



LARRY LONG

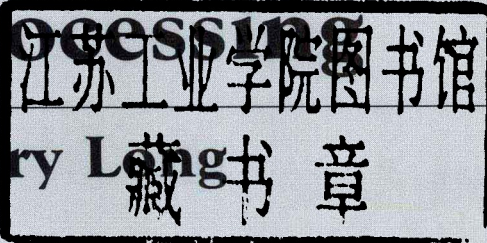
INTRODUCTION TO COMPUTERS
AND INFORMATION PROCESSING

THIRD EDITION

3rd Edition

Introduction to Computers and Information Processing

Larry Long



Prentice Hall, Englewood Cliffs, New Jersey 07632

Long, Larry E.

Introduction to computers and information processing / Larry Long.
—3rd ed.

p. cm.

Includes index.

ISBN 0-13-488701-8

1. Electronic digital computers. 2. Electronic data processing.

I. Title.

QA76.5.L655 1991

004-dc20

90-14217

CIP

Editorial/production supervision: Nancy DeWolfe

Interior design: Sue Behnke/A Good Thing, Inc.

Cover design: A Good Thing, Inc.

Cover photo: Roberto Brosan

Manufacturing buyer: Trudy Piscioti/Bob Anderson

Page layout: Diane Koromhas

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A Division of Simon & Schuster

Englewood Cliffs, New Jersey 07632

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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 0-13-488701-8 01

Prentice-Hall International (UK) Limited, *London*

Prentice-Hall of Australia Pty. Limited, *Sydney*

Prentice-Hall Canada Inc., *Toronto*

Prentice-Hall Hispanoamericana, S.A., *Mexico*

Prentice-Hall of India Private Limited, *New Delhi*

Prentice-Hall of Japan, Inc., *Tokyo*

Simon & Schuster Asia Pte. Ltd., *Singapore*

Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

**Introduction
to Computers
and Information
Processing**

To the *instructors* whose dedication to the principles
of education have enabled thousands to enter the age
of information with confidence

To the *students* with the will to accept challenge
and the foresight to seize opportunity

We are in transition from an industrial society to an information society. The forces driving this transition are the computer and the people who strive to exploit its seemingly endless capabilities in their work and in their leisure.

The chapters, fourteen in all, offer an overview of information technology and applications. Two of the seven appendices provide conceptual coverage of computer history and numbering systems. The remaining appendices will help you learn to operate microcomputers and use a variety of popular software packages, including MS-DOS (operating system), WordPerfect (word processing), Lotus 1-2-3 (electronic spreadsheet), and dBASE III Plus (database).

Once you have read and understood the material in this text and have had hands-on experience with computers, you will be poised to play an active role in the "computer revolution."

Getting the Most from This Text

The layout and organization of the text and its content are designed to present concepts in an interesting, logical, and informative manner, and to be used as a reference for the reinforcement of classroom lectures.

A good way to approach each chapter is to

1. Look over the Student Learning Objectives on the chapter opener.
2. Turn to the end of the chapter and read the Summary Outline and Important Terms.
3. Read over the major headings and subheadings and think of how they are related.
4. Read the chapter and note the important terms in **boldface** type and in *italic* type.
5. Relate photos and photo captions to the text. (One picture is worth a thousand words.)
6. Go over the Summary Outline and Important Terms again, paying particular attention to the boldface terms.
7. Take the Self-Test. Reread those sections you do not fully understand.
8. Answer the questions in the Review Exercises.

Color is used throughout the book to add another dimension to the learning process. There are many instances where concepts are reinforced and made easier to understand with the judicious use of color. We call this the *functional use of color*.

The Learning Assistance Package

Introduction to Computers and Information Processing is supported by a comprehensive learning assistance package. The package is detailed in the "Preface to the Instructor." Ask your instructor about the availability of these supplements.

You, Computers, and the Future

Whether you are pursuing a career as an economist, a social worker, an attorney, a dancer, an accountant, a computer specialist, a sales manager, or virtually any other career from shop supervisor to politician, the knowledge you gain from this course ultimately will prove beneficial. Keep your course notes and this book; they will prove to be valuable references in other courses and in your career. The chapter material addresses a broad range of computer concepts that you will encounter frequently in other classes, at work, and even at home.

