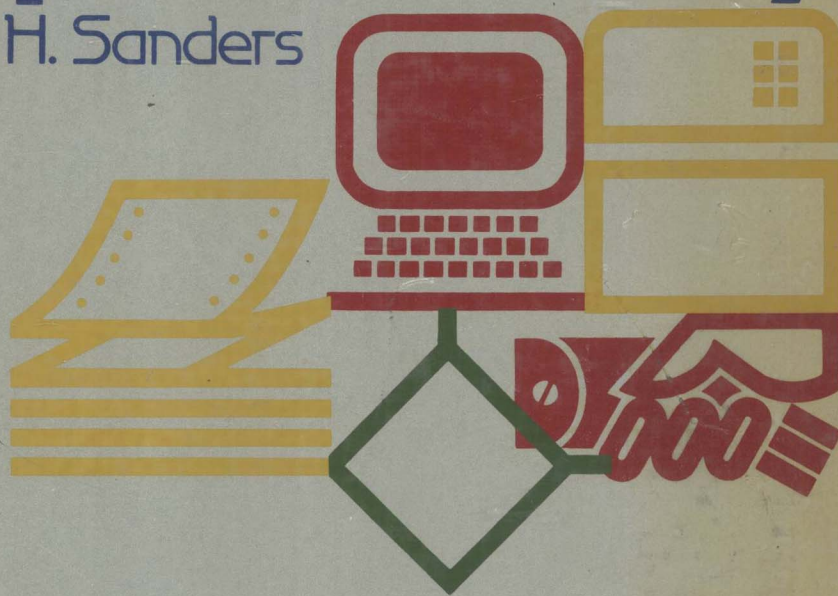


Computers Today

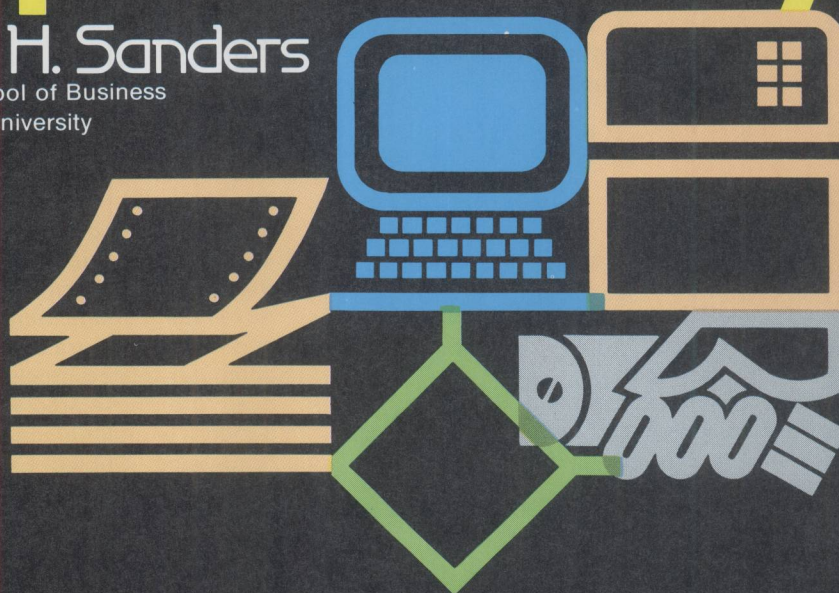
Donald H. Sanders



Computers Today

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In addition to his books, Professor Sanders has contributed articles to journals such as *Data Management*, *Automation*, *Banking*, *Journal of Small Business Management*, *Journal of Retailing*, and *Advanced Management Journal*. He has also encouraged his graduate students to contribute computer-related articles to national periodicals, and over 70 of these articles have been published. Professor Sanders is chairperson of the "Computers and Data Processing" Subject Examination Committee, CLEP Program, College Entrance Examination Board, Princeton, N. J.

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Preface

*Rockwell calculators
Really are a treat
With big green digits
And little rubber feet*

At the time this jingle was being sung on radio in the mid-1970s, most computers were controlled by organizations. Only a few microcomputers existed, and people generally used machines with “little rubber feet” for their personal needs. The situation has changed more today than anyone could have imagined 10 years ago. Millions of personal computers are now available, and computer usage will explode in the years ahead.

Ogden’s “Law” says that “The sooner you fall behind, the more time you have to catch up.” Anyone (meaning any of today’s students) who falls behind in learning about computers may spend plenty of time—perhaps a lifetime—trying to catch up. An essential outcome of education in the next decade must be computer literacy. Computer literacy is “knowing” computers. It’s knowing what they are, what they can and cannot do, how they are put to work, and how their use can affect society. It’s vital, of course, to continue to educate the many thousands of people who will become computer specialists. And this book certainly contains the information required to introduce these future specialists to the subject of computers and data processing. But computer literacy is now needed by *all* students so that they will not be intimidated by daily life, but will instead feel a sense of belonging in a computer-rich society.

