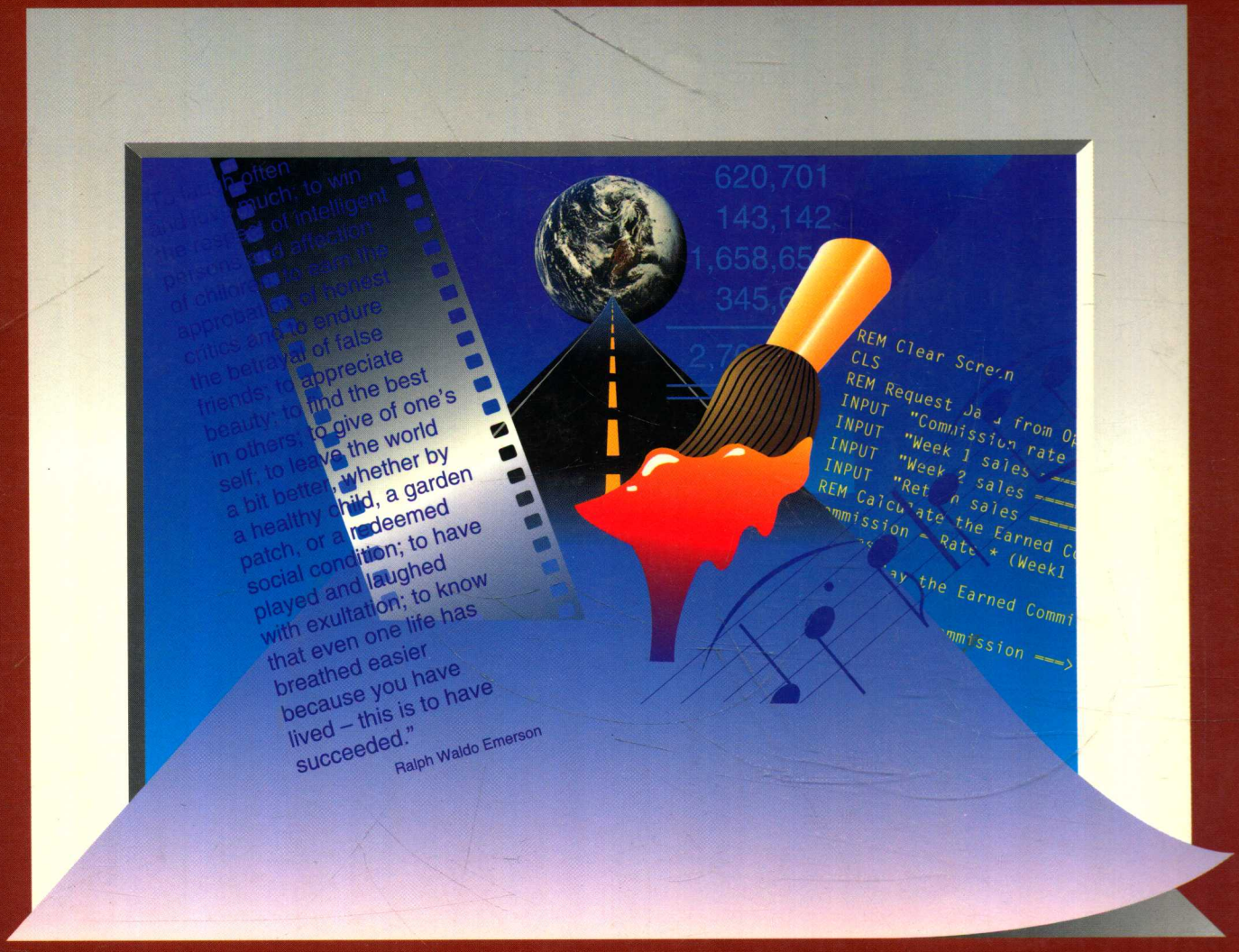
SHELLY CASHMAN SERIES®

Using Computers A Gateway to Information AND Programming in QBasic



SHELLY • CASHMAN • WAGGONER

Using Computers
A Gateway to Information
AND
Programming in QBasic

Gary B. Shelly
Thomas J. Cashman
Gloria A. Waggoner
William C. Waggoner

Contributing Authors
James S. Quasney
Misty E. Vermaat
Tim J. Walker

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SHELLY CASHMAN SERIES®

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Using Computers
A Gateway to Information
AND
Programming in QBasic

Contents in Brief

Using Computers: A Gateway to Information
AND
Programming in QBasic

USING COMPUTERS: A GATEWAY TO INFORMATION

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Preface

This Shelly Cashman Series textbook provides an up-to-date coverage of computers, their uses, and programming in QBasic than any book ever published. When preparing this book, our single guiding thought was: The book must be relevant to the world of computers today.