The use of computers for information processing is in its infancy. You are "getting in on the ground floor" by taking this course. Each class you attend and each page you turn will be a learning experience to help you advance one step closer to an understanding of how computers are making the world a better place in which to live and work. You also will be gaining the knowledge necessary to become an active participant in what is the most exciting decade of technological innovation and change in recorded history.

The introductory computer course traditionally has posed one of the greatest teaching challenges. To be effective, we must continually change our lecture style. Sometimes we are historians. Much of the time we are scientists presenting technical material. On occasion we are sociologists commenting on social issues. In the same course we toggle between lecture and lab. Moreover, we are teaching an ever-increasing amount of material to students with a wide range of career objectives, many of whom are computerphobics.

Introduction to Computers and Information Processing and its comprehensive teaching/learning system are designed to help you meet this challenge. In the book I have attempted to motivate students by projecting the message that computers are more than just productivity tools; they also can be a continuing source of enjoyment and personal gratification. The teaching/learning system, which is the most comprehensive of its kind, is described briefly in this preface and in detail in the Instructor's Resource Manual portion of the Annotated Instructor's Edition (AIE) of the text. The AIE consists of the student text with lecture-oriented material in the margins.

Target Course

The target course for this text and its teaching/learning system

1. Provides overview coverage of introductory computer and information processing concepts (as opposed to comprehensive coverage).
2. Accommodates students from a broad spectrum of disciplines and interests.
3. Introduces students to microcomputers and one or more of the following: MS-DOS, WordPerfect, Lotus 1-2-3, dBASE III Plus, BASIC programming. (BASIC is covered in a separate booklet.)

Features

- *Step-by-step software tutorials.* Students can progress to an intermediate level of competency in MS-DOS, WordPerfect, Lotus 1-2-3, and dBASE III Plus by working through the keystroke tutorials, one step at a time. Numerous hands-on exercises provide students with an opportunity to build their skills. Once completed, the tutorials are designed to serve as a reference for common software functions.
- *Readability.* All elements (feature boxes, profiles, photos, figures, memory bits, and so on) are integrated with the text to create a reading and study rhythm that complements and reinforces learning.
- *Teachability.* Teachability of a text is that quality that permits instructors to present lectures in a logical and coherent manner.
- *Applications-oriented.* Throughout the book, concepts are presented in the context of computer applications.

- *Presentation style.* The text and all supplements are written in a style that remains pedagogically sound while communicating the energy and excitement of computers to the student.
- *Functional use of color.* Color is used functionally to relate ideas to one another and to illustrate the text.
- *Currency-plus.* The material is more than current, it's "current-plus"—anticipating the emergence and implementation of computer technology.
- *Flexibility.* The text and its teaching/learning system are organized to permit maximum flexibility in course design and in the selection, assignment, and presentation of material.
- *Chapter pedagogy.* Chapter organization and pedagogy are consistent throughout the text. The chapter is prefaced by Student Learning Objectives. In the body of the chapter, all major headings are numbered (1-1, 1-2, and so on) to facilitate selective assignment and to provide an easy cross-reference to all related material in the supplements. Important terms and phrases are highlighted in boldface type. Words and phrases to be emphasized appear in italics. Informative boxed features, "Profiles," photos, and "Memory Bits" (outlines of key points) are positioned strategically to complement the running text. Each chapter concludes with a Summary Outline and Important Terms, Review Exercises (concepts and discussion), and a Self-Test.

The Third Edition

The revisions embodied in *Introduction to Computers and Information Processing* reflect advancing technology and the evolution of college curriculums. The major changes are summarized below.

- *Introduction to Computers and Information Processing* is published in two versions: the student text and the Annotated Instructor's Edition.
- Four completely new appendices demonstrate, via interactive tutorials, the features and functions of MS-DOS, WordPerfect 5.X, Lotus 1-2-3 2.2, and dBASE III Plus. Another new appendix covers using a microcomputer.
- The coverage of I/O and data storage is now split into two separate chapters.
- The history chapter has been replaced with a pictorial overview in Appendix A.
- Two chapters on personal computing and micro software (generic coverage of word processing, desktop publishing, spreadsheet, graphics, and database) have been added.
- A chapter on computers in society has been added.
- BASIC has been removed from the main text and offered as a supplement at a nominal cost.
- Profiles of people who have had a major influence on computers and the computer industries now appear in each chapter.

