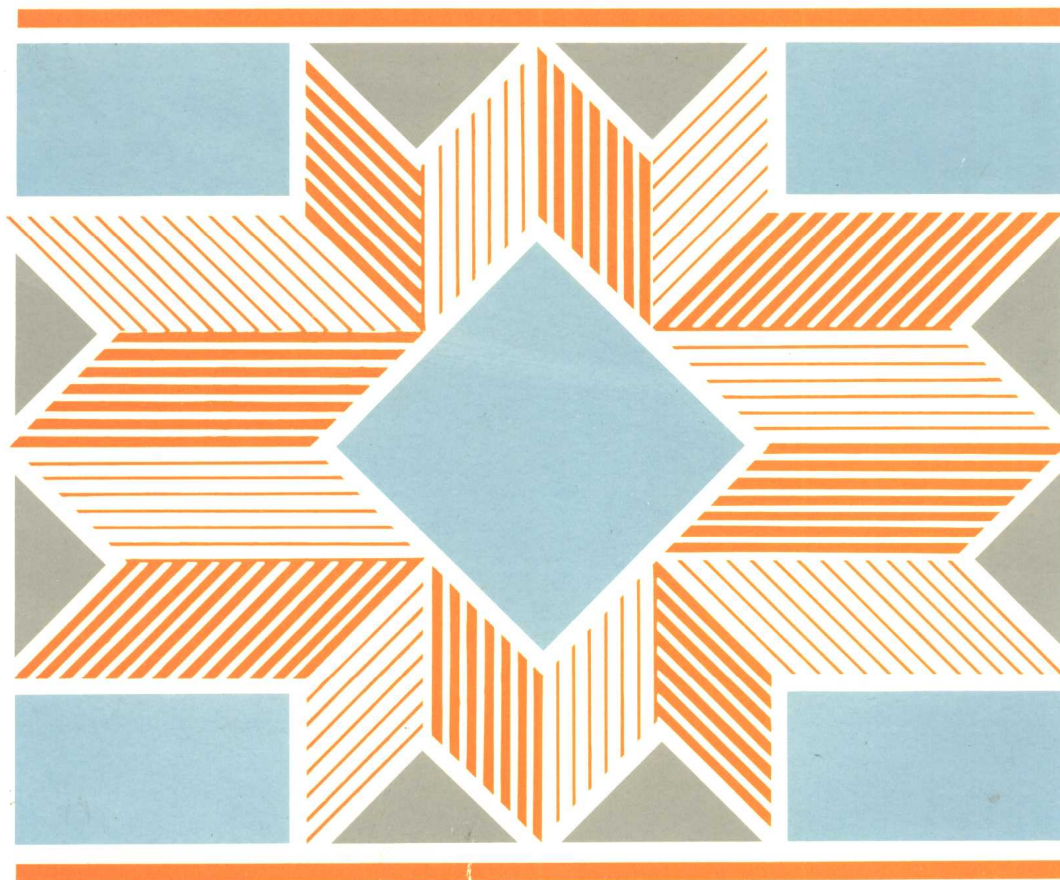

Essentials of Data Processing

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Essentials of Data Processing

NANCY A. FLOYD



Times Mirror/Mosby College Publishing

ST. LOUIS • TORONTO • SANTA CLARA 1987

To David Eaton Arthur and Mildred Porst Arthur

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Editorial Assistant: Pamela Lanam
Production: Stacey C. Sawyer, Montara, Calif.
Text and Cover Design: Al Burkhardt
Text Illustration: Mary Burkhardt
Copy Editor: Roger McWilliams
Typesetting: Maryland Composition

FIRST EDITION

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A Division of the C. V. Mosby Company

11830 Westline Industrial Drive, St. Louis, MO 63146

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Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Floyd, Nancy A. (Nancy Arthur)

Essentials of data processing.

Bibliography: p.

Includes index.

