EIGHTH EDITION

C++ PROGRAMS TO ACCOMPANY PROGRAMMING LOGIC AND DESIGN

BY JO ANN SMITH

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C++ Programs to Accompany
Programming Logic and Design
Eighth Edition
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Brief Contents

Contents

CHAPTER 5 Writing Programs Using Loops 69

CHAPTER 6 Using Arrays in C++ Programs 93

Preface

C++ Programs to Accompany Programming Logic and Design, Eighth Edition (also known as *C++ PAL*) is designed to provide students with an opportunity to write C++ programs as part of an Introductory Programming Logic course. It accompanies the student's primary text, *Programming Logic and Design, Eighth Edition*, by Joyce Farrell. This textbook assumes no programming language experience and provides the beginning programmer with a guide to writing structured programs and simple object-oriented programs using introductory elements of the popular C++ programming language. It is not intended as a textbook for a course in C++ programming. The writing is non-technical and emphasizes good programming practices. The examples do not assume mathematical background beyond high school math. Additionally, the examples illustrate one or two major points; they do not contain so many features that students become lost following irrelevant and extraneous details.

The examples in C++ PAL are often examples presented in the primary textbook, *Programming Logic and Design, Eighth Edition*. The following table shows the correlation between topics in the two books.

C++ PAL, Eighth Edition	***Programming Logic and Design, Eighth Edition***
Chapter 1: An Introduction to C++ and the C++ Programming Environment	Chapter 1: An Overview of Computers and Programming
Chapter 2: Variables, Constants, Operators, and Writing Programs Using Sequential Statements	Chapter 2: Elements of High-Quality Programs Chapter 3: Understanding Structure
Chapter 3: Writing Structured C++ Programs	Chapter 2: Elements of High-Quality Programs Chapter 3: Understanding Structure
Chapter 4: Writing Programs that Make Decisions	Chapter 4: Making Decisions
Chapter 5: Writing Programs Using Loops	Chapter 5: Looping
Chapter 6: Using Arrays in C++ Programs	Chapter 6: Arrays
Chapter 7: File Handling and Applications	Chapter 7: File Handling and Applications
Chapter 8: Advanced Array Techniques	Chapter 8: Advanced Data Handling Concepts
Chapter 9: Advanced Modularization Techniques	Chapter 9: Advanced Modularization Techniques
Chapter 10: Object Oriented C++	Chapter 10: Object Oriented Programming
	Chapter 11: More Object Oriented Programming Concepts

Organization and Coverage

C++ Programs to Accompany Programming Logic and Design, Eighth Edition provides students with a review of the programming concepts they are introduced to in their primary textbook. It also shows them how to use C++ to transform their program logic and design into working programs. Chapter 1 introduces the structure of a C++ program, how to compile and run a C++ console program, and introductory object-oriented concepts. Chapter 2 discusses C++'s data types, variables, constants, arithmetic and assignment operators, and using sequential statements to write a complete C++ program. In Chapter 3, students learn how to transform pseudocode and flowcharts into C++ programs. Chapters 4 and 5 introduce students to writing C++ programs that make decisions and programs that use looping constructs. Students learn to use C++ to develop more sophisticated programs that include using arrays, control breaks, and file input and output in Chapters 6 and 7. In Chapter 8, students learn about sorting data items in an array and using multidimensional arrays. Passing parameters to functions is introduced in Chapter 9. Lastly, in Chapter 10, students use C++ to write programs that include programmer-defined classes.

This book combines text explanation of concepts and syntax along with pseudocode and actual C++ code examples to provide students with the knowledge they need to implement their logic and program designs using the C++ programming language. This book is written in a modular format and provides paper-and-pencil exercises as well as lab exercises after each major topic is introduced. The exercises provide students with experience in reading and writing C++ code as well as modifying and debugging existing code. In the labs, students are asked to complete partially prewritten C++ programs. Using partially prewritten programs allows students to focus on individual concepts rather than an entire program. The labs also allow students to see their programs execute.

