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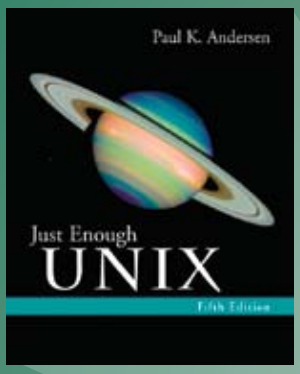
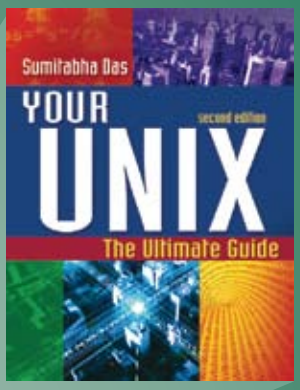
Higher Education





Computer Science

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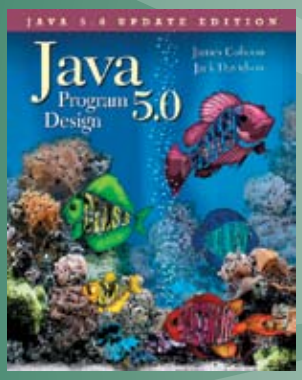

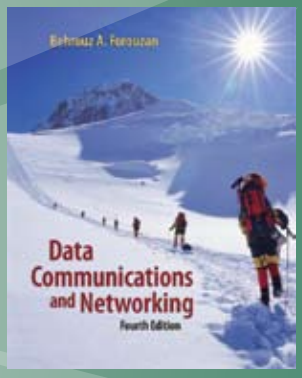

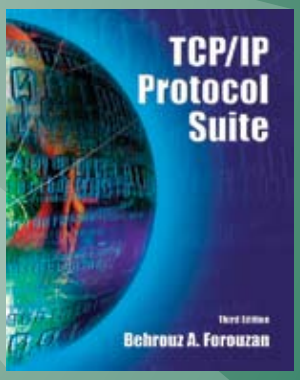

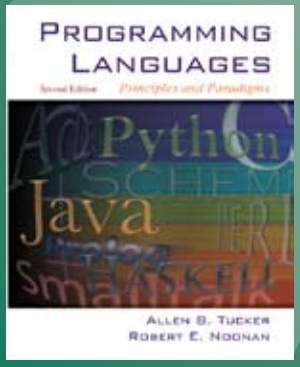

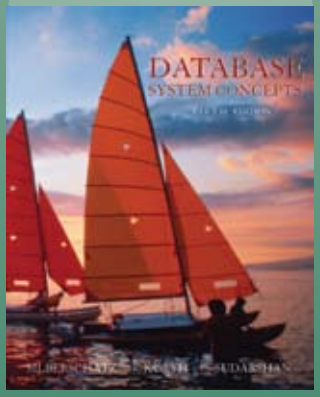

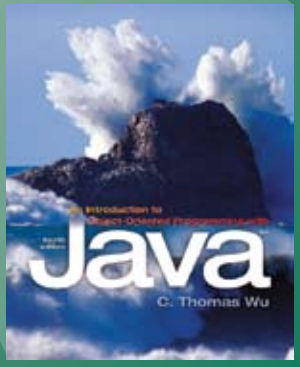

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ANALYSIS OF ALGORITHMS

Algorithms

Sanjoy Dasgupta
University of California-San Diego
Christos H. Papadimitriou
University of California-Berkeley
Umesh Vazirani
University of California-Berkeley

2008 / Softcover / 320 pgs / ISBN 0-07-352340-2

Browse http://www.mhhe.com/dasgupta

New!

This text, extensively class-tested over a decade at UC Berkeley and UC San Diego, explains the fundamentals of algorithms in a story line that makes the material enjoyable and easy to digest. Emphasis is placed on understanding the crisp mathematical idea behind each algorithm, in a manner that is intuitive and rigorous without being unduly formal. Features include: The use of boxes to strengthen the narrative: pieces that provide historical context, descriptions of how the algorithms are used in practice, and excursions for the mathematically sophisticated. Carefully chosen advanced topics that can be skipped in a standard one-semester course, but can be covered in an advanced algorithms course or in a more leisurely two-semester sequence. An accessible treatment of linear programming introduces students to one of the greatest achievements in algorithms. An optional chapter on the quantum algorithm for factoring provides a unique peephole into this exciting topic.

FEATURES

- SPRINKLED WITH interesting stories about the development of important algorithms AS WELL AS ABOUT THEIR CURRENT USES IN THE GLOBAL INFORMATION ENVIRONMENT.
- The book is concise and realistic; with key Design Issues and rationales that clearly outline the problems to be solved and show how to develop the algorithm...
- Self contained chapters provide a variety of perspectives on the implementation of algorithms
- The authors cover the essential algorithms that students need to know, but are also thorough and rigorous; including coverage of linear programming and quantum computing (both optional, but covered in no other book).
- This is a highly flexible text with self contained chapters: some simple and others high level; that provide a variety of perspectives on the analysis and design of algorithms.
- Carefully class tested at UCSD and UC Berkeley OVER 10 YEARS.
- The book uses a unique approach for proofs and is intuitive and accessible.

