versions as well as the full 16-chapter text. As shown in the figure on page ix, the 16 chapters are grouped into the following seven modules:

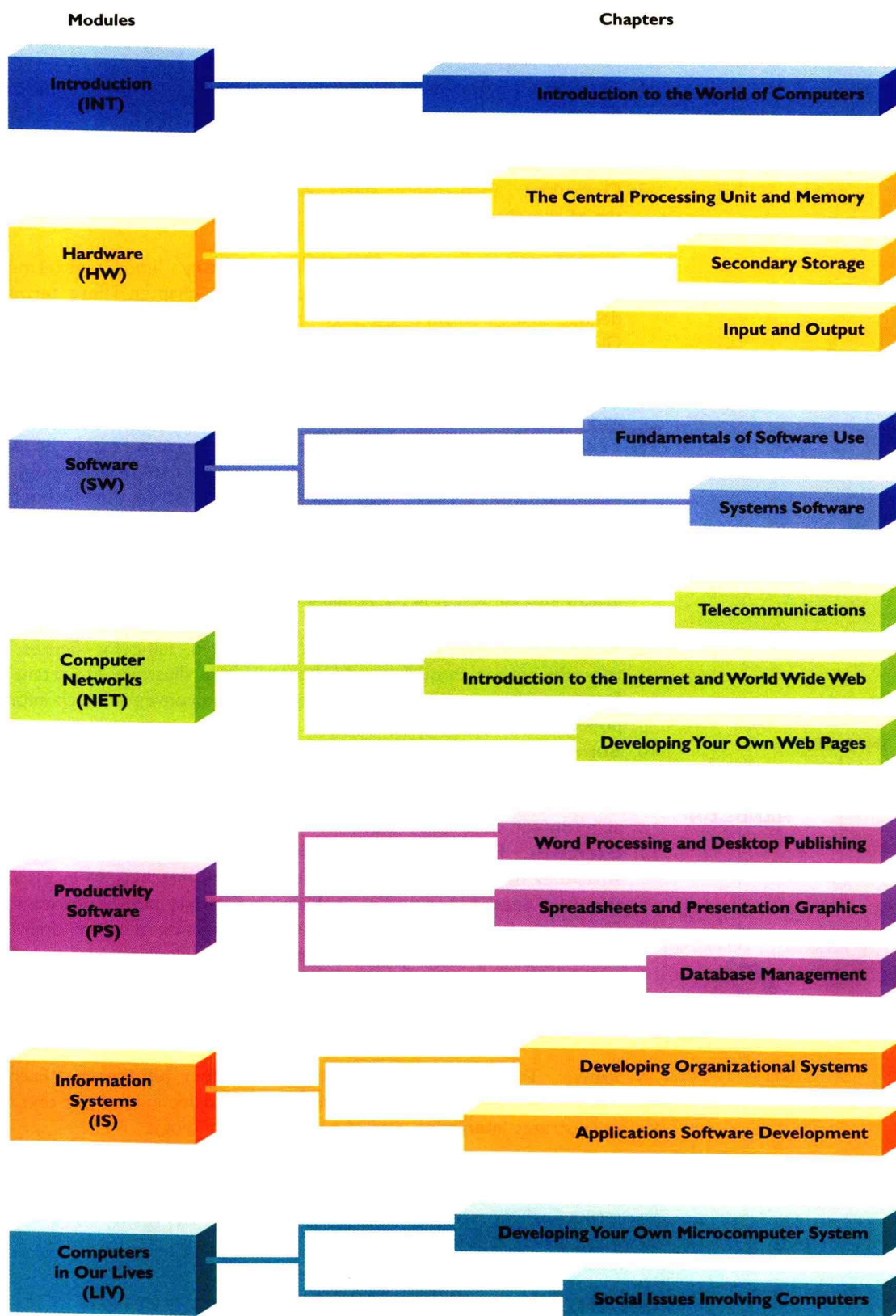
- Introduction (Chapter INT 1)
- Hardware (Chapters HW 1, HW 2, and HW 3)
- Software (Chapters SW 1 and SW 2)
- Computer Networks (Chapters NET 1, NET 2, and NET 3)
- Productivity Software (Chapters PS 1, PS 2, and PS 3)
- Information Systems (Chapters IS 1 and IS 2)
- Computers in Our Lives (Chapters LIV 1 and LIV 2)

Through the EXACT custom publishing program, instructors have the option of eliminating any module or modules—or rearranging modules—to tailor the text to meet the needs of any specific course. In addition, *Understanding Computers* can be bound with a variety of software manuals. Contact your local Dryden representative for further information concerning customization and the EXACT program.

