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Principles of Program Design Secrets of Successful Program Design How to Design Programs, second edition Pattern Languages of Program Design Systematic Program Design Computer Program Design Programming Fundamentals Program Design C++ ???? Java Program Design Pattern Languages of Program Design 5 Principles of Program Design: Problem-Solving with JavaScript Fundamentals of Structured Program Design Data Structures and Program Design Using C Java Program Design NSCA's Guide to Program Design Pattern Languages of Program Design 4 Data Structures and Program Design in C Program Design in Currency Unions Social Safeguards and Program Design in PRGT and PSI-Supported Programs The Essence of Program Design Program Design with Pseudocode C Program Design for Engineers Software Design for Flexibility Problem Solving and Program Design in C Therapeutic Recreation Program Design Program Design in Physical Education PostScript Language Program Design Software Design for Engineers and Scientists Review of PRGF Program Design - Overview Program Design Options for Non-stipended Programs Data Structures and Program Design The Design of Well-Structured and Correct Programs Program Development in Java Back to School Linking Teacher Preparation Program Design and Implementation to Outcomes for Teachers and Students Algorithm Development and Program Design Using C C++ Programming: From Problem Analysis to Program Design Data Structures and Program Design Using Java C# Programming: From Problem Analysis to Program Design

Written by a world-renowned expert on programming methodology, and the winner of the 2008 Turing Award, this book shows how to build production-quality programs--programs that are reliable, easy to maintain, and quick to modify. Its emphasis is on modular program construction: how to get the modules right and how to organize a program as a collection of modules. The book presents a methodology effective for either an individual programmer, who may be writing a small program or a single module in a larger one; or a software engineer, who may be part of a team developing a complex program comprised of many modules. Both audiences will acquire a solid foundation for object-oriented program design and component-based software development from this methodology. Because each module in a program corresponds to an abstraction, such as a collection of documents or a routine to search the collection for documents of interest, the book first explains the kinds of abstractions most useful to programmers: procedures; iteration abstractions; and, most critically, data abstractions. Indeed, the author treats data abstraction as the central paradigm in object-oriented program design and implementation. The author also shows, with numerous examples, how to develop informal specifications that define these abstractions--specifications that describe what the modules do--and then discusses how to implement the modules so that they do what they are supposed to do with acceptable performance. Other topics discussed include: Encapsulation and the need for an implementation to provide the behavior defined by the specification Tradeoffs between simplicity and performance Techniques to help readers of code understand and reason about it, focusing on such properties as rep invariants and abstraction functions Type hierarchy and its use in defining families of related data abstractions Debugging, testing, and requirements analysis Program design as a top-down, iterative process, and design patterns The Java programming language is used for the book's examples. However, the techniques presented are language independent, and an introduction to key Java concepts is included for programmers who may not be familiar with the language. Respected author Dr. Barbara Doyle admirably balances programming principles and concepts with practical coding skill to create a strong professional foundation for beginning programmers in her latest edition of C#

PROGRAMMING: FROM PROBLEM ANALYSIS TO PROGRAM DESIGN. This 5th edition’s straightforward approach and understandable vocabulary make it easy for readers to grasp new programming concepts without distraction. The book introduces a variety of fundamental programming concepts, from data types and expressions to arrays and collections, all using the latest version of today’s popular C# language. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. Data structures provide a means to managing large amounts of information such as large databases, usingSEO effectively, and creating Internet/Web indexing services. This book isdesigned to present fundamentals of data structures for beginners using the Javaprogramming language in a friendly, self-teaching format. Practical analogiesusing real world applications are integrated throughout the text to explaintechnical concepts. The book includes a variety of end-of-chapter practiceexercises, e.g., programming, theoretical, and multiple-choice. Features: Covers data structure fundamentals using Java Numerous tips, analogies, and practical applications enhance understanding of subjects under discussion "Frequently Asked Questions" integrated throughout the text clarify and explain concepts Includes a variety of end-of-chapter exercises, e.g., programming, theoretical, and multiple choice "Back to School: Pathways for Reengagement of Out-of-School Youth in Education" focuses on a social and global problem--200 million adolescents and youth are out of school, live in adverse life circumstances, and face multiple disadvantages. It analyzes the available evidence for what works, how, and why for reengaging and retaining these young people in education. The study further explores for whom and in what contexts the identified interventions can be effective, considering variations in both individual and contextual characteristics of the targeted youth. The synthesized findings from this review are used to build a broad theory of change which can guide efforts of policy and programming for designing contextualized interventions for education reengagement. A completely revised edition, offering