CONTENTS

Prologue / 1 Algorithms with Numbers / 2 Divide-and-conquer algorithms / 3 Decompositions of graphs / 4 Paths in graphs / 5 Greedy algorithms / 6 Dynamic Programming / 7 Linear Programming and Reductions / 8 NP-complete Problems / 9 Coping with NP-completeness / 10 Quantum Algorithms

Introduction to Algorithms and Java CD-ROM, 2E

Thomas H. Cormen
Dartmouth College

2002 / Hardcover with CD-ROM / 1056 pages / ISBN 0-07-297054-5

OLC (Browse http://www.introductiontoalgorithms.com)

The updated new edition of the classic *Introduction to Algorithms* is intended primarily for use in undergraduate or graduate courses in algorithms or data structures. Like the first edition, this text can also be used for self-study by technical professionals since it discusses engineering issues in algorithm design as well as the mathematical aspects.

In its new edition, *Introduction to Algorithms* continues to provide a comprehensive introduction to the modern study of algorithms. The revision has been updated to reflect changes in the years since the book's original publication. New chapters on the role of algorithms in computing and on probabilistic analysis and randomized algorithms have been included. Sections throughout the book have been rewritten for increased clarity, and material has been added wherever a fuller explanation has seemed useful or new information warrants expanded coverage.

As in the classic first edition, this new edition of *Introduction to Algorithms* presents a rich variety of algorithms and covers them in considerable depth while making their design and analysis accessible to all levels of readers. Further, the algorithms are presented in pseudocode to make the book easily accessible to students from all programming language backgrounds.

Each chapter presents an algorithm, a design technique, an application area, or a related topic. The chapters are not dependent on one another, so the instructor can organize his or her use of the book in the way that best suits the course's needs. Additionally, the new edition offers a 25% increase over the first edition in the number of problems, giving the book 155 problems and over 900 exercises that reinforce the concepts the students are learning.

NEW TO THIS EDITION

- This is the first revision of this classic text originally published in 1989.
- *Introduction to Algorithms* is useful for a variety of courses, from an undergraduate course in data structures up through a graduate course in algorithms.
- The wide range of topics in this book makes it an excellent handbook on algorithms. Because each chapter is relatively self-contained, the instructor can organize the course in the manner that best suits him or her.

FEATURES

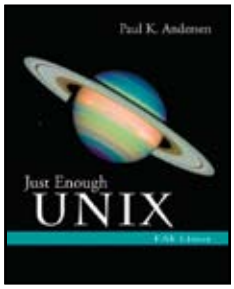
- This book contains over 900 exercises that check understanding of basic concepts and over 120 more elaborate problems that require students to implement what they have learned.

CONTENTS

Preface / I Foundations / 1 The Role of Algorithms in Computing / 2 Getting Started / 3 Growth of Functions / 4 Recurrences / 5 Probabilistic Analysis and Randomized Algorithms / II Sorting and Order Statistics / 6 Heapsort / 7 Quicksort / 8 Sorting in Linear Time / 9 Medians and Order Statistics / III Data Structures / 10 Elementary Data Structures / 11 Hash Table / 12 Binary Search Trees / 13 Red-Black Trees / 14 Augmenting Data Structures / IV Advanced Design and Analysis Techniques / 15 Dynamic Programming / 16 Greedy Algorithms / 17 Amortized Analysis / V Advanced Data Structures / 18 B-Trees / 19 Binomial Heaps / 20 Fibonacci Heaps / 21 Data Structures for Disjoint Sets / VI Graph Algorithms / 22 Elementary Graph Algorithms / 23 Minimum Spanning Trees / 24 Single-Source Shortest Paths / 25 All-Pairs Shortest Paths / 26 Maximum Flow / VII Selected Topics / 27 Sorting Networks / 28 Matrix Operations / 29 Linear Programming / 30 Polynomials and the FFT / 31 Number-Theoretic Algorithms / 32 String Matching / 33 Computational Geometry / 34 NP-Completeness / 35 Approximation Algorithms / VIII Appendix: Mathematical Background / A Summations / B Sets, Etc. / C Counting and Probability

UNIX

Just Enough UNIX, 5E



Paul K. Andersen
New Mexico State University-Las Cruces

2006 / Softcover / 608 pgs / ISBN 0-07-295297-0

Browse http://www.mhhe.com/andersen

Just Enough UNIX provides a quick and gentle introduction to the UNIX operating system. The fifth edition of this highly successful text reflects changes and updates to the UNIX curriculum that have taken place since the publication of the fourth edition. The book is written in a clear, straightforward style that avoids unnecessary jargon.

This short, yet comprehensive text covers the basics of UNIX. It can be used in both a freshman engineering course or to supplement other courses where the student needs to learn UNIX for the first time. The book is enhanced by strong pedagogical tools that will be very useful to those in the classroom, as well as those engaged in self-study.