The Purpose of Computers Today

This is the sixth in a series of computer data processing books that I’ve written. Several of these titles have appeared in multiple editions and have been translated into German, French, and Spanish versions. And hundreds of thousands of copies have been used in college courses and industry/government training programs. Drawing on two decades of experience, I’ve designed

Computers Today for use in an introductory one-term course in computer data processing. No data processing or mathematical background is required or assumed.

Computers Today is an ambitious title for a book because it suggests a breadth of contemporary computer/data processing information not found in other texts. Some introductory books focus only on the constructs of a particular programming language. Some maintain this specific language focus, but also introduce program development concepts. Some place the emphasis on computing equipment and then show how this equipment may be programmed to solve problems. And some concentrate primarily on computer/data processing applications and the resulting social impact of these applications.

The purpose of *Computers Today*, however, is to acquaint readers with *all four* of the following related areas of knowledge required for computer literacy:

1. **Computers Themselves.** The organization, function, capabilities, and limitations of the equipment in modern computer systems of all sizes is presented.
2. **What Computers Do.** Common data processing uses or applications of computers in today’s society are treated. The focus is generally on business data processing applications, but many of the selected applications are also processed by not-for-profit organizations such as governments, hospitals, and schools.
3. **How Computers Are Put to Work.** The techniques used in the analysis and design of information systems are explained, and the procedures that are used to prepare programs are outlined. Programs for a number of the common data processing applications that have

been identified earlier are then coded using the constructs of the BASIC programming language.

4. The Social Impact of Computers at Work.

The ways in which people and organizations may be affected by present and future computer applications are presented.

Flexible Organization: Delivery of the Promise






Computers Today is specifically designed and organized to meet the needs of courses with different subject emphases and with different presentation sequences. This flexibility is possible because Computers Today is organized into five modules. The first Background Module presents an overview of all four areas of study mentioned above. The essence of the knowledge required for computer literacy is presented in the four chapters of this module. Chapter 1 introduces readers to computer hardware and stored program concepts. Chapter 2 presents an introduction to common data processing applications. A summary of the system analysis, design, and program preparation steps needed to put the computer to work processing applications is given in Chapter 3. And the social impact of computers on people and organizations is previewed in Chapter 4.

These first four chapters should be covered in sequence. As the detailed chart below shows, however,

once these chapters have been completed, users of Computers Today can turn immediately to any of the remaining modules to meet whatever sequence and depth requirements are needed in a particular course.

As you can see, Modules 2 through 5 build on and add further detail to the topics first introduced in Chapters 1 through 4 of Module 1. Thus, a course can easily be structured so that Chapters 12 through 15 in the Programming Module immediately follow the completion of Chapter 4. Or, readers may be more motivated to study computer data processing if some time is spent on the Social Impact chapters (19 through 21) after Chapter 4 is completed. Of course, it's also logical to consider computing equipment in more detail (Chapters 5 through 11), and then move to the Systems Module (Chapters 16 through 18) prior to studying programming concepts. But you get the idea: Computers Today gives you the flexibility to choose the sequence that is best for your needs. It also permits you to vary the depth of the material covered in a one-term course. Although it's unlikely that you'll be able to cover all 21 chapters in a single term, you'll have the freedom to select those topics that are most appropriate for your needs.

One final note on organization: Some texts have promised modular flexibility in the past and have failed to deliver on this promise. This failure is common enough, in fact, to prompt one surprised reviewer of Computers Today to remark: "You know, when you finish Chapter 4 you really can go to any module!"

MODULE		CHAPTERS	MODULE NAME	PREREQUISITE MODULE
1 BACKGROUND		1-4	Computers Today: What They Are and What They Do	None
2 HARDWARE		5-11	Computer Hardware Systems	1
3 PROGRAMMING		12-15	Computer Software Concepts	1
4 SYSTEMS		16-18	Information System Concepts	1
5 SOCIAL IMPACT		19-21	Computers and Society	1