1. Electronic data processing. I. Title.

QA76.F57 1986 004 86-14574

ISBN 0-8016-1660-3

MC/VH/VH 9 8 7 6 5 4 3 2 02/A/243



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
- Short answer
- Fill-in-the blank
- True/false
- Matching

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

Acknowledgments

I am indebted to the many people who contributed to the development of this book: my family, who supported my decision to write and accepted the many other things that did not get done this year, and the reviewers, whose feedback and suggestions were invaluable.

Reviewers

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Linda Knight	
Northern Illinois University	

My thanks are also due to the data processing students at Rockingham Community College, Wentworth, North Carolina. They read various drafts

of the manuscript, endured countless practice runs of the material and examples, and humored me through the agony of deadlines. Their interest in and enthusiasm for data processing have fueled my own and made teaching a most joyous profession.

Special thanks are due to the staff of Times Mirror/Mosby: Executive Editor Susan Solomon, Marketing Manager Jim Donohue, Developmental Editor Rebecca Reece, Editorial Assistant Pam Lanam, and Production Coordinator Stacey Sawyer. I've learned so much from them all.

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	vii
Preface	xvii
Chapter 1	<i>Introduction</i> 1
Chapter 2	<i>Hardware: The Peripheral Devices</i> 18
Chapter 3	<i>The Central Processing Unit and the Operating System</i> 44
Chapter 4	<i>Software</i> 60
Chapter 5	<i>The Programming Process</i> 81
Chapter 6	<i>Microcomputers</i> 104
Chapter 7	<i>File Organization</i> 124
Chapter 8	<i>Database</i> 137
Chapter 9	<i>Microcomputer Applications</i> 150
Chapter 10	<i>Telecommunications</i> 170
Chapter 11	<i>Office Automation</i> 186
Chapter 12	<i>Trends</i> 203
Appendix A	<i>BASIC</i> 215
Appendix B	<i>Data Representation</i> 229
	<i>Glossary</i> 240
	<i>Index</i> 250



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.

CHAPTER 1 **Introduction** **1**

<i>What Is a Computer?</i>	3
<i>From Calculating Machines to Computers</i>	4
The First “Computer”	5
Punched Cards and the 1890 Census	6
The Electromechanical Computer Arrives	7
The Electronic Computer: Who Gets the Credit?	7
Separation of Computer and Program	8
<i>Building on the Foundation</i>	9
The First Generation: Computers Reach Private Industry	10
Transistors: The Second Generation Begins	11
The Third Generation: Computers and Their Families	12
The Fourth Generation: A Population Explosion	14
Learning from Experience: The Fifth Generation	15
Where Are Computers Today?	15

CHAPTER 2 **Hardware: The Peripheral Devices** **18**

<i>Input Devices and Media</i>	20
Terminals	20

<i>Video Display Terminal</i>	20
<i>Point of Sale Terminal</i>	22
Optical Recognition	23
<i>Mark Sensing</i>	23
<i>Optical Character Recognition</i>	23
<i>Bar Code</i>	24
Magnetic Ink Character Recognition	25
Light Pen	27
Mouse	27
Voice Recognition	28
<i>Secondary Storage Devices</i>	29
Magnetic Tape	29
Magnetic Disk	33
Mass Storage Devices	36
Optical Devices	36
<i>Output Devices</i>	37
Printers	37
Plotters	40
Microfilm and Microfiche	40

CHAPTER 3

Central Processing Unit and Operating System

44

<i>Central Processing Unit</i>	45
Arithmetic/Logic Unit	45
Control Unit	46
Internal Storage	46
<i>Random Access Memory</i>	47
<i>Read-only Memory</i>	47
Registers	48
Bus Lines	49
The Machine Cycle	49
<i>Processing Techniques</i>	49
Buffers	51
Spooling	52
Multiprogramming	52
Multiprocessing	53

<i>Other Systems Software Features</i>	54
Utility Programs	54
Interpreters	54
Performance Measurement Programs	55
<i>Some Popular Operating Systems</i>	55
OS-MVS	56
MS-DOS	56
CP/M	57
Unix	57
<i>Criteria for Evaluating the Operating System</i>	58