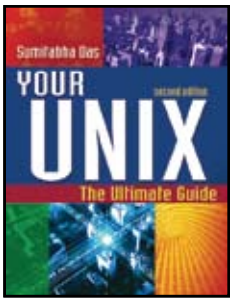
NEW TO THIS EDITION

- **Key New Topics**. The following topics are new in the fifth edition: computer and network security; Secure Shell (SSH) for remote computing; practical cryptography; scripting in awk; and scripting in Perl.
- **New and revised chapters.** There are several completely new chapters in the book—chapters 24 (Computer Security), 25 (Remote Computing Using SSH-1), 26 (Remote Computing Using SSH-2), 27 (Encryption using GPG), 32 (Scripting Languages), 33 (Shell Scripting), 34 (Scripting with AWK), and 35 (Scripting with Perl).
- **Security**. The fifth edition features expanded coverage of security issues, including the use of Secure Shell as a secure alternative to the traditional UNIX ?r-commands.?
- **Organization.** The book is divided into the following sections: Introduction to UNIX, UNIX File System, UNIX Shells, Text Editors, UNIX Networking, Startup Files, Secure Computing, Scripting and Programming under UNIX. Each section opens with a descriptive concepts chapter followed by several tutorials that guide the new user step-by-step toward learning how UNIX works.
- **Graphical Interfaces.** The fifth edition maintains coverage of the CDE interface. The book continues the concept that the typical student is using the most current engineering workstation running the most current graphical user interface, including both one based on the X Window system and CDE.
- **Text Editors.** The reader will learn to create or modify UNIX files using text editors. The book covers the most popular UNIX editors, including vi, emacs, pico, and CDE Text Editor.
- **Networking.** The book has coverage of popular Internet and Web tools like ftp and CDE Mailer, including how to process E-mail.
- **Pedagogy.** The book offers a number of helpful pedagogical features: descriptive chapters, tutorials, marginal notes, sidebars, command summaries and exercises.
- **Website**. The expanded book website includes answers to exercises for instructors only, as well as PowerPoint slides and data files.

CONTENTS

Part I: Introduction to UNIX / 1 Introduction to UNIX / 2 Your UNIX Account / 3 Getting Started / 4 Tutorial: Getting Started (X/Motif) / 5 Tutorial: Getting Started (CDE) / Part II: UNIX File System / 6 The UNIX File System / 7 Tutorial: Working with Files / 8 Tutorial: Working with Directories / 9 Tutorial: Using File Manager / Part III: UNIX Shells / 10 UNIX Shells / 11 Tutorial: Working with the Shell / 12 Tutorial: Using Additional Shell Features / Part IV: Text Editors / 13 Text Editors / 14 Tutorial: Editing with vi / 15 Tutorial: Editing with emacs / 16 Tutorial: Editing with Pico / 17 Tutorial: Editing with Text Editor / Part V: Networking / 18 Networking / 19 Tutorial: Using Mail and Mailx / 20 Tutorial: Processing Mail with Pine / 21 Tutorial: Processing Mail with Mailer / 22 Tutorial: Logging in Remotely / 23 Tutorial: Transferring Files / Part VI: Computer Security / 24 Computer Security / 25 Tutorial: Remote Computing Using SSH-1 / 26 Tutorial: Remote Computing Using SSH-2 / 27 Tutorial: Encryption Using GPG / Part VII: Startup Files / 28 Startup Files / 29 Tutorial: Using sh & ksh Startup Files / 30 Tutorial: Using csh & tcsh Startup Files / 31 Tutorial: Using bash Startup Files / Part VIII: Scripting Languages / 32 Scripting Languages / 33 Tutorial: Shell Scripting / 34 Tutorial: Scripting with awk / 35 Tutorial: Scripting with Perl / Part VIX: Programming Languages / 36 Programming Languages / 37 Tutorial: Programming in C / 38 Tutorial: Programming in C++ / 39 Tutorial: Programming in Java / Appendices / A: Taming Your Terminal / B: The UNIX Manual / C: Starting X and Motif / D: Regular Expressions / E: Formatted Output / F: Using dbx / G: Using make / H: Write and Talk

YOUR UNIX: The Ultimate Guide, 2E



Sumitabha Das

2006 / Softcover / 864 pgs / ISBN 0-07-252042-6

Browse http://www.mhhe.com/das

NEW TO THIS EDITION

- The number of chapters has been reduced from 24 to 19 to allow for a more intense focus on core UNIX topics.
- Coverage is logically divided between essential (chapters 1-13) and advanced (chpaters 14-19) material.
- Three new chapters on programming tools and systems programming benefit the serious programmer and make the book suitable for a course on systems programming.
- Coverage of encryption and the Secure Shell has been added.
- Discussion of vi and emacs editors uses snippets of code to illustrate the benefits to programmers of knowing the editor well.
- The requirements of the POSIX standard have been highlighted throughout.
- A single comprehensive index replaces the multiple specialized indices from the previous edition.

FEATURES

- Notes, Tips, and Caution boxes provide on-the-spot assistance to students.
- Linux coverage supplements generic coverage of UNIX in cases where Linux behaves differently.
- Coverage of the Korn, bash, and C shells is featured in appendices.
- Scores of tables, diagrams, and screen shots make the fundamentals of the Unix operating system more accessible to students.
- Over nine hundred self-test questions and exercises allow students to test and reinforce their understanding of key concepts.
- Scores of real-life examples prompt the reader to envision the practical application of UNIX in situations they are likely to encounter.