Organization

Introduction to Computers and Information Processing consists of 14 chapters and seven appendices. The chapters, which are divided into five parts,

address concepts relating to information technology and present many examples of the application of this technology. The first two appendices cover those major topics most often omitted from computer survey courses—computer history and numbering systems. Appendix C provides an overview of using microcomputers. The remaining appendices present explanations and keystroke tutorials for MS-DOS, WordPerfect, Lotus 1-2-3, and dBASE III Plus. BASIC programming is covered in *BASIC for Introductory Computing*, a supplemental booklet by Larry and Nancy Long.

The glossary is comprehensive. That is, terms that are not in the text but which may be encountered by the student in future courses or at work are included.

The Introduction to Computers and Information Processing Teaching/Learning System

The Annotated Instructor's Edition (AIE). The AIE is a four-color instructor's version of *Introduction to Computers and Information Processing* that includes lecture points, teaching tips, supplemental material, in-class discussion questions, supplemental examples, warnings, quotes, cross-references to other components of the teaching/learning system, and much more—all in the margin of the text! The AIE also contains an Instructors Resource Manual (IRM) section. The IRM tells you how to acquire and use all the teaching and learning materials; provides tips on preparation, teaching, and delivery; and presents a pedagogical summary of the text. (Lecture notes and solutions are in the *Instructor's Manual and Test Item File*.)

Computer-Assisted Presentation System (CAPS). CAPS is an integrated set of animated graphics, sometimes called “electronic transparencies,” that are used with a PC and a screen-image projector to enhance and facilitate classroom lectures. The “transparencies” contain key lecture points and appropriate graphics, and can be recalled and displayed as needed.

Instructor's Manual and Test Item File (IM&TIF). The IM&TIF contains lecture outlines for each chapter and appendix in the text and each learning module in *BASIC for Introductory Computing*, solutions to exercises (main text, *Study Guide*, and the BASIC supplement), and the test item file (main text and BASIC supplement).

Test Item File Diskettes. The Test Item File Diskettes are used in conjunction with Prentice Hall DataManager software and the hard copy in the IM&TIF.

Instructor's Manual on a Disk. The chapter and appendix lecture outlines of the IM&TIF are included on a disk in generic ASCII format.

Study Guide. The *Study Guide* is a supplementary book designed to support the student learning objectives in the text. It contains self-tests and hand-in exercises for material in the text and in the BASIC supplement. It also contains a “Guide to *The New Literacy Videotape Series*.”

Microcomputer Software: Step by Step. This hands-on lab book by Ted Kalmon, Larry Long, and Nancy Long (Englewood Cliffs, N.J.: Prentice Hall, 1990) provides step-by-step instructions, tutorials, and exercises for MS-DOS, WordPerfect, Lotus 1-2-3, and dBASE III Plus. This book is made available for those students who wish to learn about these software packages in greater depth than they are presented in the main text. It takes beginners to an advanced level of competency.

BASIC for Introductory Computing. This booklet (90 pages) by Larry and Nancy Long (Englewood Cliffs, N.J.: Prentice Hall, 1990) can be purchased with the main text at a nominal extra cost.

Prentice Hall DataManager. PH DataManager is an integrated IBM-PC-compatible test-generation and classroom-management software package. The package permits instructors to design and create tests, to maintain student records, and to provide practice testing for students.

Computerized Testing Service. This call-in service provides customized exams by return mail.

Color Transparency Acetates. One hundred and twenty color transparency acetates, which support material in the text and the Annotated Instructor's Edition, are offered to facilitate in-class explanation. (Over 50% supplement the figures in the text.)

Prentice Hall/New York Times Contemporary View Program. This annual compilation of approximately 20 pertinent and timely articles on computers and automation is available to students. Instructors get a free subscription to *The New York Times* for classroom use.

Full-Function Word Processing Software. Webster's New World Writer and its 100,000-word-plus Spelling Checker are available at a nominal cost.

Videotape Series—The New Literacy: An Introduction to Computers. *The New Literacy* is a 13-tape, 26-segment video series on the use and application of computer and information technology.

Video Software Tutorials—The Video Professor. This series includes video tutorials for MS-DOS, WordPerfect, Lotus 1-2-3, dBASE III Plus, Microsoft Word, and others.