**Currency** Perhaps more than textbooks in any other field, computer texts must reflect current technologies, trends, and classroom needs. The state-of-the-art content of this book and its support package reflects these considerations. Before the 98 edition was started, reviews were commissioned and meetings were held to identify key areas of change for the text and support package. Also, throughout the writing and production stages, enhancements and new developments were continually being made to ensure that the final product would be as state-of-the-art as possible throughout the life of the edition. A glance at the chapter outlines, sidebars, and Windows should illustrate why this text has been and will continue to remain a market leader.

**Comprehensiveness and Depth** In planning for the current edition of this book, the publisher conducted several extensive research studies to determine the selection of topics, degree of depth, and other features that instructors of introductory computer courses most want to see in their texts. As the manuscript evolved, instructors at a variety of schools around the country were asked for their comments. The resulting textbook accommodates a wide range of teaching preferences. It not only covers traditional topics comprehensively but also includes the facts every student should know about today’s “hot” topics, such as the Internet, PCs, multimedia technology, wireless communications, electronic commerce, global computing issues, decision support and expert systems, data warehousing, object-oriented-language products, virtual reality, and user and programmer productivity tools.

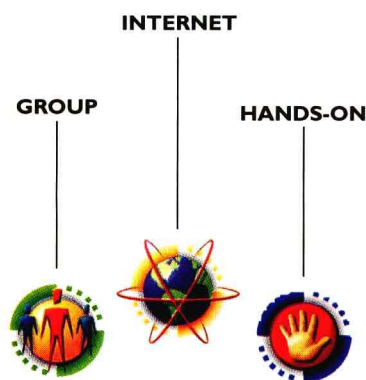
**Readability** We remember more about a subject if it is presented in a straightforward way and made interesting and exciting. This book is written in a conversational, down-to-earth style—one designed to be accurate without being intimidating. Concepts are explained clearly and simply, without use of overly technical terminology. Where complex points are presented, they are made understandable with realistic examples from everyday life.



**Custom publishing options.** *Understanding Computers* can be ordered as a complete text of seven modules or as an abbreviated text with any combination of modules bound in any order you like.

**Chapter Learning Tools** Each chapter contains a number of learning tools to help students master the materials.

1. **Outline** An Outline of the headings in the chapter shows the major topics to be covered.
2. **Learning Objectives** A list of Learning Objectives is provided to serve as a guide while students read the chapter.
3. **Overview** Each chapter starts with an Overview that puts the subject matter of the chapter into perspective and lets students know what they will be reading about.
4. **Boldfaced Key Terms and Running Glossary** Important terms appear in boldface type as they are introduced in the chapter. These terms are also defined at the bottom of the page on which they appear and in the end-of-text Glossary.
5. **Tomorrow Boxes** These special elements, one in each chapter, provide students with a look at possible future developments in the world of computers and serve as a focus for class discussion.
6. **Feature Boxes** Each chapter contains one or more Feature boxes designed to stimulate interest and discussion about today's uses of technology.
7. **User Solution Boxes** User Solution boxes describe how technology is creatively being used to solve real-world problems. Each chapter contains at least one of these features.
8. **Inside the Industry Boxes** These boxes, one to each module, provide insight into some of the personalities and practices that have made the computer industry unique and fascinating.
9. **Illustrations and Photographs** Instructive, full-color figures and photographs appear throughout the book to help illustrate important concepts. Figures are annotated in a new, revised style to convey as much information as possible.
10. **Summary and Key Terms** This is a concise, section-by-section summary of the main points in the chapter. Every boldfaced key term in the chapter also appears in boldface type in the summary. Students will find the summary a valuable tool for study and review.
11. **Exercises** End-of-chapter Exercises allow students to test themselves on what they have just read. The exercises include matching, fill-in, discussion, and true-false questions as well as problems in a variety of other formats.
12. **Projects** End-of-chapter Projects require students to extend their knowledge by doing research beyond merely reading the book. Special icons (see left margin) denote projects that are recommended for groups, projects that should be done on the Internet, and projects that require hands-on computer skills with productivity software.