Programming Examples: Relief from the Unrelated

In addition to its workable modular flexibility, *Computers Today* incorporates another unique feature: *integrated programming examples*. This innovative approach introduces readers to the methodology and techniques of computer programming. The programming examples used in most texts involve a series of unrelated data processing applications at a number of separate businesses. Since readers are often unfamiliar with common business systems and with the interrelated nature of the outputs produced by those systems, these examples are often viewed as random and boring exercises. To counter this problem, a new business enterprise created by two college students is presented and discussed in the early chapters of *Computers Today*. The information needs of this new business—R-K Enterprises—are outlined in a number of applications examples in Chapter 2. (These examples include order entry/shipping/billing, sales compensation, sales analysis, inventory control, word processing, the preparation of mailing labels, and other topics.) An analysis and redesign of the student entrepreneurs' order entry/shipping/billing system is presented in Chapter 3. This theme of an "actual" business with realistic interrelated data processing needs is then carried to Chapters 12 through 14 in the Programming Module. Readers will see how the R-K Enterprises' applications presented in Chapter 2 are analyzed, flowcharted, and coded in the BASIC language. A progression of billing programs, beginning with simple examples and continuing on to more complex cases is discussed, charted, and coded. Multiple sales compensation programs and sales analysis programs are similarly handled, as are the inventory control and mailing label programs for R-K Enterprises. Creating a realistic enterprise that students can identify with, discussing a number of the most common applications that such a business must process, and then carrying these interrelated applications through the analysis, flowcharting, and BASIC coding steps is unique to *Computers Today*.

Other Features and Aids to Learning

Included among the numerous additional features and learning aids found in *Computers Today* are:

- Hundreds of *full-color* photographs, drawings, and illustrations are provided. Since these up-to-date pictures and diagrams often show computers in realistic environments, they are effective in visually conveying some of the excitement found in the use of computers today.
- A *vignette* that highlights some aspect of the contents of a chapter, and a *chapter outline* are used to open each chapter. Each vignette/outline is then followed by a *Looking Ahead* section that previews the chapter contents and lists the *Learning Objectives* for each chapter.
- *Feedback and Review* sections are presented in every chapter to reinforce reader understanding. A variety of formats are used in these sections.
- *Boxed inserts* are included in each chapter to provide applications, cases, and items of interest to support chapter material. These inserts are effective in stimulating discussions.
- A *Closer Look* reading to provide additional information follows each chapter. These readings also stimulate discussion and permit more in-depth coverage of selected topics.
- At the end of each chapter is a *Looking Back* section that summarizes the main points found in the chapter, a listing of chapter *Key Terms and Concepts* that includes the page number where the terms and concepts are first mentioned, a number of *questions for review and discussion*, and the *answers* to the Feedback and Review sections found in the chapter.
- Up-to-date chapters on CPU, data entry, secondary storage, and output concepts are followed in the Hardware Module by acclaimed chapters on the uses and characteristics of actual micros, minis, mainframes, and supercomputers, data communication and distributed data processing networks, and word processing and electronic mail/message systems.
- An overview of programming languages is presented in Chapter 13, and an R-K Enterprises' application is coded in several different lan-

guages. This gives readers an idea of language differences prior to being introduced to BASIC in Chapter 14.

- Topics that can often be intimidating to readers of introductory texts—e.g., system analysis, design, and implementation considerations and the concepts and functions of operating systems, data base management systems, and management information systems—are presented in a nonthreatening way in Chapters 15 through 18.
- The chapters in the Social Impact Module give readers a balanced presentation of the possible positive and negative effects that computer usage may have on the people and organizations in a society.
- A *Glossary* of the terms frequently found in the computer/data processing field is included at the back of the book.

Supplements for Computers Today

Several supplements have been prepared to make the *Computers Today* package a more complete teaching/learning tool. They include:

- *Inside Computers Today*. This student Study Guide is designed to provide extensive self-tests for each corresponding chapter in *Computers Today*. Each Study Guide chapter contains learning objectives; a chapter overview and summary; and varied self-test sections including key term matching, multiple choice, true or false, and completion exercises. Answers for all exercises are included in the Study Guide. *Inside Computers Today* is an instrument planned to reinforce and integrate text concepts. It is designed for success—no “tricky” questions have been included intentionally. Successfully completing the Study Guide exercises should increase the confidence of all levels of students. It is a straightforward, no-frills, self-testing implement written for students, not for teachers.
- *Instructor's Resource Kit*. The components of this Kit provide instructors with extensive support

materials for teaching a course with *Computers Today*. The following supplements are included:

1. *Instructor's Manual*. Beyond supplying resource material for each chapter of the text, this Manual contains FORTRAN, COBOL, and Pascal programs dealing with R-K Enterprises applications. (The logic of each program is analyzed in text Chapter 12.) These programs use the same input data and produce the same output results as the BASIC programs discussed in Chapter 14 of the text. Anyone wishing to consider an additional language or an alternative to BASIC will likely find the needed programs in this section. The manual also supplies transparency masters of selected text illustrations.
2. *Overhead Transparencies*. A set of 48 color transparencies serves as a visual classroom aid which can be used to further explain text concepts.
3. *Test Bank*. This set of more than 2000 questions covers the important ideas and definitions in *Computers Today*. The Test Bank contains, for each text chapter, two different quizzes—“A” and “B” sets—plus an extensive set of Additional Questions, which may be used as a separate test (Quiz C) or from which you may supplement the A and B Quiz items. No questions from the text or the Study Guide are repeated in the Test Bank. Finally, the Test Bank is available for use with the Examiner Test Generation System.