new design recipes for interactive programs and support for images as plain values, testing, event-driven programming, and even distributed programming. This introduction to programming places computer science at the core of a liberal arts education. Unlike other introductory books, it focuses on the program design process, presenting program design guidelines that show the reader how to analyze a problem statement, how to formulate concise goals, how to make up examples, how to develop an outline of the solution, how to finish the program, and how to test it. Because learning to design programs is about the study of principles and the acquisition of transferable skills, the text does not use an off-the-shelf industrial language but presents a tailor-made teaching language. For the same reason, it offers DrRacket, a programming environment for novices that supports playful, feedback-oriented learning. The environment grows with readers as they master the material in the book until it supports a full-fledged language for the whole spectrum of programming tasks. This second edition has been completely revised. While the book continues to teach a systematic approach to program design, the second edition introduces different design recipes for interactive programs with graphical interfaces and batch programs. It also enriches its design recipes for functions with numerous new hints. Finally, the teaching languages and their IDE now come with support for images as plain values, testing, event-driven programming, and even distributed programming. The PostScript language has become the industry standard for printing high-quality graphics and text. This powerful language has the ability to describe efficiently the appearance of text, images, and graphics on a printed page. The PostScript language is currently incorporated into over 30 different products, including phototypesetters and high-speed laser printers from many well-known computer systems vendors. Data structures provide a means to manage large amounts of information such as large databases, using SEO, and creating Internet/Web indexing services. The book is designed to present fundamentals of data structures for beginners using the C programming language. Practical analogies using real world applications are integrated throughout the text to explain the technical concepts presented. Features: • Covers data structure fundamentals using C • Numerous tips and practical applications enhance understanding of concepts "Despite a long history of program engagement, the Fund has not developed guidance on program design in members of currency unions. The Fund has engaged with members of the four currency unions—the Central African Economic and Monetary Community, the Eastern Caribbean Currency Union, the European Monetary Union, and the West African Economic and Monetary Union—under Fund-supported programs. In some cases, union-wide institutions supported their members in undertaking adjustment under Fund-supported programs. As such, several programs incorporated—on an ad hoc basis—critical policy actions that union members had delegated. Providing general guidance on program design for members in a currency union context would fill a gap in Fund policy and help ensure consistent, transparent, and evenhanded

treatment across Fund-supported programs. This paper considers two options on when and how the Fund should seek policy assurances from union-level institutions in programs of currency union members. Option 1 would involve amending the Conditionality Guidelines, which would allow the use of standard conditionality tools with respect to actions by union-level institutions. Option 2—which staff prefers—proposes formalizing current practices and providing general guidance regarding principles and modalities on policy assurances from union-level institutions in support of members' adjustment programs. Neither option would infringe upon the independence (or legally-provided autonomy) of union-level institutions, since the institutions would decide what measures or policy actions to take—just as any independent central bank or monetary authority does, for example, in non-CU members." Especially designed for those with minimal computer experience, this book presents the concepts of program design in a simple, easy-to-understand "building block" format, and applies those design concepts to realistic business programs. Each chapter provides not only a complete explanation of what needs to be done in the design, but why. The book is divided into four main parts: Design Principles, Basic Program Design Techniques, and Advanced Program Design. This organization helps readers understand how the subject matter in each chapter relates to other chapters within the section— and the topic of program design as a whole. For individuals interested in the field of program design. The major goal of this book is to present the techniques of top-down program design and verification of program correctness hand-in-hand. It thus aims to give readers a new way of looking at algorithms and their design, synthesizing ten years of research in the process. It provides many examples of program and proof development with the aid of a formal and informal treatment of Hoare's method of invariants. Modem widely accepted control structures and data structures are explained in detail, together with their formal definitions, as a basis for their use in the design of correct algorithms. We provide and apply proof rules for a wide range of program structures, including conditionals, loops, procedures and recur sion. We analyze situations in which the restricted use of gotos can be justified, providing a new approach to proof rules for such situations. We study several important techniques of data structuring, including arrays, files, records and linked structures. The secondary goal of this book is to teach the reader how to use the programming language Pascal. This is the first text to teach Pascal pro gramming in a fashion which not only includes advanced algorithms which operate on advanced data structures, but also provides the full axiomatic definition of Pascal