CONTENTS

1 Introducing UNIX / 2 Becoming Familiar with UNIX Commands / 3 The File System / 4 File Attributes / 5 The vi/vim Editor / 6 The GNU emacs Editor / 7 The Shell / 8 The Process / 9 The Shell—Customizing the Environment / 10 Simple Filters / 11 Filters Using Regular Expressions—grep and sed / 12 Filtering and Programming with awk / 13 Shell Programming / 14 Networking Tools / 15 perl—The Master Manipulator / 16 Program Development Tools / 17 Systems Programming I—Files / 18 Systems Programming II—Process Control / 19 System Administration / Appendices / A: The C Shell—Programming Constructs / B: The Korn and Bash Shells—Exclusive Programming Constructs / C: vi/vim and emacs Command Reference / D: The Regular Expression Superset / E: The HOWTO / F: The ASCII Character Set / G: Glossary / H: Solutions to Self-Test Questions

DATABASE SYSTEMS

Database Management Systems, 4E

Raghu Ramakrishnan
Univ of Wisconsin-Madison
Johannes Gehrke
Cornell University

New! Edition

2009 / Hardcover / 1088 pgs / ISBN 0-07-296825-7

Database Management Systems provides comprehensive and up-to-date coverage of the fundamentals of database systems. Coherent explanations and practical examples have made this one of the leading texts in the field. The third edition continues in this tradition, enhancing it with more practical material.

The new edition has been reorganized to allow more flexibility in the way the course is taught. Now, instructors can easily choose whether they would like to teach a course which emphasizes database application development or a course that emphasizes database systems issues. New overview chapters at the beginning of parts make it possible to skip other chapters in the part if you don't want the detail.

More applications and examples have been added throughout the book, including SQL and Oracle examples. The applied flavor is further enhanced by the two new database applications chapters.

FEATURES

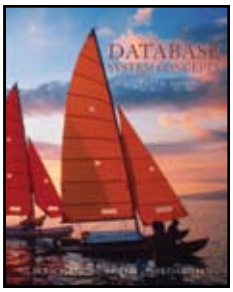
- Emphasis on the physical aspects of databases, including a chapter entitled "Physical Database Design and Tuning."
- An extensively updated website is new to this edition. It includes:
  —Manuals for Oracle, MS, and DB2 that explain how to set up servers.
  —New instructor's guide with chapter summaries and tips.
  —SQL Exercises allow students to create sample databases and put solutions online.
  —A chapter on QBE chapter and Case Study are available on-line.
  —Lecture slides
  —Full solutions-odds for students and a complete set for instructors.
- Flexible Organization: The new organization makes it possible to teach an introductory application-oriented course or introductory systems-oriented course. Instructors can easily select a suitable set of overview chapters that allow other chapters in the part to be skipped.
- More applications and examples have been added throughout the book to help make the material more relevant to students.
- Pedagogy has been improved with the addition of chapter objectives, review questions, boxes about system-specfic information, and improved layout and figures.
- A case study runs throughout the book where appropriate showing students how to apply what the concepts they are learning.

CONTENTS

1 Foundations / 1 Overview of Database Systems / 2 Introduction to Database Design / 3 The Relational Model / 4 Relational Algebra and Calculus / 5 SQL: Queries, Constraints, Triggers / **2 Application Development** / 6 Database Application Development / 7 Internet Applications / **3 Storage and Indexing** / 8 Overview of Storage and

Indexing / 9 Storing Data: Disks and Files / 10 Tree-Structured Indexing / 11 Hash-Based Indexing / **4 Query Evaluation** / 12 Overview of Query Evaluation / 13 External Sorting / 14 Evaluating Relational Operators / 15 A Typical Relational Query Optimizer / 5 Transaction Management / 16 Overview of Transaction Management / 17 Concurrency Control / 18 Crash Recovery / 6 Database Design and Tuning / 19 Schema Refinement and Normal Forms / 20 Physical Database Design and Tuning / 21 Security and Authorization / 7 Additional Topics / 22 Parallel and Distributed Databases / 23 Object-Database Systems / 24 Deductive Databases / 25 Data Warehousing and Decision Support / 26 Data Mining / 27 Information Retrieval and XML Data / 28 Spatial Data Management / 29 Further Reading / 30 The Minibase Software

Database Systems Concepts, 5E



Abraham Silberschatz
Yale University
Henry F. Korth
Lehigh University
S. Sudarshan

2006 / Hardcover / 1168 pgs / ISBN 0-07-295886-3

Online solutions for practical exercises, detailed slides for all chapters, teaching supplements, and online appendices. (Browse http://www.mhhe.com/silberschatz)

NEW TO THIS EDITION

- New chapter organization, featuring earlier coverage of SQL.
- A new Part devoted to database design, with extended coverage of normalization and temporal data.
- Expanded and updated coverage of XML.
- Chapters on data mining and analysis and information retrieval.
- Case studies covering the latest versions of IBM DB2, Oracle, Microsoft SQL Server and (new to this edition) PostgresSQL.
- Emphasis on practical issues, applications and implementation, coupled with intuitive coverage of key theoretical concepts.
- Enhanced pedagogy.
- A web page (www.mhhe.com/silberschatz) featuring online solutions for practical exercises, detailed slides for all chapters, teaching supplements, and online appendices.
- Online appendices.