**Windows** The full, 16-chapter text contains four photoessays. Each of these “Windows” to the world of computers is organized around a major text theme and vividly illustrates interesting uses of computer technology.

**End-of-Text Glossary** The Glossary at the end of the book defines approximately 500 important computer terms mentioned in the text, including all boldfaced key terms. Each glossary item has a page reference indicating where it is boldfaced or where it first appears in the text.

## CHANGES FROM THE PREVIOUS EDITION

Although previous editions of this text have been highly successful, the relentless pace of technology has regularly necessitated a number of key changes in each new edition in order to keep content fresh. Among the noteworthy differences between

the previous edition and the current edition of *Understanding Computers* are the following:

1. The book has been shortened from 17 to 16 chapters. Chapters IS 1 (Business Systems) and IS 2 (Systems Development) from the previous edition have been combined into a single chapter in this book, Chapter IS 1 (Developing Systems for Organizations). Also, to make room for the addition of two new chapters on the Internet—NET 2 (Introduction to the Internet and World Wide Web) and NET 3 (Developing Your Own Web Pages)—two chapters from the previous edition have been eliminated, their contents distributed elsewhere throughout this new book. These chapters are INT 2 (Computer Systems and Information Processing) and SOC 1 (Computers in Our Lives).
2. The TSW (Telecommunications and Software) module in the previous edition has been split into two separate modules—SW (Software) and NET (Computer Networks). This increases the number of modules from six to seven. The split was prompted by far more coverage on the Internet than in the previous edition. Materials on the Internet have also been woven into many other parts of the book.
3. The end-of-chapter Exercises and Projects are new to this edition. The Exercises—which require students to provide responses on what they have read in the chapter—replace the fill-in, matching, and discussion questions from the last edition. The Projects go beyond the chapter materials and ask students to do topical research, perform thought-provoking calculations, and take viewpoints on important issues involving computers and their uses.
4. The IS (Information Systems) and LIV (Computers in Our Lives) modules have been heavily reorganized from similar modules in the previous edition. You will notice that Chapter LIV 1 (Developing Your Own Microcomputer System) was moved from the IS module in the previous edition, where it was Chapter IS 4. Also, as mentioned earlier, chapters IS 1 and IS 2 of the previous edition have been combined into a single chapter.
5. The art program has been extensively revised. Each chapter includes dynamic, fully annotated illustrations integrated with the text material, as well as numerous color photos and screen shots that showcase the latest applications and programs. Many of the illustrations are rendered in a photorealistic style to show students the details of computer components close up.
6. The Inside the Industry boxes, also new to this edition, describe some of the colorful personalities and practices arising from microcomputers and related technologies. Features include how to find an “Easter egg” in a software program, how the Yahoo! Web-search site began, and computer-industry code names.
7. Continuing the trend from earlier editions, this book presents an increased emphasis on PC-based processing and communications. This shift reflects the trend in business applications as well as the social trend of more and more people getting involved with these facets of technology.
8. Several topics have emerged in importance since the text was last published and receive greater attention here. Among these topics are the Internet and the World Wide Web, organizational intranets and extranets, electronic commerce, plug-and-play computing, Windows 98, greater name recognition of important companies in the PC and telecommunications industry (such as Microsoft and Cisco Systems), color printers, software suites, client-server computing, mobile computing technologies, workgroup computing, DVD and new forms of secondary storage, multimedia applications and MMX-based processor chips, new forms of computer crime and cyberterrorism, virtual reality, RAID and parallel processing systems, object-oriented languages, and global and international issues.

## Student and Teacher Support Materials

*Understanding Computers: Today and Tomorrow* is available with a complete package of support materials for instructors and students. Included in the package are an Instructor's Manual with transparency masters, a set of Electronic Transparencies, a Test Bank in hard-copy and computerized forms, a dedicated CD-ROM and Web site, a variety of software manuals to meet lab needs, and a number of additional items.