due to Wirth and Hoare. Our approach to the language is very different from that of a conventional programming text. Improving the use of evidence in teacher preparation is one of the greatest challenges and opportunities for our field. The chapters in this volume explore how data availability, quality, and use within and across preparation programs shed light on the structures, policies, and practices associated with high quality teacher preparation. Chapter authors take on critical questions about the connection between what takes place during teacher preparation and subsequent outcomes for teachers and students – which has remained a black box for too long. Despite a long history of teacher preparation in the U.S. and a considerable investment in preservice and in-service training, much is still to be learned about how pre-service preparation impacts teacher effectiveness. A strong empirical basis that informs how specific aspects of and approaches to teacher preparation relate to outcomes for graduates and their preK-12 student outcomes will provide a foundation for improved teaching and learning. Our book responds to stakeholders' collective responsibility to students and teachers to act more deliberately. Issues of data availability and quality, the uses of data for improvement, priorities for future research, and opportunities to promote evidence use in teacher preparation are discussed throughout the volume to inspire collective action to push the field towards more use of evidence. Chapters present research that uses a variety of research designs, methodologies, and data sources to explore important questions about the relationship between teacher preparation inputs and outcomes. Learn how to program with C++ using today's definitive choice for your first programming language experience -- C++ PROGRAMMING: FROM PROBLEM ANALYSIS TO PROGRAM DESIGN, 8E. D.S. Malik's time-tested, user-centered methodology incorporates a strong focus on problem-solving with full-code examples that vividly demonstrate the hows and whys of applying programming concepts and utilizing C++ to work through a problem. Thoroughly updated end-of-chapter exercises, more than 20 extensive new programming exercises, and numerous new examples drawn from Dr. Malik's experience further strengthen the reader's understanding of problem solving and program design in this new edition. This book highlights the most important features of C++ 14 Standard with timely discussions that ensure this edition equips you to succeed in your first programming experience and well beyond. Important Notice: Media content referenced within the product description or the product text may not be available in

the ebook version. Programming Fundamentals - A Modular Structured Approach using C++ is written by Kenneth Leroy Busbee, a faculty member at Houston Community College in Houston, Texas. The materials used in this textbook/collection were developed by the author and others as independent modules for publication within the Connexions environment. Programming fundamentals are often divided into three college courses: Modular/Structured, Object Oriented and Data Structures. This textbook/collection covers the rest of those three courses. Based on the successful book A First Book of C by the same author, this text includes algorithm development, problem solving, and computer science concepts for CS1 courses. Each chapter has a section with two applications developed using a top-down design approach illustrating the chapter's material. Includes A Bit of Background boxes, Common Programming Error sections, Enrichment Study sections, and Tips From the Pros boxes. Exercises can be found at the end of each section and at the end of each chapter. Software Design for Engineers and Scientists integrates three core areas of computing: . Software engineering - including both traditional methods and the insights of 'extreme programming' . Program design - including the analysis of data structures and algorithms . Practical object-oriented programming Without assuming prior knowledge of any particular programming language, and avoiding the need for students to learn from separate, specialised Computer Science texts, John Robinson takes the reader from small-scale programing to competence in large software projects, all within one volume. Copious examples and case studies are provided in C++. The book is especially suitable for undergraduates in the natural sciences and all branches of engineering who have some knowledge of computing basics, and now need to understand and apply software design to tasks like data analysis, simulation, signal processing or visualisation. John Robinson introduces both software theory and its application to problem solving using a range of design principles, applied to the creation of medium-sized systems, providing key methods and tools for designing reliable, efficient, maintainable programs. The case studies are presented within scientific contexts to illustrate all aspects of the design process, allowing students to relate theory to real-world applications. Core computing topics - usually found in separate specialised texts - presented to meet the specific requirements of science and engineering students Demonstrates good practice through applications, case studies and worked examples based in real-world contexts Your success as a fitness professional depends on your ability to reliably deliver results to clients. In Secrets of Successful Program Design: A How-To Guide for Busy Fitness Professionals, noted fitness and program design expert Alwyn Cosgrove and his director of programming, Craig Rasmussen, share Alwyn’s proven system for creating programs that take clients from where they are to where they want to be. You’ll learn how to properly assess a client and design the most effective program based on their individual goal—whether that is fat loss, muscle and strength building, or improved overall conditioning. You’ll also learn how to customize the training experience of your client on the fly, effectively progressing and regressing exercises according to day-to-day fluctuations in abilities and