Understanding Computers And Data Processing: Today And Tomorrow

WITH BASIC

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Understanding Computers and Data Processing: Today and Tomorrow with BASIC

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Preface

Modern society has become an information society, and the key to information is computers. You know it and your students know it. In fact, it's hard to think of any profession unaffected by computers. The explosive demand for personal computers, desk-top work stations, and computer-driven gadgets of all sorts has placed "computer power" virtually everywhere—the home, office, laboratory, factory floor, check-out counter, artist's studio, local fitness center—and so on. Just to get along these days requires some knowledge of computer systems—how they can help people do their work better, what information resources they can unlock, what effects they have on our world and on our lives, and what to expect from them tomorrow.

I have been teaching an introductory computer data processing course in one form or another for 14 years. In that time the number of students taking the course has risen dramatically. College administrators, knowing they have a responsibility to prepare students for a rapidly changing workplace, have made this course a requirement for a variety of curricula. But many students today don't need administrative prodding. No matter what their major field of study, they see familiarity with computers as a basic marketable skill.

That leaves you and me as instructors standing before students with diverse backgrounds and a variety of expectations. We need tools that can help us communicate the excitement we feel about computers and give our students the preparation they need for today's world and tomorrow's. *Understanding Computers and Data Processing: Today and Tomorrow* fills that need with a complete teaching package. This package includes the textbook itself, available in two versions—one with an appendix on BASIC programming and one without—and a comprehensive set of student and teacher support materials.

THE TEXTBOOK

Understanding Computers and Data Processing: Today and Tomorrow is designed for students taking a first course in computers and data processing. It provides a comprehensive introduction to the world of computers, but it is not overly technical. It emphasizes both commercial and personal applications of computers. In writing it I kept in mind the fact that the scope of computing is changing. It now includes applications unheard of ten years ago, and the number of people who need some background in the subject has grown accordingly. Thus one of the primary goals of this book is to give students a readable introduction to important computer principles and a clear perspective on the present and future uses of computers.

Key Features

This book is both current and comprehensive. It offers you a flexible teaching organization and your students a readable and engaging presentation. Learning aids in each chapter help students master important concepts. Tomorrow boxes and other boxed features provide extra insight on major issues. The 80 pages of full-color photographs, organized into nine thematic "Windows" bring the world of computers to life. A glossary at the end of the book gives concise definitions of important terms. And the appendix on BASIC, for those who adopt the version of

the text that contains it, provides a comprehensive introduction to BASIC in a style students will find easy to read.

Currency. Almost daily an existing computer product becomes obsolete and a new one takes its place. In some cases, entire technologies fall by the wayside. We are rapidly evolving into a society in which powerful, easy-to-use computer systems will be available to almost everyone. The state-of-the-art content of this book reflects these and other trends. Take a look, for example, at the chapters on teleprocessing (7) and personal computers (13). In the chapter on input and output devices (6), note the emphasis on modern display terminals and source-data-automation techniques. Glance at the Tomorrow boxes in each chapter, which give students a sense of the direction of change in the world of computers. And look at the array of state-of-the-art applications and technologies illustrated in the nine full-color "Windows" that appear throughout the book.

Comprehensiveness and Depth. Before work began on 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 data-processing courses most want to see in a textbook of this type. As the project took shape, instructors at a variety of institutions around the country were asked to review the manuscript. The resulting textbook accommodates a wide range of teaching preferences. It not only covers traditional topics thoroughly, but it also includes the facts your students should know about today's "hot" topics, such as teleprocessing, user-friendly software products, interactive terminal use, personal computers, office systems, database management systems, computer graphics, and systems development.

Flexible Organization. A textbook locked into a rigid organization, no matter how thorough, will inevitably find its uses limited. In order to appeal to a wide audience, I have designed this book to be flexible. Its eighteen chapters are grouped into five modules: Introduction (Chapters 1–3), Hardware (Chapters 4–7), Software (Chapters 8–12), Computer Systems (Chapters 13–16), and Computers in Society (Chapters 17 and 18). Every effort was made to have each chapter as self-contained as possible, making it easy for you to skip chapters or teach them in a sequence other than the one followed in the book. And each chapter is organized into well-defined sections, so you can assign only parts of a chapter if the whole provides more depth than you need.

Readability. Students 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 to make students comfortable with the material. Concepts are explained clearly and simply without use of confusing terminology. And technical points are made vivid with realistic examples from everyday life.

Chapter Learning Aids. Each chapter contains a number of learning aids to help students master the materials.

- **Chapter Outline** An outline of the headings in the chapter shows the major topics to be covered.
- **Overview** Each chapter starts with an overview that puts the subject matter of the chapter in perspective and lets students know what they will be reading about.