C++ PAL, *Eighth Edition* is unique because:

- It is written and designed to correspond to the topics in the primary textbook, *Programming Language and Design, Eighth Edition*.
- The examples are everyday examples; no special knowledge of mathematics, accounting, or other disciplines is assumed.
- It introduces students to introductory elements of the C++ programming language rather than overwhelming beginning programmers with more detail than they are prepared to use or understand.
- Text explanations are interspersed with pseudocode from the primary book, thus reinforcing the importance of programming logic.
- Complex programs are built through the use of complete examples. Students see how an application is built from start to finish instead of studying only segments of programs.

Features of the Text

Every chapter in this book includes the following features. These features are both conducive to learning in the classroom and enable students to learn the material at their own pace.

- Objectives: Each chapter begins with a list of objectives so the student knows the topics that will be presented in the chapter. In addition to providing a quick reference to topics covered, this feature provides a useful study aid.
- Figures and illustrations: This book has plenty of visuals, which provide the reader with a more complete learning experience, rather than one that involves simply studying text.
- Notes: These brief notes provide additional information—for example, a common error to watch out for.
- Exercises: Each section of each chapter includes meaningful paper-and-pencil exercises that allow students to practice the skills and concepts they are learning in the section.
- Labs: Each section of each chapter includes meaningful lab work that allows students to write and execute programs that implement their logic and program design.

Acknowledgments

I would like to thank all of the people who helped to make this book possible. Thanks to Alyssa Pratt, Senior Content Developer, and Jim Gish, Senior Product Manager, for their help and encouragement. I am grateful to Jennifer Feltri-George, Content Project Manager, Serge Palladino, Manuscript Quality Assurance, and Anandhavalli Namachivayam of Integra Software Services, for overseeing the production of the printed book. It is a pleasure to work with so many fine people who are dedicated to producing quality instructional materials.

This book is dedicated to my mom. Her courage and determination continue to inspire me. I am grateful for such an excellent role model.

Jo Ann Smith

Read This Before You Begin

To the User

Data Files

To complete most of the lab exercises, you will need data files that have been created for this book. Your instructor can provide the data files. You also can obtain the files electronically from the publisher at *www.CengageBrain.com* (search under the ISBN for this book).

You can use a computer in your school lab or your own computer to complete the lab exercises in this book.

Solutions

Solutions to the Exercises and Labs are provided to instructors on the Cengage Learning Web site at *sso.cengage.com*. The solutions are password protected.

Using Your Own Computer

To use your own computer to complete the material in this textbook, you will need the following:

- Computer with a 1.6 GHz or faster processor
- Operating System:
  - Windows® 7 SP1 (x86 & x64)
  - Windows® 8 (x86 & x64)
  - Windows Server® 2008 R2 SP1 (x64)
  - Windows Server 2012 (x64)
- 1 GB RAM (1.5 GB if running on a virtual machine)
- 5 GB of available hard-disk space
- 5400 RPM hard drive
- DirectX 9 capable video card running at 1024 x 768 or higher display resolution

This book was written using Microsoft Windows 8 and Quality Assurance tested using Microsoft Windows 7.

Using the C++ Compiler

To use the C++ compiler (`cl`) you open the Developer Command Prompt for VS2012.

To do this in Windows 8, right-click on a blank area of the **Start** screen, click **All apps**, scroll until you see the Microsoft Visual Studio 2012 area, and then click **Developer Command Prompt for VS2012**. In the next version of Windows 8, you click the down arrow on the **Start** screen, scroll until you see the Microsoft Visual Studio 2012 area, and the click **Developer Command Prompt for VS2012**.

In Windows 7, click the **Start** button, point to **All Programs**, click **Visual Studio 2012**, click **Visual Studio Tools**, and then click **Developer Command Prompt for VS2012**.

To The Instructor

To complete some of the Exercises and Labs in this book, your students must use the data files provided with this book. These files are available from the publisher at *www.CengageBrain.com* (search under the ISBN for this book). Follow the instructions in the Help file to copy the data files to your server or standalone computer. You can view the Help file using a text editor such as WordPad or Notepad. Once the files are copied, you may instruct your students to copy the files to their own computers or workstations.

Cengage Learning Data Files

You are granted a license to copy the data files to any computer or computer network used by individuals who have purchased this book.

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