FEATURES

- Detailed coverage of database internals and architectures.

CONTENTS

Database System Concepts, 5th Edition / 1 Introduction / 2 Relational Model / 3 SQL / 4 Advanced SQL / 5 Other Relational Languages / 6 Database Design and the E-R Model / 7 Relational Database Design / 8 Application Design and Development / 9 Object-Based Databases / 10 XML / 11 Storage and File Structure / 12 Indexing and Hashing / 13 Query Processing / 14 Query Optimization / 15 Transactions / 16 Concurrency Control / 17 Recovery System / 18 Data Analysis and Mining / 19 Information Retrieval / 20 Database-System Architectures / 21 Parallel Databases / 22 Distributed Databases / 23 Advanced Application Development / 24 Advanced Data Types and New Applications / 25 Advanced Transaction Processing / 26 PostgreSQL / 27 Oracle / 28 IBM DB2 Universal Database / 29 Microsoft SQL Server / Appendices / A: NetworkModel / B: Hierarchical Model / C: Advanced Relational Database Design

DIGITAL LOGIC DESIGN

Introduction to Logic Design with CD-ROM, 2E

Alan B. Marcovitz
Florida Atlantic University-Boca Raton

2005 / Hardcover with CD-ROM / 672 pgs / ISBN 0-07-295176-1

Browse http://highered.mcgraw-hill.com/sites/0072865164

Introduction to Logic Design by Alan Marcovitz is intended for the first course in logic design, taken by computer science, computer engineering, and electrical engineering students. As with the first edition, the new edition is distinguised by a clear presentation of fundamentals and an exceptional collection of examples, solved problems, and exercises. Changes found in the new edition reflect reviewer feedback from both users and nonusers of the first edition and primarily involve improvements in organization and topic coverage.

The text integrates laboratory experiences, both hardware and computer simulation, while not making them mandatory for following the main flow of the chapters. Design is emphasized throughout, and switching algebra is developed as a tool for analyzing and implementing digital systems. The presentation includes excellent coverage of minimization of combinational circuits, including multiple output ones, using the Karnaugh map and iterated consensus. There are a number of examples of the design of larger systems, both combinational and sequential, using medium scale integrated circuits and programmable logic devices.

NEW TO THIS EDITION

- A separate chapter on Iterated Consensus and Quine-McCluskey has been added for the second edition.
- The second edition features two chapters on sequential systems. The first chapter covers analysis of sequential systems and the second covers design. Complete coverage of the analysis and design of synchronous sequential systems adds to the comprehensive nature of the text.
- "Test Yourself" sections, designed to help students measure their comprehension of key material, have been added to the end of chapters for the second edition.
- Answers to selected exercises are included in an easy-to-reference appendix for the second edition.

FEATURES

- A clear and well-paced writing style makes this text especially well-suited for students who might otherwise find this course area particularly challenging.
- An extensive set of examples, well integrated into the body of the text as well as at the end of each chapter in sections of solved problems, gives students multiple opportunities to understand the topics being presented.
- The text integrates practical circuits with theory by presenting two types of laboratory experiments. Traditional hands-on hardware experiments as well as simulation laboratory exercises using popular software packages are tied closely to the text material to allow students to implement the concepts they are learning.
- Use of the Karnaugh Map helps students understand the principles of switching algebra.
- A thorough discussion of the minimization of switching functions using Karnaugh maps, including 6-variable maps and multiple output problems, gives students something to sink their teeth into and doesn't leave them wondering about the unusual or boundary case.
- Coupling of gate implementation with the algebra helps extend the students' range of understanding.
- Color is used as a pedagogical aid.
- The derivation of state tables from word problems further emphasizes the practical implementation of the material being presented.

CONTENTS

1 Introduction / 2 Switching Algebra and Logic Circuits / 3 The Karnaugh Map / 4 Function Minimization Algorithms / 5 Larger Combinational Systems / 6 Analysis of Sequential Systems / 7 The Design of Sequential Systems / 8 Solving Larger Sequential Problems / 9 Simplification of Sequential Circuits / Appendices / A: Laboratory Experiments / B: Answers to Selected Exercises / C: Chapter Tests Answers

Fundamentals of Digital Logic with VHDL Design with CD-ROM, 2E

Stephen Brown
University of Toronto, Canada
Zvonko Vranesic
University of Toronto, Canada

2005 / Hardcover with CD-ROM / 960 pages / ISBN 0-07-249938-9

This website contains: PowerPoint Slides, Solutions Manual, and PageOut (Browse http://www.highered.mcgraw-hill.com/TBD)

Fundamentals of Digital Logic With VHDL Design teaches the basic design techniques for logic circuits. It emphasizes the synthesis of circuits and explains how circuits are implemented in real chips. Fundamental concepts are illustrated by using small examples, which are easy to understand. Then, a modular approach is used to show how larger circuits are designed. VHDL is used to demonstrate how the basic building blocks

and larger systems are defined in a hardware description language, producing designs that can be implemented with modern CAD tools.

