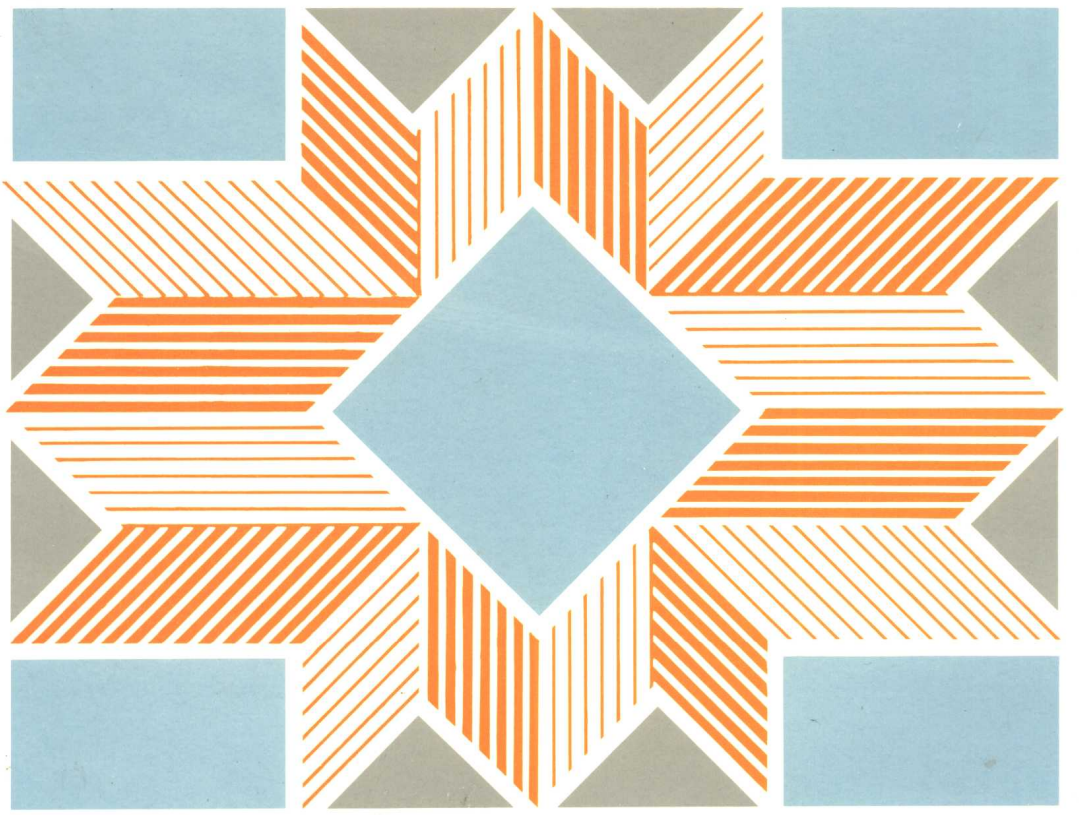
Essentials of Data Processing

NANCY A. FLOYD



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Preface

The Intended Audience for This Book

The growth and development of the data processing field have affected almost every aspect of our lives. Consequently, the student taking an introductory data processing course today may be majoring in computer studies, may be in a related field such as business, or may use computers only in support of his or her area of expertise. This diverse group of students—enrolled in 2- and 4-year colleges, nonmajors and majors—has one important unifying goal: the need to learn fundamental computer concepts. By providing in-depth coverage of *essential* data processing concepts, *Essentials of Data Processing* is intended to support a practical first course in data processing for nonmajors and for majors enrolled in a combined introductory data processing/BASIC or introductory data processing/microcomputer applications course.

Why This Book Was Written

Students today are interested in what practical information they need to deal with the computer in the workplace. They need to learn key concepts and important terminologies without being burdened with unnecessary detail. This book was written because the available textbooks did not satisfy students' needs. Specifically:

The big, 4-color introductory data processing books are *too* big for some courses.