Toward that end, with our previous bestsellers as a base, we reviewed each and every aspect of the computer industry to ferret out the essential knowledge a student requires for a well-rounded understanding of using a computer as a tool to produce useful information, whether it be in the home, small business, or large business environments. This includes not only hardware and software, but also the processes and procedures required to successfully program a computer.

As a result, this book was developed with five goals in mind: The material must

- represent the latest in computer technology, particularly with respect to personal computer hardware and software.
- recognize that personal computers have become the backbone of the computer industry and emphasize their use as both stand-alone devices and networked devices.
- focus on using the computer as a productivity tool.
- present the material in an interesting, exciting manner with a format that invites the student to learn. This includes new, color photographs and unique, state-of-the-art drawings that augment the text material.
- provide exercises and lab assignments that allow the student to interact with a computer and actually learn by using the computer.
- present introductory programming concepts using QBasic.

Therefore, not only do we discuss the latest in computer equipment, computer software, and personal computer applications, but we also explain the process required to successfully use these tools to produce useful information. The result is a complete treatment of computers, the computer industry, and programming.

Merely explaining computer concepts without allowing a student to interact with a computer, however, would deprive the student of an essential experience. Therefore, at the end of each of the first fourteen chapters, we have included a series of *In the Lab* exercises that direct the student to use a computer to learn Microsoft Windows and DOS. In addition, a series of special Shelly Cashman Series Interactive Labs allow students to learn computer skills and gain computer knowledge in an online, interactive setting.

Each of the sections of the book, together with the extraordinary instructor's materials, are explained in the following paragraphs.

Objective of the Textbook

Using Computers: A Gateway to Information and Programming in QBasic is intended for use in a one-quarter or one-semester introductory course whose purpose is to provide students with a firm foundation in computer technology, computer nomenclature, the use of computers as productivity tools, and introduce programming using QBasic.

When a student has completed a course using this book, he or she will have an understanding of computers, computer technology, programming, computer hardware and software, and how computers can be used to produce meaningful information. With the experience gained via the *In the Lab* section of the book, the student should be proficient in using computers running under both DOS and Windows.

Chapter Organization of *Using Computers: A Gateway to Information*

Each of the first fourteen chapters is organized to present the optimum amount of material in the most effective manner possible. The text is presented in concise, clearly identified sections and subsections so the student is easily guided through the chapter. Figures (pictures and drawings) are visually separated from the text so the student can read without being encumbered by confusing text, graphics, arrows, and drawings.

Each chapter is organized into the following sections:

- **Objectives** The objectives for the chapter are clearly stated on the first page of the chapter so the student has an overview of the subject matter.
- **Chapter Introduction** Each chapter has an introduction that briefs the student on the material within the chapter and the reason the material in the chapter is important.
- **Chapter Text, Pictures, and Drawings** The major learning material in the chapter is presented as text, pictures, and drawings. The pictures have been chosen for their pedagogical value and provide a valuable addition that allows students to see the actual hardware, software, and other subjects described in the text. The drawings, created with the latest state-of-the-art drawingcapabilities of computers, specifically illustrate concepts that are understood more easily through the

use of drawings. The combination of drawings and pictures used in this book sets a new standard for computer textbooks.