ABC News/Prentice Hall Video Library. This series offers documentary and feature-style stories on computers and computer technology from such award-winning news shows as *Nightline*.

SuperSoftware (IBM PC and Apple IIe). SuperSoftware is a dual-purpose educational software package. It is equally effective as a stand-alone interactive software package for students or as a teaching tool to demonstrate interactively a myriad of computer-related concepts, such as computers (configuring a micro), information processing (airline reservations), software (mail merge with word processing), and programming (sorting). SuperSoftware, which contains 60 hands-on lab activities, is designed to instruct, intrigue, and motivate.

Author “Hotline.” If you have questions about the text, its package, or course planning, call me on the hotline. The telephone number appears in the IRM portion of the AIE.

Microcomputer Software and Micro Software Support Materials. Prentice Hall is the largest publisher of computer texts in the world. In many instances, full-function and educational versions of commercial software are distributed with these books. For example, Prentice Hall's Software Kit for Introductory Computing, which contains educational versions of WordPerfect 4.2, The TWiN, and dBASE III Plus, is available with this text. Your PH representative will be happy to discuss the many options you have in the selection of lab manuals and support software.

Acknowledgments

This space is insufficient to thank all the people who have made contributions to this text and its support package. The key players, however, deserve special recognition because “Intro 3/E” is their book, too. At Prentice Hall, acquisitions editor Ted Werthman committed himself and the resources of the company to the success of the project; production editor Nancy DeWolfe has woven ten thousand multicolored threads into an exquisite tapestry; and Jenny Kletzin, Delores Kenny, Rob Dewey, Sue Behnke, Mary Ann Gloriande, Trudy Piscioti, and Bob Anderson have proven once again that they are the best in the business. I would also like to extend my gratitude to a group of Prentice Hall managers for their continued support—Dennis Hogan, Alison Reeves, Jeanne Hoeting, Leah Jewel, Seth Reichlin, Rudy Lopes, and John Jones.

Twenty-plus books and two kids later, my wife, Nancy, remains the mainstay of the Long series of books. Joel Stauffer's artistic acumen and computer wizardry are evident in CAPS, the electronic transparencies that accompany the text. Both are to be congratulated.

Scores of people from a variety of companies have in some way participated in the preparation of this book and its supplements. I thank them, one and all. I would like to single out several of these people for their ongoing commitment to education: Jessie Kempter (IBM), Pete McLaughlin (EDS), Kathy Donahue (Dynatech), Carol Parcels (Hewlett-Packard), Vicki Hawthorne (NASA), Gail Jackson (Wang), Christie Campbell (TRW), Linda Morgan (Gannet), and Peter Van Avery (General Electric).

The insight of hundreds of instructors, administrators, and students who have used *Introduction to Computers and Information Processing* has been invaluable to the evolution of its third edition. I would like to extend my sincere appreciation to each of them and to a select group of professors who critiqued the manuscript.

- Sarah Rothenberg, Hartwick College
- Maribeth King, Kilgore College
- Larry Buch, Milwaukee Area Technical College
- Alex Ephrem, Monroe Business Institute

- Don Cartlidge, New Mexico State University
- Jeffery Corcoran, Nichols College
- Vernon Case, Penn Valley Community College
- Gary Nunn, Radford University
- Paul Dietz, The University of Mary
- Gary Hyslop, The University of Rhode Island
- Deborah Martin, Virginia Western Community College
- Elizabeth Rhodes, Virginia Western Community College

Finally, I would like to thank the pioneers of our industry profiled in the text for their cooperation.

LARRY LONG, Ph.D.

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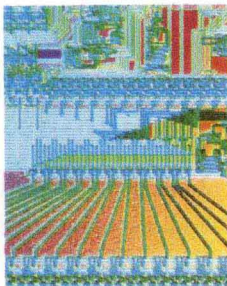
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Part I Computers Today



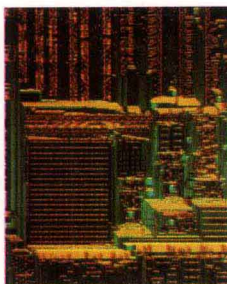
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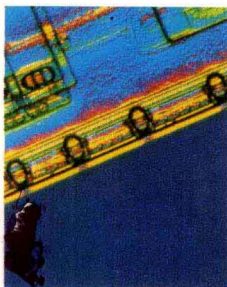
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