The book emphasizes the concepts that should be covered in an introductory course on logic design, focusing on:
- Logic functions, gates, and rules of Boolean algebra
- Circuit synthesis and optimization techniques
- Number representation and arithmetic circuits
- Combinational-circuit building blocks, such as multiplexers, decoders, encoders, and code converters
- Sequential-circuit building blocks, such as flip-flops, registers, and counters
- Design of synchronous sequential circuits
- Use of the basic building blocks in designing larger systems

It also includes chapters that deal with important, but more advanced topics:
- Design of asynchronous sequential circuits
- Testing of logic circuits

For students who have had no exposure to basic electronics, but are interested in learning a few key concepts, there is a chapter that presents the most basic aspects of electronic implementation of digital circuits.

Major changes in the second edition of the book include
- new examples to clarify the presentation of fundamental concepts
- over 50 new examples of solved problems provided at the end of chapters
- NAND and NOR gates now introduced in Chapter 2
- more complete discussion of techniques for minimization of logic functions in Chapter 4 (including the tabular method)
- a new chapter explaining the CAD flow for synthesis of logic circuits
- Altera's Quartus II CAD software provided on a CD-ROM
- three appendices that give tutorials on the use of Quartus II software

NEW TO THIS EDITION

- The book emphasizes CAD through the use of Altera's Quartus II CAD software, a state of the art digital circuit design package. This software provides automatic mapping of designs written in VHDL into Field Programmable Gate Arrays (FPGAs) and Complex Programmable Logic Devices (CPLDs). The user will be able to enter a design into the CAD system, compile the design into a selected device, simulate the functionality and timing of the resulting circuit, and implement the designs in actual devices (using the school's laboratory facilities).
- A chapter is included that illustrates the most basic aspects of electronic implementation of digital circuits for students who have had no exposure to basic electronics.
- New examples have been added to the second edition to help clarify the presentation of fundamental concepts.
- Over 50 new examples of solved problems appear at the end of chapters in the second edition.
- The second edition features a new chapter explaining CAD flow for synthesis of logic circuits.
- Three new appendices give tutorials on the use of Quartus II software.

FEATURES

- The book teaches the basic design techniques for logic circuits, emphasizing the synthesis of circuits and explaining how circuits are implemented in real chips.
- Small, easy-to-understand examples illustrate fundamental concepts.
- A modular approach is used to show how larger circuits are designed.
- VHDL is used to demonstrate how the basic building blocks and larger systems are defined in a hardware description language, producing designs that can be implemented with modern CAD tools.

CONTENTS

1 Design Concepts / 2 Introduction to Logic Circuits / 3 Implementation Technology / 4 Optimized Implementation of Logic Functions / 5 Number Representation and Arithmetic Circuits / 6 Combinational-Circuit Building Blocks / 7 Flip-Flops, Registers, Counters, and a Simple Processor / 8 Synchronous Sequential Circuits / 9 Asynchronous Sequential Circuits / 10 Digital System Design / 11 Testing of Logic Circuits / 12 Computer Aided Design Tools / Appendices / A: VHDL Reference / B: Tutorial 1—Using Quartus II CAD Software / C: Tutorial 2—Implementing Circuits in Altera Devices / D: Tutorial 3—Physical Implementations in a PLD / E: Commercial Devices

COMPUTER ORGANIZATION

INTRODUCTION TO COMPUTING SYSTEMS: From Bits & Gates to Programming & Beyond, 3E

Yale N. Patt
University of Texas at Austin
Sanjay J. Patel
University of Illinois-Champaign

2007 / Hardcover / 640 pgs / ISBN 0-07-299465-7

An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board. (Browse http://www.mhhe.com/patt3)

NEW TO THIS EDITION

- **NEW! Privilege:** Based on market feedback, the coverage of privilege will be augmented in this edition.
- **NEW! Computer Organization Topics:** Optional, supplemental material on topics such as virtual memory, cache and pipelining will be provided at the book's website.
- **NEW! C++:** Optional, supplemental material highlighting key features for the usage of the C++ language will also be provided at the book's website.

FEATURES

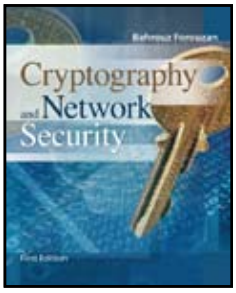
- **Bottom-Up Organization:** For Patt and Patel, the bottom level abstraction is the switch level representation of a MOS transistor. From there, they quickly move to logic gates, latches, logic structures (MUX, decoder, full adder, and gated latches), finally culminating in an implementation of memory. Then the book moves on to finite state control, its implementation as a sequential circuit, the von Neumann model of execution, a simple computer (the LC-3), machine language programming and assembly language programming of the LC-3, the high level language C, recursion, and finally elementary data structures.
- **Debugging:** Because students are taught debugging techniques from the first program they write and are required to use the LC-3 Simulator's debugging tools from the start, they are better able to master the art of programming and can complete their programming assignments with a lot less help from the TA.
- **The LC-3 Simulator:** Central to the student's learning is hands-on access to the LC-3 Simulator, which has been created specifically to aid the student's mastery of the concepts. (Students can download the LC-3 Simulator from the book's website at no cost).
- **Programming Methodology:** Students are provided with numerous meaningful, simple examples on how to take a problem and transform it into a computer program via systematic decomposition. Students are exposed to the fundamental similarities in programming, whether it be in the LC-3 or in C, which provides the student with the useful ability to quickly understand other programming languages.
- **Website:** An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board.