CHAPTER 4 **Software**

60

<i>The Two Kinds of Software</i>	62
Purchased Software	62
Spreadsheets	62
Word Processing Programs	63
Integrated Software	64
Custom Software	67
Advantages and Disadvantages of Purchasing Software	67
<i>Levels of Language</i>	67
Low-level Languages	68
Machine	68
Assembler	68
<i>High-level Languages</i>	68
FORTRAN	71
COBOL	71
RPG	72
BASIC	73
Pascal	73
C	74
Logo	75
Fourth-generation Languages	76
Natural Languages	77
Query Languages	78

CHAPTER 5

The Programming Process

81

<i>What Is Programming?</i>	83
<i>What Is Systems Analysis?</i>	83
The Systems Analysis Process	84
<i>Programming Logic</i>	85
<i>Flowcharts</i>	86
Flowcharting Symbols	86
Logic Flow	89
Loops	89
Branches	90
<i>Structured Programming</i>	92
Structure Charts	92
IPO Charts	93
Pseudocode	93
Structured Code	93
<i>Coding the Program</i>	94
<i>Testing the Program</i>	96
Syntax Errors	96
Logic Errors	97
<i>Marking the Trail</i>	99
Documentation for Maintenance	99
Documentation for Operators	100
Documentation for Users	101
Training Operators and End Users	101

CHAPTER 6

Microcomputers

104

<i>Brief History of Microcomputers</i>	105
<i>Microcomputer Characteristics</i>	106
Hardware	107
Software	107
Operating Systems	107
Applications Software	108
<i>The Users</i>	110
Individuals	110
Educators	110

Small Businesses	111
Large Businesses	112
<i>Criteria for Selecting and Evaluating a System</i>	116
Criteria for Evaluating Software	116
Criteria for Evaluating Hardware	118
<i>Caring for Your System</i>	119
<i>Trends in Microcomputers</i>	120
Trends in Development	120
Trends in Use	120
Trends in Sales	121

CHAPTER 7 *File Organization* 124

<i>Data Structure</i>	125
<i>Space Considerations</i>	126
Record Types: Fixed versus Variable	126
Blocking	127
Packing	128
<i>File Organization</i>	129
Sequential File Organization	129
Direct File Organization	130
Relative File Organization	130
Indexed File Organization	130
<i>Processing Methods</i>	131
Batch Processing	132
Transaction-oriented Processing	132
<i>Access Methods</i>	132
Accessing Sequential Files	133
Accessing Direct and Relative Files	133
Accessing Indexed Files	133
Access Method Programs	134

CHAPTER 8 *Database* 137

<i>Why Did Database Evolve?</i>	139
<i>What Is a Database?</i>	139
<i>Advantages of Database Organization</i>	139

Data Redundancy	141
Data Integrity	141
Data Security	141
Shared Data	141
<i>Data Management System</i>	147
Purpose	142
Data Dictionary	143
Query Language	143
<i>Shared Files</i>	144
<i>Types of Database</i>	144
Hierarchical Database	144
Network Database	144
Relational Database	147
Problems	147

CHAPTER 9	<i>Microcomputer Applications</i>	150
------------------	--	------------

<i>Symphony</i>	152
<i>Spreadsheets</i>	152
Layout	152
Spreadsheet Windows	152
How the Spreadsheet Is Used	153
<i>Graphics</i>	156
<i>Word Processing</i>	157
<i>Database</i>	163
<i>Other Applications</i>	165
<i>Trends</i>	165

CHAPTER 10	<i>Telecommunications</i>	170
-------------------	----------------------------------	------------

<i>Hardware</i>	172
Terminal	172
Modem	174
Communications Channel	174
<i>Telephone Lines</i>	174
<i>Coaxial Cable</i>	175
<i>Fiber Optics</i>	175