- **Boldfaced Key Terms** Important terms appear in boldface type as they are introduced in the chapter. These terms are also defined in the glossary.
- **Tomorrow Boxes** These special features (there's one in each chapter and two in chapter 18) provide students with a look at possible future developments in the world of computers and serve as a focus for class discussion.
- **Other Boxed Features** Each chapter has one or more additional features with supplementary information designed to stimulate class discussion.
- **Photographs and Diagrams** Instructive photographs and two-color diagrams appear throughout the book to help illustrate important concepts. The use of color in the diagrams is a functional part of the book. To give one example, operator input and computer output on a display terminal always appear in different colors.
- **Summary and Key Terms** This is a concise 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 this summary a valuable tool for study and review.
- **Review Questions** These short-answer questions allow students to test themselves on what they have just read. You may also find many of them useful for class discussion.
- **Suggested Readings** Most chapters end with a list of sources for further study.

Windows. The book contains nine full-color photo essays. Each of these "Windows" on the world of computers is organized around a major text theme (see page vi for details).

Glossary. The glossary at the end of the book defines approximately 470 important computer terms mentioned in the text, including all the boldfaced key terms. Each glossary item has a page reference indicating where it is boldfaced or where it first appears in the text.

A Beginner's Guide to BASIC. The version of this book that contains an appendix on BASIC provides a comprehensive, 96-page introduction to that language. It is not just a list of rules and procedures, but an engaging, easy-to-read tutorial that encourages students to begin creating programs immediately.

STUDENT AND TEACHER SUPPORT MATERIAL

Understanding Computers and Data Processing: Today and Tomorrow comes with a complete package of support materials for you and your students. These include a student *Study Guide,* an *Instructor's Manual, Transparency Acetates,* a *Test Bank,* and instructional software to accompany the appendix on BASIC.

Study Guide

The *Study Guide* is designed to help students master the material in the text through self-testing. For each of the eighteen chapters in the text the *Study Guide* provides:

- A list of *Chapter Objectives.*
- A *Pretest* that lets students test their knowledge of the chapter before they begin to study it intensively.
- An *Overview* that puts the subject matter of the chapter in perspective.
- A *Summary* of the chapter, written in narrative form. This summary is more detailed than the end-of-chapter summary in the text.
- A list of the *Key Terms* in the chapter, with page references indicating where each is boldfaced.
- Five types of *self-testing questions:* matching, true/false, multiple-choice, fill-in, and short answer.
- An *Answer Key.*

The *Study Guide* also covers the appendix on BASIC programming. For each section of the appendix the *Study Guide* provides a brief summary, a review of BASIC commands, multiple-choice questions, and new programming problems.

Instructor's Manual

In the *Instructor's Manual* I draw on my own teaching experience to provide you with practical suggestions for enhancing your classroom presentation. The *Instructor's Manual* also 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 eighteen chapters of the text the *Instructor's Manual* provides:

- A list of *Chapter Objectives.*
- A *Summary,* oriented to the instructor, with teaching suggestions.
- A list of the *Key Terms* in the chapter, with a page reference indicating where each is boldfaced.
- A *Teaching Outline* that gives a detailed breakdown of the chapter, with all headings and subheadings as well as points to cover under each. References to the *Transparency Acetates* are keyed to this outline.
- *Activity Notes,* with recommended topics for class discussion, suggestions for using the windows and boxes, important points to cover on the transparency acetates, and mention of additional instructor resources.
- *Answers* to the end-of-chapter Review Questions.

The *Instructor's Manual* also covers the appendix on BASIC programming. For each section of the appendix it includes a brief teaching summary and suggested solutions to the Programming Exercises.

Transparency Acetates

A complete set of two-color, ready-to-show *Transparency Acetates* for use with an overhead projector is available to help you explain key points. The figures are derived from the text diagrams. The *Teaching Outlines* of the *Instructor's Manual* indicate when to show the acetates, and the *Activity Notes* lists points to make about each.

Test Bank

The *Test Bank* contains approximately 3000 test items in various formats, including true/false, multiple-choice, matching, fill-in, and short-answer ques-

tions. Answers are provided for all but the short-answer questions. The *Test Bank* is also available on disks for the IBM PC, the Apple II, and the TRS-80 Model III.

Software for the BASIC Appendix

Instructor's who adopt the version of this book that contains *A Beginner's Guide to BASIC* will receive self-documenting, interactive instructional software to accompany it. The software is available on disks for the IBM PC, the Apple II, and the TRS-80 Model III.

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The modesty of my publisher has forced me to tone down the praise I would like to give the two people most instrumental in the development of this project—Brete Harrison and David Chodoff of Holt, Rinehart and Winston. Brete contributed many key ideas, and his initial faith and perserverance got me started on the project to begin with. David shaped my sometimes cryptic prose into the textbook you now hold. Also to be thanked at Holt are Paul Becker, Tom Gornick, Susan Katz, Bob Woodbury, and David Scott.

I sincerely hope that you and your students find *Understanding Computers and Data Processing: Today and Tomorrow* a useful and interesting textbook.

C. S. Parker

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The Windows

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A visual demonstration of the widespread use of computers

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A glimpse at a variety of computers and their support equipment

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From the drawing board to final product assembly

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