Acknowledgments

It's customary for authors to conclude a preface by acknowledging the contributions and suggestions received from numerous sources. This is particularly appropriate in the case of *Computers Today* because a full-color project of this scope just doesn't happen without the input of many people.

The authorities who responded to a preliminary questionnaire and helped shape the content and organization of *Computers Today*, and the professionals who

reviewed the manuscript and made many helpful suggestions are acknowledged separately following this Preface.

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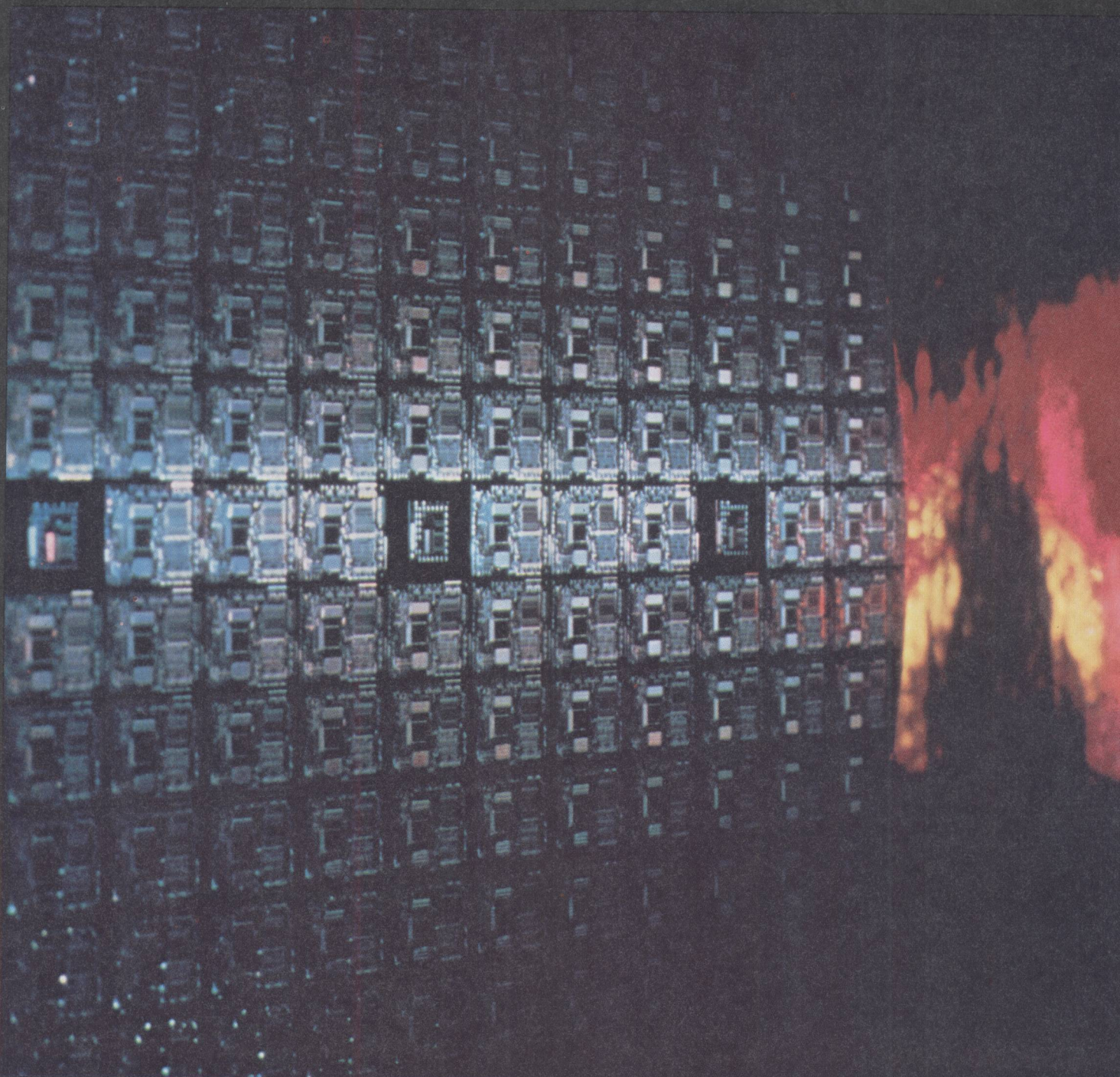
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Computers Today

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