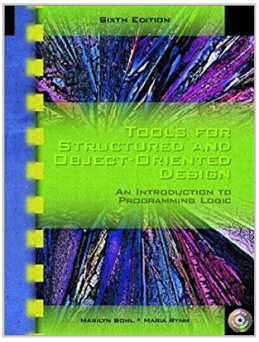

Tools for Structured and Object-Oriented Design: An Introduction to Programming Logic, Sixth Edition

By Marilyn Bohl, Maria Rynn

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For courses in Problem Solving/Programming Logic and Programming Concepts and Logic. With exceptionally clear explanation of basic programming design principles, this book "really" starts from the beginning and assumes no prior programming knowledge. Using a unique concept-oriented, language-independent approach, it explores the structured design concepts, object-oriented design concepts, and problem-solving tools--through simple language, step-by-step examples, many sample problems, enrichment sections, and exercises. Chapter topics cover an introduction to structured design, SIMPLE SEQUENCE control structure, IFTHENELSE control structure, DOWHILE control structure--counter-controlled loops, DOWHILE control structure--trailer record logic, modularization, CASE control structure, DOUNTIL control structure, introduction to arrays, introduction to object-oriented design, inheritance, other class and object relationships, array applications, master file update processing, and control-break processing. For self-teachers and -learners of computer programming concepts.

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Editorial Review

From the Publisher
This book uses an easy to follow step-by- step approach to teach the fundamentals of programming logic.

From the Inside Flap
Preface

Tools for Structured Design: An Introduction to Programming Logic, fifth edition, teaches program design in a well thought out, language-independent manner. This text assumes no previous programming background. It can be used as a main text in a programming logic class or as a supplement in any beginning programming class.

Our approach is to start with simple concepts and build upon these concepts as new topics are introduced. We use a sequential, step-by-step approach that introduces, by way of example, only one new concept at a time. Sample problems are included throughout the chapters to illustrate the use of program design tools in practical situations. Enrichment sections are included in many of the chapters to illustrate the program design concepts in Basic and Visual Basic. Exercises are given at the end of each chapter to help you apply what you are learning.

Our objective is to analyze a problem and express its solution in such a way that the computer can be directed to follow the problem-solving procedure. With simple language and frequent examples, this book explains how to understand and how to use important problem-solving tools. We begin with system and program flowcharts. Flowcharting guidelines approved and published by the American National Standards Institute (ANSI) and its international counterpart, the International Standards Organization (ISO), are explained and applied to solution planning. Emphasis is placed on maintaining an overall structure in program design. We show how to use pseudocode as an alternative or supplement to flowcharting in planning the logic of a well-structured program. We analyze techniques of top-down, modular program development by describing how to read and how to develop structure charts that show the hierarchical relationships of modules within a program. We also explain the basic concepts of object-oriented design and event-driven programming and show how to apply these concepts to problem-solving situations.

Upon completion, the solution or program design should be verified using some of the techniques we recommend. The purpose of verification is to detect and eliminate errors as early in program development as possible. Design documentation in flowchart, pseudocode, or another form of design language is also useful in subsequent program coding and program checkout. Much of the necessary documentation is created as an integral part of the program development process.

Enrichment sections are included in many of the chapters to illustrate some of the sample problems in the programming languages Basic and Visual Basic. Basic is used to illustrate how the design of a program can be implemented using a procedural approach. Visual Basic is used to illustrate how the design of a program can be implemented using an event-driven approach. It is important to note that our approach to teaching program design remains language-independent. All program design concepts are covered prior to the enrichment sections in each chapter. The enrichment sections are optional and are included as a supplement to further illustrate some of these concepts.

The fifth edition of this book offers the same pedagogical features as the fourth edition. Each chapter

includes objectives and a list of key terms. The fifth edition also includes an index and is supported by an Instructor's Guide. The Instructor's Guide contains the same objectives and key term lists as the textbook as well as suggested teaching strategies. Solutions to all the end-of-chapter exercises are also included. A CD including all the transparency masters in PowerPoint format is available to instructors. In addition, a disk containing the source code for all the Basic and Visual Basic examples included in the enrichment sections of the text is included with the textbook.

The text is organized into three parts as follows:

The first part (Chapters 1 through 10) introduces the theory of structured programming and includes a chapter on each control structure as well as a chapter on array fundamentals. Chapter 10 introduces object-oriented design and programming. These chapters should be covered in sequence.

The second part (Chapters 11 through 13) illustrates several more complex applications, building on material previously introduced. These chapters can be covered in any order after Chapters 1 through 10 are completed.

The final part (Appendices A through C) contains general reference material, including solutions to selected end-of-chapter exercises.