- *They contain too much material to cover in the time available.* Some professors attempt to make the big books "fit" their courses by omitting chapters and thereby also eliminating coverage of valuable concepts. Some professors try to solve this problem by using only selected readings from within each chapter, thereby creating gaps that cause problems in student comprehension. And even more elaborate "text surgery" is necessary if the professor wants also to cover BASIC.
- *Material may be deleted, but the price remains the same.* Professors pay the price in time spent tailoring the book to meet their course needs, and students pay the price for an expensive, 4-color book of which they use only a portion.

The smaller introductory data processing books miss the mark in satisfying course needs.

- *Some texts have shallow coverage of too few concepts.* These texts, in attempting to be "shorter" than the bigger books, end up containing material that is not technical enough. The coverage lacks depth and fails to include important topics.
- *Many texts do not have a practical orientation.* Some texts contain material that is too technical for nonmajors, for example, focusing primarily on programming. Some texts focus on the societal implications of the computer. Some texts don't devote enough coverage to microcomputers. These texts don't address what the average person needs to know about dealing with computers in career and family activities.

Why You Should Consider This Book

I really believe *Essentials of Data Processing* will better suit your course needs than any other book because:

- *This book is designed so that all the material can be covered in one term, with or without a lab.* This permits maximum flexibility for those instructors who want to cover BASIC programming or microcomputer applications, as well as essential data processing concepts. The decision to include topics was based on whether that information was essential to both majors and nonmajors and whether the material was usually covered in another course. For example, Chapter 5, The Programming Process, includes *brief* coverage of systems analysis—only those concepts pertinent to the average nonmajor. Majors will go on to take a one-term and sometimes a two-term Systems Analysis and Design Course.
- *This book offers a practical, microcomputer-oriented approach to data processing concepts.* Content is presented so that students can identify with it and immediately transfer it into their own lives. Students are taught what they need to know to interact with computers and the per-

sons who program computers. Also, the book covers *practical* information about the type of computer students are most likely to encounter—the microcomputer. The microcomputer orientation throughout the text is additionally bolstered by two chapters that are microcomputer specific. Chapter 4, Software, includes guidelines for evaluating and purchasing software and for storing and handling diskettes. Chapter 6, Microcomputers, includes a checklist for purchasing hardware.

- *This book is up-to-date.* Topics covered include office automation, robotics, decision support systems, fifth-generation computers, expert systems, and artificial intelligence.
- *Carefully developed in-text learning aids ensure student comprehension:*
  - *At XFields, Inc.* All chapters begin with a short business-oriented scenario that sets the scene for the topics to be covered in the chapter. Students will identify with the characters' real-life job concerns and anxieties about using computers and be motivated to study the chapter.
  - *Chapter Objectives.* After studying the chapter, students can use the list of objectives to test their understanding of the chapter contents.
  - *Overview.* Following the Chapter Objectives is a brief introduction that previews chapter content.
  - *On the Job Boxes.* Each chapter contains this feature, which highlights how computers are used in the business world and reinforces chapter concepts.
  - *Summary.* All chapters end with a brief section summarizing the topics covered. Students can use this feature for review and study purposes.
  - *At XFields: Conclusion.* Each chapter ends by returning to the XFields characters introduced at the beginning of the chapter. Because the characters' learning parallels what students have learned in the chapter, students will again identify with the characters.
  - *Definitions.* Terms are boldfaced and defined on first mention within chapters. All boldfaced terms appear in the end-of-text glossary.
  - *Exercises.* Each chapter ends with discussion questions that test student comprehension of chapter content.
  - *Projects.* Following the *Exercises* are *Projects* to expand students' learning experience beyond the text.

- *This book was written for students.* The book presents essential concepts in a concise, clear, easy-to-understand manner so that students are interested and encouraged, not intimidated by computers. Discussions are not overly technical. Concepts are explained through the use of objects and events with which students can relate. For example, in the explanation of how matrix construction creates letters, the matrix pins of a printer are compared to the individual bulbs that light up to show the score on a basketball scoreboard (Chapter 2). The functional use of a second color also enhances student interest.