- **Computers at Work** At the end of each chapter, an example of computers being used for interesting applications is presented. These examples illustrate points made within the chapter.
- **In the Future** This feature, which appears at the end of each chapter, points out an application or applications that will occur in the future using technology discussed in the chapter.
- **What You Should Know** This clear, step-by-step summary of the material in the chapter will help students review the chapter and prepare for examinations.
- **Terms to Remember** This listing of the key terms found in the chapter together with the page on which the terms are defined will aid students in mastering the chapter material. A complete summary of all key terms in the book, together with their definitions, appear in the Index at the end of the book.
- **Test Your Knowledge** Fill-in and short answer questions, together with a figure from the chapter that must be labeled, help focus the student when reviewing the material within the chapter.
- **Points to Ponder** The computer industry is not without its controversial issues. At the end of each chapter, six scenarios are presented that challenge the student to critically examine the computer industry and rethink his or her perspective of technology in society.
- **Out and About** Computers are found everywhere. This section, appearing at the end of each chapter, provides multiple projects that send the student out of the classroom and into the world where interesting discoveries about computers will take place.
- **In the Lab** Students must interact with and use a computer to complete their introduction to computers. At the end of each chapter, a series of lab exercises are presented for student use. These Labs are:
  - **Windows Labs** Beginning with the simplest exercises within Microsoft Windows, students are led through a series of activities that, by the end of the book, will enable them to be proficient in using Windows.
  - **DOS Labs** As with Windows, students are given a set of exercises that will lead to proficiency in using DOS commands by the end of the course.
  - **Online Labs** Online Labs introduce students to the many online services available when using a personal computer and a modem. This series of exercises at the end of each chapter directs students to use and interact with one or more online services.
  - **Shelly Cashman Series Interactive Labs** These unique exercises, developed specifically for this book, are hands-on exercises that use the computer to teach about the computer. The Labs are described in detail on page xxiii.

This chapter organization and the material presented provide an in-depth treatment of introductory computer subjects. Students will finish the course with a complete understanding of computers and how to use computers.

Contents of *Using Computers: A Gateway to Information*

A brief explanation of each of the chapters in this book follows:

Chapter 1 – An Overview of Computer Concepts Introduces the student to the fundamentals of a computer, including the information processing cycle. When the student completes the chapter, he or she will have a firm understanding of the basics of computer processing and will be ready for the more in-depth treatment of subjects in subsequent chapters.

Chapter 2 – Computer Software Applications: User Tools Provides a complete explanation of application software available on computers, with an emphasis on personal computer software that students are likely to use. Numerous examples of the use of software such as word processing, spreadsheets, database, presentation graphics, data communications, electronic mail, and others are included.

Chapter 3 – Input to the Computer Presents the manner in which data is entered into the computer for processing, with primary attention to personal computers. In addition to the keyboard and mouse, pointing devices, scanners, voice input, and other means of entering data into personal computers is closely examined.

Chapter 4 – The System Unit Offers a detailed look inside the system unit. Topics include the motherboard, processors, memory, ports, and other elements that make a personal computer run.

Chapter 5 – Output from the Computer Explores the many means for obtaining useful information from a computer, including printers, display devices, voice output, and plotters. Included is an explanation of the types of output from personal computers, such as reports, graphics, audio output, video output, multimedia, and virtual reality.

Chapter 6 – Secondary Storage Discusses the manner in which data is stored on a computer. Included are diskettes, hard disk, and cartridge tape systems, among others, together with an explanation of such storage issues as defragmentation and compression.

Chapter 7 – Communications and Networks Covers communications and networks from a user's perspective. All important subjects are explained, with a special emphasis on local area networks and personal computers.

Chapter 8 – Operating Systems and System Software Teaches students about operating systems such as DOS, OS/2, and Windows. A clear explanation of difficult subjects such as multitasking and multiprocessing contributes to a student's overall understanding.

Chapter 9 – Information Management: Files and Databases Emphasizes the care and treatment of data, with particular attention on databases and the capability of accessing data to create meaningful information.

Chapter 10 – Information Systems Explains that when the computer is used as a tool within an organization, be it small or large, the information from the computer must be organized and presented in its most useful form; details the information needs of various people within an organization.

Chapter 11 – Information Systems Development Identifies the processes necessary to analyze, design, and implement an information system because effective use of computers and application systems does not happen by accident.

Chapter 12 – Program Development and Programming Languages Presents all the steps required to produce a robust, functioning program. In addition, the student is exposed to the multitude of available programming languages.

Chapter 13 – Security, Ethics, and Privacy Explores the effects of computers within society. It also looks at security issues with computers, and in particular how to ensure that data and programs on a computer are not rendered useless by viruses.