PRELIMINARY CONTENTS

1 Welcome Aboard / 2 Bits, Data Types, and Operations / 3 Digital Logic Structures / 4 The Von Neumann Model / 5 The LC-3 / 6 Programming / 7 Assembly Language / 8 I/O / 9 TRAP Routines and Subroutines / 10 And, Finally...The Stack / 11 Introduction to Programming in C / 12 Variables and Operators / 13 Control Structures / 14 Functions / 15 Testing and Debugging / 16 Pointers and Arrays / 17 Recursion / 18 I/O in C / 19 Data Structures / Appendices / A: The LC-3 ISA / B: From LC-3 to x86 / C: The Microarchitecture of the LC-3 / D: The C Programming Language / E: Useful Tables / :F Selected Solutions (available at website)

TCP/IP NETWORKS

Cryptography and Network Security



New!

Behrouz A. Forouzan
De Anza College

2008 / Hardcover / 480 pgs / ISBN 0-07-332753-0

In this new text, well-known author Behrouz Forouzan uses his accessible writing style and visual approach to simplify the difficult concepts of cryptography and network security. Forouzan presents difficult security topics from the ground up. A gentle introduction to the fundamentals of number theory is provided in the opening chapters, paving the way for the student to move on to more complex security and cryptography topics. Difficult math concepts are organized in appendices at the end of each chapter so that students can first learn the principles, then apply the technical background. Hundreds of examples, as well as fully coded programs, round out a practical, hands-on approach which encourages students to test the material they are learning.

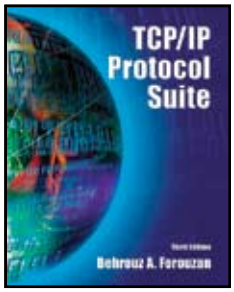
FEATURES

- Hundreds of figures are used to visually illustrate concepts, making technical material easier to understand.
- Usuable programs, so students can do hands on activities.
- Up-to-date coverage of all of the latest networking technologies.
- Extensive practice sets at the end of each chapter help students reinforce what they have learned and give them an opportunity to work through some more challenging exercises.
- Student-friendly approach moves math to the ends of chapters for an easier explanation of concepts.
- An accompanying website provides both PowerPoints and solutions.

PRELIMINARY CONTENTS

Cryptography and Network Security / Part I: Introduction / 1 Introduction / Part II: Number Theory / 2 Modular Arithmetic, Divisibility, and Inverses / 3 Prime Numbers and Factorization / 4 Number Sets and Algebraic Constructs / 5 Equations in Modular Arithmetic / Part III: Cryptography / 6 Traditional Symmetric-Key Ciphers / 7 Modern Ciphers / 8 Modern Symmetric-Key Block Ciphers / 9 Public-Key Cryptosystem: Part I / 10 Public-Key Cryptosystem: Part II / Part IV: Network Security / 11 Message Integrity and Authentication / 12 Hash Algorithms / 13 Digital Signature / 14 Entity Authentication / 15 Key Management / Part V: Internet Security / 16 Security at Network Layer: IPSec / 17 Security at Transport Layer: SSL and TLS / 18 Security at Application Layer: PGP

TCP/IP Protocol Suite, 3E



Behrouz A. Forouzan
De Anza College

2006 / Hardcover / 896 pgs / ISBN 0-07-296772-2

This website contains: four-color PowerPoint slides and solutions-odds for students and a complete password protected set for instructors. (Browse http://www.mhhe.com/forouzan)

Networking technologies have become an integral part of everyday life, which has led to a dramatic increase in the number of professions where it is important to understand network technologies.

TCP/IP Protocol Suite teaches students and professionals, with no prior knowledge of TCP/IP, everything they need to know about the subject. This comprehensive book uses hundreds of figures to make technical concepts easy to grasp, as well as many examples, which help tie the material to the real-world.

The second edition of *TCP/IP Protocol Suite* has been fully updated to include all of the recent technology changes in the field. Many new chapters have been added such as one on Mobile IP, Multimedia and Internet, Network Security, and IP over ATM. Additionally, out-of-date material has been overhauled to reflect recent changes in technology.

NEW TO THIS EDITION

- Security coverage was been augmented and revised to reflect the latest issues in security.
- New chapter on SCTP, which covers Internet Telephony, an technology that is changing the world.
- More hands-on and real-life examples, using utilities such as *ping*, *grep*, *netstat* were added to appropriate chapters.
- Research activities have been added to the end of each chapter to provide challenging problems for students.
- Website found at www.mhhe.com/forouzan contains PowerPoints, solutions, student quizzing and more.
- The third edition includes enhanced coverage of classless addressing (Chapter 4, 5, 6).
- *TCP/IP Protocol Suite* teaches students and professionals, with no prior knowledge of TCP/IP, everything they need to know about the subject

FEATURES

- Hundreds of excellent figures, enhanced with a second color, present technical concepts in a visual and intuitive manner.
- Extensive Practice Sets in each chapter include exercises and reasearch activities, giving students and professors ample opportunity to check understanding of concepts.
- Summary sections at the end of chapters list major concepts learned in the chapter.