needs. This will ensure you are delivering the best results possible for each client every time they train. This guide to building training programs is supplemented with a selection of predesigned workouts that will draw on your skills for progressing and regressing exercises, saving you valuable time and energy while still allowing you to produce a personalized experience for your client. A reliable system-based approach to program design that consistently delivers results to every client—regardless of demographic profile, ability, or goals—will set your training business up for success in the incredibly competitive fitness market. CE exam available! For certified professionals, a companion continuing education exam can be completed after reading this book. The Secrets of Successful Program Design Online CE Exam may be purchased separately or as part of the Secrets of Successful Program Design With CE Exam package that includes both the book and the exam. The original program design text, this book is about programming for data processing applications, and it presents a coherent method and procedure for designing systems, programs, and components that are transparently simple and self evidently correct. The main emphasis is on the structure--on the dissection of a problem into parts and the arrangement of those parts to form a solution. Exercises and questions for discussion are given at the end of almost every chapter. The long awaited fifth volume in a collection of key practices for pattern languages and design. Comparing, contrasting and assessing the most popular and widely used design methods, this book covers a range of methods, including both structured and object-oriented methods. Therapeutic Recreation Program Design uses the most up-to-date information and powerful study tools to help students learn how to synthesize different elements of therapeutic recreation into one cohesive program. The Fourth Edition features comprehensive end-of-chapter materials including practice tests, discussion questions, and activities that provide students with an easy, accessible way to study the material. The book has been

thoroughly updated to include the latest government/organization regulations, and more client examples have been woven through each chapter to give students practical illustrations of the theories presented in the text. Strategies for building large systems that can be easily adapted for new situations with only minor programming modifications. Time pressures encourage programmers to write code that works well for a narrow purpose, with no room to grow. But the best systems are evolvable; they can be adapted for new situations by adding code, rather than changing the existing code. The authors describe techniques they have found effective--over their combined 100-plus years of programming experience--that will help programmers avoid programming themselves into corners. The authors explore ways to enhance flexibility by: • Organizing systems using combinators to compose mix-and-match parts, ranging from small functions to whole arithmetics, with standardized interfaces • Augmenting data with independent annotation layers, such as units of measurement or provenance • Combining independent pieces of partial information using unification or propagation • Separating control structure from problem domain with domain models, rule systems and pattern matching, propagation, and dependency-directed backtracking • Extending the programming language, using dynamically extensible evaluators Part of the Fund’s periodic reviews of its policy advice to member countries, and responds to calls by Executive Directors for further staff analysis on improving the design of such programs. In the context of the recent discussions on the design of the broad range of Fund-supported programs, Directors also requested more in-depth analytical studies of disaggregated and homogenous groups, as well as a closer look at how progress towards external viability in low-income countries (LICs) can be improved. The review also seeks to address these requests. The Fund provides considerable support to low-income countries (LICs). This includes concessional financing from the Poverty Reduction and Growth Trust (PRGT), which currently carries an interest rate of zero percent. Since 2010, over half of Fund-supported arrangements have involved a PRGT facility. Support for poverty reduction is a core objective of arrangements supported by these facilities. This paper examines how PRGT-supported programs safeguard spending on poor and vulnerable groups within the broader framework of promoting inclusive growth. In some cases, national poverty reduction programs seek to shift expenditures toward social programs in the context of generally higher spending supported by domestic revenue mobilization, grants, or debt financing. In other cases, the goal is to safeguard poor and vulnerable groups from fiscal adjustment and reform measures that could adversely affect them by adopting countervailing policy measures to strengthen social safety nets. In discussing social safeguards, this paper focuses on how and if these objectives are reflected satisfactorily in the design of PRGT and PSI-supported programs. The effectiveness of social spending in improving social outcomes, including by durably reducing poverty, is beyond the scope of the paper. Suited to any introductory programming course using any language. Gives clear concise coverage of problem-solving strategies, modular techinques, program testing, program correctness and data correctness and programming logic. Get a grounding in polymorphism and other fundamental aspects of object-oriented program design and implementation, and learn a subset of design patterns that any practicing Java professional simply must know in today’s job climate. Java Program Design presents program design principles to help practicing programmers up their game and remain relevant in the face of changing trends and an evolving language. The book enhances the traditional design patterns with Java's new functional programming features, such as functional interfaces and lambda expressions. The