### INSTRUCTOR'S MANUAL

In the Instructor's Manual I draw on my own teaching experience to provide instructors with practical suggestions for enhancing classroom presentations. The Instructor's Manual contains suggestions for adapting this textbook to various course schedules, including one-quarter, two-quarter, one-semester, two-semester, and night courses. For each of the 16 chapters of the text the Instructor's Manual provides:

1. A list of **Learning Objectives**.
2. A **Summary**, oriented to the instructor, with teaching suggestions.
3. A list of the **Key Terms** in the chapter and their definitions.
4. A **Teaching Outline** that gives a detailed breakdown of the chapter, with all major headings and subheadings, as well as points to cover under each. References to the Electronic Transparencies and Transparency Masters are keyed in to this outline.
5. **Teaching Tips**, with additional topics for class discussion, important points to cover in class, and book and Web-site recommendations.
6. **Lecture Anecdotes** providing additional stories, news items, projects, and information—specific to chapter content—to liven up lectures.
7. **Transparency Scripts** for each Electronic Transparency and Transparency Master in the instructional package.
8. **Answers to Exercises** that appear at the end of the chapter.
9. **Suggestions for Projects** that appear at the end of the chapter.
10. **Transparency Masters** covering the chapter outline, chapter learning objectives, and other key topics for classroom discussion.

### ELECTRONIC TRANSPARENCIES

A set of over one hundred Electronic Transparencies for use in classroom presentations is available to help explain key points. The Electronic Transparencies cover key text figures as well as illustrations not found in the text. The Teaching Outlines in the Instructor's Manual indicate when to show each of the Electronic Transparencies and Transparency Masters, and the Transparency Scripts in the Instructor's Manual list points to make about each.

### TEST BANK

The Test Bank contains over 3,200 test items in various formats, including true/false, multiple-choice, matching, fill-in, and short-answer questions. Answers are provided for all but the short-answer questions. The Test Bank is available in both hard-copy and computerized forms. The electronic versions—available for use with PC-compatible and Macintosh computers—allow instructors to preview, edit, and delete questions as well as to add their own questions, print scrambled forms of tests, and print answer keys.

A key indicating the chapter section from which each question was taken is also provided as part of the Test Bank. Keys are included with each questions, except for the matching questions. Also provided is a ten-question, ready-to-copy-and-distribute multiple-choice quiz for every chapter, which tests students on a representative sample of important topics.

## COMPUTERS: AN INTERACTIVE LOOK, VERSION 2 CD-ROM

This CD-ROM supplement gives students the opportunity to explore computer concepts in an interactive format. *Computers: An Interactive Look* is made up of a series of interactive learning modules covering core topics such as hardware, software, the Internet, networking, and more. Within each learning module students will find extensive tutorials, exercises, and a self test for review purposes. The CD-ROM also includes the text of *Understanding Computers*, the Electronic Transparencies, a ready-made PowerPoint presentation for each chapter, and a set of 800 text review questions. The CD-ROM may be bundled with the text or purchased separately by students.

## THE PARKER WEB SITE

The Parker Web site located at

<http://www.dryden.com/infosys/parker>

provides constantly updated support for both instructors and students. In the Instructor's Only section, teachers can download Teaching Outlines, Teaching Tips, Lecture Anecdotes, answers to Exercises, suggestions for Projects, Electronic Transparencies, and other classroom resources. Students will find current links to all of the Web sites mentioned in the projects as well as additional exercises, projects, and sites of interest.

## SOFTWARE MANUALS

Lab manuals, covering hands-on use of software packages, are available from Dryden Press for a number of widely used products. The packages supported include popular systems software such as Microsoft Windows 98, Windows 95, Windows 3.1, and MS-DOS, as well as the principal applications-software components of the market-leading software suites—Microsoft Office Professional, Corel Office Professional, and Lotus SmartSuite. Lab manuals are also available for such products Netscape Navigator, Microsoft Internet Explorer, dBASE, Harvard Graphics, Pagemaker, BASIC, and QBASIC. Applications-software manuals come in Windows 98, Windows 95, Windows 3.1, and MS-DOS versions. Using Dryden's custom-publishing option, you can have virtually any combination of components bound together for your classes. Check with your Dryden sales representative about the configuration options currently possible.