Chapter 14 – Your Future in the Information Age Examines career opportunities in the computer field and discusses the future of the computers in our society

Special Features Within the book, the special features sections provide an in-depth look at certain aspects of computers. The four special features are:

- The Evolution of the Computer Industry
- Making a Computer Chip
- The Internet
- How to Purchase, Install, and Maintain a Personal Computer
- Multimedia
- Virtual Reality

These contents, together with *In the Lab* and other projects within this book, present a thorough course on computers and computer usage.

Contents of *Programming in QBasic*

Programming in QBasic is designed for a first course on Microsoft QBasic programming. It introduces fundamentals programming concepts, presents the essentials of the Microsoft QBasic language that comes free with versions of DOS 5 and DOS 6, and acquaints students with structured and top-down programming techniques. This portion of the book assumes neither previous experience with computers nor mathematics beyond the high school freshman level. *Programming in QBasic* is organized into six projects. In each project, a problem is presented and then, step by step, it is thoroughly solved with a QBasic program.

- **Project 1 – An Introduction to Programming in QBasic** The first project introduces students to the program development cycle, the basic characteristics of a QBasic program, and the QBasic operating environment.
- **Project 2 – Basic Arithmetic Operations and Accumulating Totals** Project 2 presents computations, summary totals, report editing, and printing a report.
- **Project 3 – Decisions** In this project, students learn about decision making. Topics include the IF statement, implementing If-Then-Else structures, logical operators, and the SELECT CASE statement.
- **Project 4 – Interactive Programming, For Loops, and an Introduction to the Top-Down Approach** Unlike the first three projects, which use the READ and DATA statements to integrate data into a program, Project 4 shows students how to use the INPUT statement to accomplish this task. Also included is coverage of how to use For loops to implement counter-controlled loops, and how to design top-down programs.
- **Project 5 – Sequential File Processing** This project introduces students to creating and processing a sequential data file.

- **Project 6 – Arrays and Functions** In this final project, students learn how to write programs that can look up information in tables; they are then acquainted with the most often used QBasic *built-in* functions.
- **Appendix – QBasic Debugging Techniques** This appendix introduces students to the debugging features that are built into Microsoft QBasic, specifically the immediate window, stepping one statement at a time, breakpoints, tracing, recording, and watchpoints.
- **Reference Card** Included at the back of this portion of the book is a reference card that lists all of the statements, functions, and features of Microsoft QBasic.

Programming in QBasic Exercises and Assignments

Each project includes one or more sets of Try It Yourself Exercises and Student Programming Assignments.

- **Try It Yourself Exercises** Try It Yourself Exercises are paper-and-pencil exercises to help students master the concepts presented. More than 75 such exercises are included; some are complete programs. Also, instructors can use these exercises as a diagnostic tool.
- **Student Programming Assignments** Student Programming Assignments are field-tested assignments included at the end of each project. Each assignment includes instructions, sample input data, and sample output results.

Instructor's Support Package

The most comprehensive instructor's support package ever developed accompanies *Using Computers: A Gateway to Information* and *Programming in QBasic*. The elements of this package are as follows:

- **Annotated Instructor's Edition (AIE)** The AIE for *Using Computers: A Gateway to Information* is designed to assist you with your lectures by suggesting transparencies to use, summarizing key points, proposing pertinent questions, offering important tips, and incorporating the answers to the student activities. The several hundred annotations in the AIE fall into three major categories:
  - **Teacher Notes** Suggest ways to convey an idea effectively; point beyond what is covered in the book; describe the latest uses of computers; explain misconceptions; include quotes, show and tell suggestions, and interesting sidelights
  - **Discussion Topics** Include questions to ask students that result in classroom discussion
  - **Transparency References** Recommend transparencies to use at key points in the lecture presentation
- **Multimedia Lecture Presentation System** The multimedia lecture presentation system was prepared specifically for use with *Using Computers: A Gateway to Information*. The system was developed using Microsoft PowerPoint 4 for Windows. The multimedia lecture presentation system is available on CD-ROM or diskette. The CD-ROM version includes chapter highlights, pictures, and more than one hour of video clips. The pictures and video clips can be viewed during lecture at the discretion of the instructor. The diskette version includes chapter highlights and fewer pictures. The Microsoft PowerPoint presentation viewer is included with both versions so an instructor does not need PowerPoint on his or her computer. The source files of the presentation are supplied, however, so instructors who have Microsoft PowerPoint 4 for Windows on their computers can customize the presentation to meet their students' needs.
- **Instructor's Materials for *Using Computers: A Gateway to Information* include the following:**
  - Detailed lesson plans, including objectives, overviews, and lecture outlines with transparency references for each illustration in each chapter of the book
  - A test bank of True/False, Multiple Choice, and Fill-in questions
  - A lesson plans and test bank diskette, called ElecMan, that includes the detailed lesson plans and test bank for customizing to each instructor's needs
  - Answers to all student activities
  - Black and white transparency masters for every figure in the first eight chapters and actual color transparencies of selected drawings for use in lectures
  - Illustrations for every screen in the *Microsoft Office* portion of this book on CD-ROM – for selection and display in a lecture or to print and make transparencies
  - A lab solutions diskette that contains all the answers to the *In the Lab* exercises in the book
- **Computer-Based LCD Lecture Success System** The Shelly Cashman Series proudly presents the finest LCD learning material available in textbook publishing. The Lecture Success System diskette, together with a personal computer and LCD technology, are used in lieu of transparencies. The system enables you to explain and illustrate the step-by-step, screen-by-screen