result is a fresh treatment of design patterns that expands their power and applicability, and reflects current best practice. The book examines some well-designed classes from the Java class library, using them to illustrate the various object-oriented principles and patterns under discussion. Not only does this approach provide good, practical examples, but you will learn useful library classes you might not otherwise know about. The design of a simplified banking program is introduced in chapter 1 in a non-object-oriented incarnation and the example is carried through all chapters. You can see the object orientation develop as various design principles are progressively applied throughout the book to produce a refined, fully object-oriented version of the program in the final chapter. What You'll Learn Create well-designed programs, and identify and improve poorly-designed ones Build a professional-level understanding of polymorphism and its use in Java interfaces and class hierarchies Apply classic design patterns to Java programming problems while respecting the modern features of the Java language Take advantage of classes from the Java library to facilitate the implementation of design patterns in your programs Who This Book Is For Java programmers who are comfortable writing non-object-oriented code and want a guided immersion into the world of object-oriented Java, and intermediate programmers interested in strengthening their foundational knowledge and taking their object-oriented skills to the next level. Even advanced

programmers will discover interesting examples and insights in each chapter. This book presents introductory programming and software development concepts to engineers using a disciplined approach. It provides numerous case studies and programming projects based on real-world examples from a wide range of engineering disciplines, making the material relevant to what students will encounter in their careers. The authors introduce implementations of basic numerical and statistical methods commonly used by engineers. The book focuses on many aspects of software engineering, establishing early the connection between good problem-solving skills and effective software development. The five-phase software development method is presented in Chapter 1 and applied in every subsequent Case Study throughout. C Program Design for Engineers presents material in an order that meets the needs of a beginning programmer, rather than by the structure of the C programming language. For example, the coverage of pointers is simplified by discussing them over several chapters, thus allowing the student to absorb the intricacies of pointer usage a little at a time.This approach makes it possible to present fundamental concepts using traditional high-level terminology-outputparameter, array, array subscript, string-and makes it easier for students without prior assembly-language background to master the many facets of pointer usage. This text is suitable as a stand-alone programming design course independent of a specific language. It should also supplement any language course where the instructor wants to emphasize design. NSCA's Guide to Program Design offers the most current information, guidance, and protocols from respected scientists and practitioners with expertise in strength and conditioning program design. Developed by the National Strength and Conditioning Association (NSCA), this text offers strength and conditioning professionals a scientific basis for developing training programs for specific athletes at specific times of year. Straightforward and accessible, NSCA’s Guide to Program Design presents a detailed examination of considerations and challenges in developing a program for each key fitness component and fitness performance goal. Editor Jay Hoffman and his team of contributors have assembled an exceptional reference for practicing professionals and a valuable educational resource for new professionals and students preparing for certification. This authoritative text moves beyond the simple template presentation of program design to help readers grasp the reasons and procedures for sequencing training in a safe, sport-specific manner. The text offers 20 tables that are sample workouts or training plans for athletes in a variety of sports, technique photos and instructions for select drills, and a sample annual training plan that shows how to assemble all the pieces previously presented. Plus, extensive references offer starting points for continued study and professional enrichment. NSCA’s Guide to Program Design progresses sequentially through the program design process. It begins by examining the athlete needs assessment process as well as performance testing considerations and selection. Next, performance-related information on both dynamic warm-up and static stretching is discussed and dynamic warm-up protocols and exercises are presented. Then it reveals an in-depth by-chapter look at program design for resistance, power, anaerobic, endurance, agility, speed, and balance and stability training. For each, considerations and adaptations are examined, strategies and methods are discussed, and evidence-based information on program development is presented. The final two chapters help you put it all together with a discussion of training integration, periodization, and implementation. In addition, a sample annual training plan illustrates how to integrate each of the key fitness components into a cohesive yearlong program. As a bonus, a sample annual training plan is provided on our website so you can create your own training plans. The fitness, safety, and performance of athletes reflect the importance of continued education in the science of strength and conditioning. NSCA’s Guide to Program Design helps bridge the gap between scientist and practitioner by providing coaches and other strength and conditioning professionals with evidence-based information and applications. Sharing the latest in proven research, NSCA’s Guide to Program Design helps readers remain on the cutting edge of athletic performance. NSCA’s Guide to Program Design is part