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**Charles S. Parker**

# **C O N T E N T S**

## **in Brief**

### **INT Module Introduction**

Chapter INT 1 Introduction to the World of Computers INT 3

### **HW Module Hardware**

Chapter HW 1 The Central Processing Unit  
and Memory HW 3

Appendix: Numbering Systems HW 37

Chapter HW 2 Secondary Storage HW 45

Chapter HW 3 Input and Output HW 87

### **SW Module Software**

Chapter SW 1 Fundamentals of Software Use SW 3

Chapter SW 2 Systems Software SW 35

### **NET Module Computer Networks**

Chapter NET 1 Telecommunications NET 3

Chapter NET 2 Introduction to the Internet and  
World Wide Web NET 47

Chapter NET 3 Developing Your Own  
Web Pages NET 93

### **PS Module Productivity Software**

Chapter PS 1 Word Processing and Desktop  
Publishing PS 3

Chapter PS 2 Spreadsheets and Presentation  
Graphics PS 37

Chapter PS 3 Database Management PS 71

### **IS Module Information Systems**

Chapter IS 1 Developing Organizational Systems IS 3

Chapter IS 2 Applications Software  
Development IS 35

### **LIV Module Computers in Our Lives**

Chapter LIV 1 Developing Your Own  
Microcomputer System LIV 3

Chapter LIV 2 Social Issues Involving Computers LIV 33

Glossary G-I

Credits C-I

Index I-I

## INT Module Introduction

### Chapter INT 1

#### Introduction to the World of Computers INT 3

#### Overview INT 4

#### Computers in the Workplace INT 4

#### What's a Computer and What Does It Do? INT 6

Computer Systems INT 7

Data, Information, and Programs INT 8

A Look at Computer Storage INT 10

Hardware and Software INT 11

Organizing Data and Programs INT 15

Users and the Experts INT 16

Computer Networks INT 17

#### Computer Systems to Fit Every Need and Pocketbook INT 19

Microcomputers INT 20

Midrange Computers INT 23

Mainframes INT 24

Supercomputers INT 24

#### Computers and Society INT 27

#### Exercises INT 29

#### Projects INT 30



User Solution INT 1-1: Virtual Presence INT 14

Tomorrow: Selling Tomorrow's Software INT 18

Inside the Industry: Easter Eggs INT 22

Feature INT 1-1: A Technobabble Miniglossary INT 26



boxes

## HW Module Hardware

### Chapter HW 1

#### The Central Processing Unit and Memory HW 3

**Overview    HW 4**

---

**How the CPU Works    HW 4**

---

Digital Computers    HW 4  
 The CPU and Memory    HW 5  
 Machine Cycles    HW 7

**Data and Program Representation    HW 9**

---

ASCII and EBCDIC    HW 10  
 Representing Nontext Data    HW 12  
 Machine Language    HW 15

**The System Unit    HW 16**

---

CPU Chips    HW 16  
 RAM    HW 19  
 ROM    HW 21  
 Ports    HW 22  
 System Expansion    HW 23  
 Buses    HW 25

**Making Computers Speedier    HW 26**

---

**Exercises    HW 33**

---

**Projects    HW 35**

---



b o x e s



User Solution HW 1-1: Digital Watermarks    HW 18  
 Feature HW 1-1: Black-Market Chips    HW 20  
 Tomorrow: The Coming Chip Technologies    HW 28  
 Inside the Industry: The Mistake That Launched Sun Microsystems    HW 30

**Appendix: Numbering Systems    HW 37**

---

**Chapter HW 2****Secondary Storage    HW 45**

---

**Overview    HW 46**

---

**Properties of Secondary Storage Systems    HW 46**

---

**Magnetic Disk Systems    HW 48**

---

Diskettes    HW 48

Hard Disks    HW 52

Disk Storage for Large Computer Systems    HW 56

**Optical Disk Systems    HW 58**

---

Types of Optical Disks    HW 58

**Magnetic Tape Systems    HW 62**

---

Types of Tape Systems    HW 63

Using Tapes    HW 64

**Comparing Secondary Storage Alternatives    HW 65**

---

**Data Organization    HW 66**

---

**Exercises    HW 75**

---

**Projects    HW 77**

---



Feature HW 2-1: DVD Technology    HW 61

User Solution HW 2-1: Extending CD-ROM through the Web    HW 62

Tomorrow: Terabyte CDs    HW 67

User Solution HW 2-2: Using the Internet as a Backup Device    HW 70



boxes

**Window: Multimedia Computing    HW 79**

---

**Chapter HW 3****Input and Output    HW 87**

---

**Overview    HW 88**

---

**Input and Output    HW 89**

---

**Keyboards    HW 89**

---

**Pointing Devices    HW 90**

---

**Source Data Automation    HW 93**

---

Optical Character Recognition (OCR)    HW 94

Image Scanners    HW 98

Digital Cameras    HW 98

Other Technologies    HW 100