development of a project in the textbook without entering large amounts of data, thereby improving your students' grasp of the material. The Lecture Success System leads to a smooth, easy, error-free lecture.

The Lecture Success System diskette comes with files that correspond to key figures in the book. You load the files that pertain to a project and display them as needed. If the students want to see a series of steps a second time, simply reopen the file you want to start with and redo the steps. This presentation system is available to adopters without charge.

- **Video Tapes to Augment Lectures** Complimentary selections from three series, *Computer Applications*, *The Machine That Changed the World*, and *The Computer Revolution*, are available to qualified adopters of *Using Computers: A Gateway to Information*.
- **MicroExam IV** MicroExam IV, a computerized test-generating system, is available free to adopters of any Shelly Cashman Series textbook. It includes all the questions from the test bank previously described. MicroExam IV is an easy-to-use, menu-driven software package that provides instructors with testing flexibility and allows customizing of testing documents.
- **NetTest IV** NetTest IV, available at no cost, allows instructors to take a MicroExam IV file made up of True/False and Multiple Choice questions and proctor a paperless examination in a network environment. The same questions display in a different order on each personal computer in the network. Students have the option of instantaneous feedback. Tests are electronically graded, and an item analysis is produced.
- **Instructor's Materials for *Programming in QBasic* include the following:**
  - Lesson plans with lecture outlines and notes
  - Answers/Solutions to all Try It Yourself Exercises and Student Assignments
  - Test Questions with answer key
  - Transparency Masters for every figure
  - Instructor's Diskette

Student Study Guide

This highly popular supplement contains completely new activities to help solidify the concepts and techniques presented in the text. The Study Guide compliments the end-of-chapter material with short answer, fill-in, and matching questions and other challenging exercises.

Acknowledgments

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We hope you find using this book an enriching and rewarding experience.

Gary B. Shelly
Thomas J. Cashman
Gloria A. Waggoner
William C. Waggoner

Shelly Cashman Series – Traditionally Bound Textbooks

The Shelly Cashman Series presents both Windows- and DOS-based personal computer applications in a variety of traditionally bound textbooks, as shown in the table below. For more information, see your ITP representative or call 1-800-423-0563.