of the Science of Strength and Conditioning series. Developed with the expertise of the National Strength and Conditioning Association (NSCA), this series of texts provides the guidelines for converting scientific research into practical application. The series covers topics such as tests and assessments, program design, and nutrition. Design patterns have moved into the mainstream of commercial software development as a highly effective means of improving the efficiency and quality of software engineering, system design, and development. Patterns capture many of the best practices of software design, making them available to all software engineers. The fourth volume in a series of books documenting patterns for professional software developers, Pattern Languages of Program Design 4 represents the current and state-of-the-art practices in the patterns community. The 29 chapters of this book were each presented at recent PLoP conferences and have been explored and enhanced by leading experts in

attendance. Representing the best of the conferences, these patterns provide effective, tested, and versatile software design solutions for solving real-world problems in a variety of domains. This book covers a wide range of topics, with patterns in the areas of object-oriented infrastructure, programming strategies, temporal patterns, security, domain-oriented patterns, human-computer interaction, reviewing, and software management. Among them, you will find: *The Role object *Proactor *C++ idioms *Architectural patterns ??????C++??????????????,????????????????????????? Get a grounding in polymorphism and other fundamental aspects of object-oriented program design and implementation, and learn a subset of design patterns that any practicing Java professional simply must know in today’s job climate. Java Program Design presents program design principles to help practicing programmers up their game and remain relevant in the face of changing trends and an evolving language. The book enhances the traditional design patterns with Java's new functional programming features, such as functional interfaces and lambda expressions. The result is a fresh treatment of design patterns that expands their power and applicability, and reflects current best practice. The book examines some well-designed classes from the Java class library, using them to illustrate the various object-oriented principles and patterns under discussion. Not only does this approach provide good, practical examples, but you will learn useful library classes you might not otherwise know about. The design of a simplified banking program is introduced in chapter 1 in a non-object-oriented incarnation and the example is carried through all chapters. You can see the object orientation develop as various design principles are progressively applied throughout the book to produce a refined, fully object-oriented version of the program in the final chapter. What You'll Learn Create well-designed programs, and identify and improve poorly-designed ones Build a professional-level understanding of polymorphism and its use in Java interfaces and class hierarchies Apply classic design patterns to Java programming problems while respecting the modern features of the Java language Take advantage of classes from the Java library to facilitate the implementation of design patterns in your programs Who This Book Is For Java programmers who are comfortable writing non-object-oriented code and want a guided immersion into the world of object-oriented Java, and intermediate programmers interested in strengthening their foundational knowledge and taking their object-oriented skills to the next level. Even advanced programmers will discover interesting examples and insights in each chapter. From the respected instructor and author Paul Addison, PRINCIPLES OF PROGRAM DESIGN: PROBLEM SOLVING WITH JAVASCRIPT gives your students the fundamental concepts of good program design, illustrated and reinforced by hands-on examples using JavaScript. Why JavaScript? It simply illustrates the programming concepts explained in the book, requires no special editor or compiler, and runs in any browser. Little or no experience is needed because the emphasis is on learning by doing. There are examples of coding exercises throughout every chapter, varying in length and representing simple to complex problems. Students are encouraged to think in terms of the logical steps needed to solve a problem and can take these skills with them to any programming language in the future. To help reinforce concepts for your students, each chapter has a chapter summary, review questions, hand-on activities, and a running case study that students build on in each chapter. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. This bestselling text maintains its classic features like the gradual introduction of pointers and the connection between problem solving skills and effective software development. It features early coverage of functions, logical operators, and operators with side effects. The third edition offers updated C code and provides a new On to C++ chapter, preparing students for future object-oriented programming and C++ courses. A systematic program design method can help developers ensure the correctness and performance of programs while minimizing the development cost. This book describes a method that starts with a clear specification of a computation and derives an efficient implementation by step-wise program analysis and transformations. The method applies to problems specified in imperative, database, functional, logic and object-oriented programming languages with different data, control and module abstractions. Designed for courses or self-study, this book includes numerous exercises and examples that require minimal computer science background, making it accessible to novices. Experienced practitioners and researchers will appreciate the detailed examples in a wide range of application areas including hardware design, image processing, access control, query optimization and program analysis. The last section of the book points out directions for future studies.