How to Use This Book

Essentials of Data Processing is designed so that all material may be completed in one term. Specific suggestions on how to use the book in the various course configurations can be found in the Instructor's Guide.

Professors have the flexibility to decide to:

Use the book by itself.

This book is self-contained; it covers all essential computer concepts. If the class is taught without a lab, the Projects at the end of each chapter will offer students some exposure to computer usage. If the course is taught with a programming lab, the BASIC appendix can be used.

Use this book with a language supplement.

This book is available with an accompanying BASIC supplement (Student Study Guide) that builds on the in-text BASIC appendix. Times Mirror/ Mosby's Cohen-Alger-Boyd *Business BASIC for the IBM PC with Cases* (for a machine-specific, business approach) might be suitable, or another language supplement can be used.

Use this book with a microcomputer supplement.

This text may be used with Times Mirror's texts Dravillas-Stilwell-Williams *Power Pack for the IBM PC,* which offers generic explanation of packages and comes with software; Spence-Windsor *Using Microcomputers: Applications for Business,* which offers generic concepts and hands-on coverage of 15 popular business packages and comes with software; or Spence-Windsor *Microcomputers in Business: WordStar, dBASE II and III, and Lotus 1-2-3.* Or professors can use another microcomputer text or supplement of their choosing.

Use this book with a language and a microcomputer supplement.

Many instructors today want to teach an introductory course that covers data processing concepts, programming, *and* microcomputer applications. Again, this book can be used as the ideal compliment to other required texts.

Supplements

A solid package of instructional supplements has been created with the needs of the large number of adjunct faculty, part-time faculty, and teaching assistants foremost in mind.

Instructor's Guide

This supplement was written by Nancy A. Floyd and contains:
Answers to all exercises in the book and the Student Study Guide.
Chapter outlines to use as lecture guides.

100 transparency masters of key figures in the text, modifications of text figures, and totally new illustrations.
Conversion notes to help you convert from your present text.
Additional lab exercises and lecture materials to supplement text.
Accompaniment notes that address how to use this book (1) with a BASIC text, (2) with a microcomputer text, and (3) with a BASIC and a microcomputer text.
Teaching tips for the instructor.
Annotated journal references.
Topics for discussion relevant to chapter content.

Student Study Guide

This supplement was written by Paul W. Ross of Millersville University, Pennsylvania.

The first part of the Student Study Guide supports the chapters and contains:
Learning objectives
Overview Chapter summary
Problem set to define key terms
Discussion questions
Multiple choice, true/false, matching, and short-answer questions
Additional projects
Case studies with problem/activity sets

The second part supports and builds on the BASIC appendix, by covering:
- The mechanics of using BASIC on a microcomputer
- Numeric and string variables
- Reserved words and operators
- Simple input and output
- Assignment statements
- Looping and decision making
- Arrays, tables, and strings
- Subroutines
- File processing

Also included are:
Self-test questions
Programming problems

Test bank

The test questions were also written by Nancy A. Floyd.
The printed version of the test items includes approximately 1300 items using the following formats:
- Multiple choice
- Fill-in-the blank
- Matching
- Short answer
- True/false

A computerized testing package, Microtest, is available from the publisher to all adopters.

Acknowledgments

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I assume full responsibility for any errors or inaccuracies. Any comments, criticisms, suggestions, or improvements are welcome. Write to me in care of Times Mirror/Mosby 4633 Old Ironsides Drive, Suite 410, Santa Clara, CA 95054.

Nancy Arthur Floyd

Brief Contents

Detailed Contents

Each Chapter begins with "At XFields, Inc."—a short business scenario—and an Overview. Each Chapter concludes with a summary, "At XFields: Conclusion," and Exercises and Projects.