COMPUTERS	
Computers	Using Computers: A Gateway to Information Using Computers: A Gateway to Information, Brief Edition
Computers and Windows Applications	Using Computers: A Gateway to Information, Brief Edition and Microsoft Office: Introductory Concepts and Techniques (also available in spiral bound) Using Computers: A Gateway to Information, Brief Edition and Works 3.0 (also available in spiral bound) Complete Computer Concepts and Microsoft Works 2.0 (also available in spiral bound)
Computers and DOS Applications	Complete Computer Concepts and WordPerfect 5.1, Lotus 1-2-3 Release 2.2, and dBASE IV Version 1.1 (also available in spiral bound) Complete Computer Concepts and WordPerfect 5.1, Lotus 1-2-3 Release 2.2, and dBASE III PLUS (also available in spiral bound)
Computers and Programming	Using Computers: A Gateway to Information and Programming in QBasic Using Computers: A Gateway to Information and Programming in Microsoft BASIC
WINDOWS APPLICATIONS	
Integrated Packages	Microsoft Office: Introductory Concepts and Techniques (also available in spiral bound) Microsoft Office: Advanced Concepts and Techniques (also available in spiral bound) Microsoft Works 3.0 (also available in spiral bound) Microsoft Works 2.0 (also available in spiral bound)
Windows	Microsoft Windows 3.1 Introductory Concepts and Techniques Microsoft Windows 3.1 Complete Concepts and Techniques
Windows Applications	Microsoft Word 2.0, Microsoft Excel 4, and Paradox 1.0 (also available in spiral bound)
Word Processing	Microsoft Word 6* • Microsoft Word 2.0 WordPerfect 6.1* • WordPerfect 6* • WordPerfect 5.2
Spreadsheets	Microsoft Excel 5* • Microsoft Excel 4 Lotus 1-2-3 Release 5* • Lotus 1-2-3 Release 4* Quattro Pro 6 • Quattro Pro 5
Database Management	Paradox 5 • Paradox 4.5 • Paradox 1.0 Microsoft Access 2*
Presentation Graphics	Microsoft PowerPoint 4*
DOS APPLICATIONS	
Operating Systems	DOS 6 Introductory Concepts and Techniques DOS 6 and Microsoft Windows 3.1 Introductory Concepts and Techniques
Integrated Package	Microsoft Works 3.0 (also available in spiral bound)
DOS Applications	WordPerfect 5.1, Lotus 1-2-3 Release 2.2, and dBASE IV Version 1.1 (also available in spiral bound) WordPerfect 5.1, Lotus 1-2-3 Release 2.2, and dBASE III PLUS (also available in spiral bound)
Word Processing	WordPerfect 6.0 WordPerfect 5.1 Step-by-Step Function Key Edition WordPerfect 5.1 WordPerfect 5.1 Function Key Edition WordPerfect 4.2 (with Educational Software) WordStar 6.0 (with Educational Software)
Spreadsheets	Lotus 1-2-3 Release 4 • Lotus 1-2-3 Release 2.4 • Lotus 1-2-3 Release 2.3 Lotus 1-2-3 Release 2.2 • Lotus 1-2-3 Release 2.01 Quattro Pro 3.0 Quattro with 1-2-3 Menus (with Educational Software)
Database Management	dBASE 5 dBASE IV Version 1.1 dBASE III PLUS (with Educational Software) Paradox 4.5 Paradox 3.5 (with Educational Software)
PROGRAMMING AND NETWORKING	
Programming	Microsoft Visual Basic 3.0 for Windows* Microsoft BASIC QBasic
Networking	Novell Netware for Users
Internet	The Internet: Introductory Concepts and Techniques (UNIX Version) The Internet: Introductory Concepts and Techniques (Mosaic Version)

*Also available as a Double Diamond Edition, which is a shortened version of the complete book

Shelly Cashman Series – **Custom Edition** Program

If you do not find a Shelly Cashman Series traditionally bound textbook to fit your needs, boyd & fraser's unique **Custom Edition** program allows you to choose from a number of options and create a textbook perfectly suited to your course. The customized materials are available in a variety of binding styles, including boyd & fraser's patented **Custom Edition** kit, spiral bound, and notebook bound. Features of the **Custom Edition** program are:

- Textbooks that match the content of your course
- Windows- and DOS-based materials for the latest versions of personal computer applications software
- Shelly Cashman Series quality, with the same full-color materials and Shelly Cashman Series pedagogy found in the traditionally bound books
- Affordable pricing so your students receive the **Custom Edition** at a cost similar to that of traditionally bound books

The table on the right summarizes the available materials. For more information, see your ITP representative or call 1-800-423-0563.