The specific content of each chapter and appendix follows.

Chapter 1 describes the system development life cycle and how program design fits with it. Computer-assisted software engineering (CASE) tools are introduced in this chapter and are referred to throughout the book, where appropriate, to increase your awareness of current tools and trends in the industry. The history of structured programming is also introduced in this chapter. Several nontechnical examples illustrate the basic control structures to give you a sense of what structured programming entails. The concepts of event-driven programming and graphical user interfaces are also introduced in this chapter.

Chapter 2 introduces the SIMPLE SEQUENCE control structure. Chapter 3 introduces the IFTHENELSE control structure and teaches simple, sequential, and nested IFs. Chapter 4 introduces the DOWHILE control structure, focusing on simple counter loops and header record logic. In this edition, the material on counter loops, header record logic, and modularization has been divided into two chapters. Chapter 5 introduces modularization. Chapter 6 focuses on trailer record logic and also includes a discussion of automatic end-of-file processing and multiple-heading logic.

Chapter 7 introduces the CASE control structure. Chapter 8 introduces the DOUNTIL control structure. Chapter 9 introduces one- and two-dimensional arrays with many short, simple examples. Chapter 10 introduces concepts of object-oriented program design. Psuedocode examples are used to illustrate object-oriented design concepts such as classes, data members, methods, encapsulation, driver programs, overloading, inheritance, and polymorphism.

Chapter 11 concentrates on more advanced array applications such as searching (both sequential and binary) and sorting. Chapter 12 illustrates the design of a sequential master file update program. Chapter 13 covers control-break processing.

Appendix A contains ANSI-approved symbols for program flowcharting, and Appendix B summarizes the basic control patterns of structured programming. Appendices A and B should be referred to whenever you are in doubt about which symbols to use in flowcharts. Responses to selected end-of-chapter exercises are provided in Appendix C to help you evaluate your understanding of the material. Acknowledgments

This book would not exist today if it were not for the hard work of many people. We would first like to thank Charles E. Stewart, Publisher, and Kate Linsner, Associate Editor, for all their help in putting this book together. We would also like to thank Janet Bixler for her support and assistance during the production of this manuscript. In addition, the following reviewers provided valuable feedback: Martha Daniels, Durham Technical Community College; Carol Grimm, Palm Beach Community College; Martin Meyers, Truckee Meadows Community College; Jo Ruta, Chattanooga State University; and Zhao Yang, Palm Beach Community College.

Maria Rynn would also like to thank all of her colleagues at Northern Virginia Community College for their continuing support and advice throughout this revision. Finally, she wishes to thank her husband, Tedd, for his constant encouragement, patience, and loving support during this endeavor.

We hope that all who use this book will find that it provides a clear, systematic, and direct approach to problem solving. We welcome your comments and suggestions.

Marilyn Bohl
Maria Rynn

From the Back Cover

This comprehensive text teaches program design in a well-organized, language-independent manner. No programming background is needed; it starts with simple concepts, and then builds on those concepts in a sequential, systematic approach to introduce new topics. Sample problems are used throughout to illustrate the use of program design tools in practical situations. Exercises found at the end of each chapter help students apply what they have learned.

New information has been added to this edition, including chapters on object-oriented design and inheritance.The text is organized into four parts:

- **Part I (Chapters 1-9)** introduces the theory of structured programming and includes a chapter on each control structure and a chapter on array fundamentals.
- **Part II (Chapters 10-12)** introduces many fundamental concepts of object-oriented design and programming.
- **Part III (Chapters 13-15)** illustrates additional complex applications, building on material introduced in previous chapters.

Appendixes A through C contain general reference material, including solutions to selected end-of-chapter exercises.

A CD-ROM, which contains the source codes for the Basic and Visual Basic examples found in the enrichment section, is packaged with the text.

Users Review

From reader reviews:

Charles Denzer:

What do you consider book? It is just for students since they're still students or it for all people in the world, exactly what the best subject for that? Merely you can be answered for that question above. Every person has various personality and hobby for each other. Don't to be compelled someone or something that they don't

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Terry Kiser:

Playing with family in a very park, coming to see the coastal world or hanging out with buddies is thing that usually you may have done when you have spare time, subsequently why you don't try thing that really opposite from that. 1 activity that make you not sense tired but still relaxing, trilling like on roller coaster you already been ride on and with addition info. Even you love Tools for Structured and Object-Oriented Design: An Introduction to Programming Logic, Sixth Edition, it is possible to enjoy both. It is great combination right, you still would like to miss it? What kind of hang type is it? Oh come on its mind hangout people. What? Still don't obtain it, oh come on its referred to as reading friends.

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