COMPUTERS	
Computers	Using Computers: A Gateway to Information Using Computers: A Gateway to Information, Brief Edition Introduction to Computers (32-page)
OPERATING SYSTEMS	
Windows	Microsoft Windows 3.1 Introductory Concepts and Techniques Microsoft Windows 3.1 Complete Concepts and Techniques
DOS	Introduction to DOS 6 (using DOS prompt) Introduction to DOS 5.0 (using DOS shell) Introduction to DOS 5.0 or earlier (using DOS prompt)
WINDOWS APPLICATIONS	
Integrated Packages	Microsoft Works 3.0 Microsoft Works 2.0
Microsoft Office	Using Microsoft Office (16-page) Object Linking and Embedding (OLE) (32-page)
Word Processing	Microsoft Word 6* Microsoft Word 2.0 WordPerfect 6.1* WordPerfect 6* WordPerfect 5.2
Spreadsheets	Microsoft Excel 5* Microsoft Excel 4 Lotus 1-2-3 Release 5* Lotus 1-2-3 Release 4* Quattro Pro 6 Quattro Pro 5
Database Management	Paradox 5 Paradox 4.5 Paradox 1.0 Microsoft Access 2*
Presentation Graphics	Microsoft PowerPoint 4*
DOS APPLICATIONS	
Integrated Package	Microsoft Works 3.0
Word Processing	WordPerfect 6.0 WordPerfect 5.1 Step-by-Step Function Key Edition WordPerfect 5.1 WordPerfect 5.1 Function Key Edition Microsoft Word 5.0 WordPerfect 4.2 WordStar 6.0
Spreadsheets	Lotus 1-2-3 Release 4 Lotus 1-2-3 Release 2.4 Lotus 1-2-3 Release 2.3 Lotus 1-2-3 Release 2.2 Lotus 1-2-3 Release 2.01 Quattro Pro 3.0 Quattro with 1-2-3 Menus
Database Management	dBASE 5 dBASE IV Version 1.1 dBASE III PLUS Paradox 4.5 Paradox 3.5
PROGRAMMING AND NETWORKING	
Programming	Microsoft Visual Basic 3.0 for Windows* Microsoft BASIC QBasic
Networking	Novell Netware for Users
Internet	The Internet: Introductory Concepts and Techniques (UNIX Version) The Internet: Introductory Concepts and Techniques (Mosaic Version)

* Also available as a mini-module

In the Lab Exercises
with Shelly Cashman Series Interactive Labs

Each of the chapters in this book concludes with a hands-on exercise section titled *In the Lab*, which consists of Windows, DOS, and Shelly Cashman Series Interactive Labs. The purpose of these Labs is to allow students to use computers so they learn firsthand how computers work. The Labs solidify and reinforce the computer concepts presented in each chapter in a way unparalleled in previous computer textbooks. Students completing these labs will have a firm understanding of how to use computers with both DOS and Windows.

Of particular interest are the Shelly Cashman Series Interactive Labs (below), which help students gain a better understanding of a specific subject covered in a chapter.

Shelly Cashman Series Interactive Labs

Lab	Function	Page
Using the Mouse	Master how to use a mouse. The Lab includes pointing, clicking, double-clicking, and dragging.	1.30
Using the Keyboard	Learn how to use the keyboard. The Lab discusses different categories of keys, including the edit keys, function keys, ESC, CTRL, and ALT keys, and how to press keys simultaneously.	1.30
Scanning Documents	Understand how document scanners work.	3.30
Understanding the Motherboard	Step through the components of the motherboard and build one by adding components. The Lab shows how different motherboard configurations affect the overall speed of a computer.	4.33
Setting Up to Print	See how information flows from the system unit to the printer and how drivers, fonts, and physical connections play a role in generating a printout.	5.36
Configuring Your Display	Recognize the different monitor configurations available, including screen size, display cards, and number of colors.	5.36
Maintaining Your Hard Drive	Understand how files are stored on disk, what causes fragmentation, and how to maintain an efficient hard drive.	6.33
Connecting to the Internet	Learn how a computer is connected to the Internet. The Lab presents using the Internet to access information.	7.41
Evaluating Operating Systems	Evaluate the advantages and disadvantages of different categories of operating systems.	8.27
Working at Your Computer	Learn the basic ergonomic principles that prevent back and neck pain, eye strain, and other computer-related ailments.	8.27
Designing a Database	Create a database structure and optimize a database to support searching.	9.31
Choosing a Programming Language	Differentiate between traditional languages and newer object-oriented languages.	12.34
Keeping Your Computer Virus Free	Learn what a virus is and about the different kinds of viruses. The Lab teaches how to prevent your computer from being infected with a virus.	13.31
Exploring the Computers of the Future	Learn about computers of the future and how they will work.	14.33

Contents

Using Computers: A Gateway to Information AND Programming in QBasic