CONTENTS

1 Introduction / 2 The OSI Model and the TCP/IP Protocol Suite / 3 Underlying Technologies / 4 IP Addresses: Classful Addressing / 5 IP Addresses: Classless Addressing / 6 Delivery, Forwarding, and Routing of IP Packets / 7 ARP and RARP / 8 Internet Protocol (IP) / 9 Internet Control Message Protocol (ICMP) / 10 Internet Group Management Protocol (IGMP) / 11 User Datagram Protocol (UDP) / 12 Transmission Control Protocol (TCP) / 13 Stream Control Transmission Protocol (SCTP) / 14 Unicast Routing Protocols (RIP, OSPF, and BGP) / 15 Multicasting and Multicast Routing Protocols / 16 Host Configuration: BOOTP and DHCP / 17 Domain Name System (DNS) / 18 Remote Login: TELNET / 19 File Transfer: FTP and TFTP / 20 Electronic Mail: SMTP, POP, and IMAP / 21 Network Management: SNMP / 22 World Wide Web: HTTP / 23 IP over ATM / 24 Mobile IP / 25 Multimedia / 26 Private Networks, Virtual Private Networks, and Network Address Translation / 27 Next Generation: IPv6 and ICMPv6 / 28 Network Security / Appendices / A: ASCII Code / B: Numbering Systems / C: Checksum / D: Error Detection / E: Project 802 / F: Contact Addresses / G: RFCs / H: UDP and TCP Ports

PARALLEL COMPUTING/PROCESSING

Parallel Programming in C with MPI and OpenMP

Michael J. Quinn
Oregon State University

2004 / Hardcover / 544 pgs / ISBN 0-07-282256-2

The book website contains a downloadable version of the solutions manual (password protected for instructor use only). It also has lecture slides for each chapter that contain outlines of the material covered in the chapters. (Browse http://highered.mcgraw-hill.com/sites/0072822562)

The era of practical parallel programming has arrived, marked by the popularity of the MPI and OpenMP software standards and the emergence of commodity clusters as the hardware platform of choice for an increasing number of organizations. This exciting new book, *Parallel Programming in C with MPI and OpenMP* addresses the needs of students and professionals who want to learn how to design, analyze, implement, and benchmark parallel programs in C using MPI and/or OpenMP. It introduces a rock-solid design methodology with coverage of the most important MPI functions and OpenMP directives. It also demonstrates, through a wide range of examples, how to develop parallel programs that will execute efficiently on today's parallel platforms.

If you are an instructor who has adopted the book and would like access to the additional resources, please contact your local sales rep. or Michelle Flomenhoft at: michelle_flomenhoft@mcgraw-hill.com.

FEATURES

- A five-chapter, tutorial introduction to the MPI library. A carefully crafted series of example programs in Chapters 4, 5, 6, 8, and 9 gradually introduces 27 key MPI functions. Collective communication functions are presented before point-to-point message passing, making it easier for inexperienced parallel programmers to write correct parallel code.

- A tutorial introduction to OpenMP. A progressively more complicated series of code segments, functions, and programs allows each OpenMP directive or function to be introduced ?just in time? to meet a need.
- Introduction to hybrid parallel programming using both MPI and OpenMP. This is often the most effective way to program clusters constructed out of symmetrical multiprocessors.
- An emphasis on design, analysis, implementation, and benchmarking. Chapter 3 introduces a rigorous parallel algorithm design process, which is used throughout the rest of the book to develop parallel algorithms for a wide variety of applications. The book repeatedly demonstrates how benchmarking a sequential program and carefully analyzing a parallel design can lead to accurate predictions of the performance of a parallel program.
- An exceptional chapter on performance analysis. The book takes a single, generic speedup formula and derives from it Amdahl's Law, Gustafson-Barsis's Law, the Karp-Flatt metric, and the isoefficiency metric. Readers will learn the purpose of each formula and how they relate to each other.
- Parallel algorithms for a wide variety of applications. The book considers parallel implementations of Floyd's algorithm, matrix-vector multiplication, matrix multiplication, Gaussian elimination, the conjugate gradient method, finite difference methods, sorting, the fast Fourier transform, backtrack search, branch-and-bound, and more.
- Thorough treatment of Monte Carlo algorithms. A full chapter on this often-neglected topic introduces problems associated with parallel random number generation and introduces random walks, simulated annealing, the Metropolis algorithm, and much more.
- A complete set of solutions and lecture slides, password-protected for instructor use only, are available through the book's listing at http://www.mhhe.com/quinn.

CONTENTS

1 Motivation and History / 2 Parallel Architectures / 3 Parallel Algorithm Design / 4 Message-Passing Programming / 5 The Sieve of Eratosthenes / 6 Floyd's Algorithm / 7 Performance Analysis / 8 Matrix-Vector Multiplication / 9 Document Classification / 10 Monte Carlo Methods / 11 Matrix Multiplication / 12 Solving Linear Systems / 13 Finite Difference Methods / 14 Sorting / 15 The Fast Fourier Transform / 16 Combinatorial Search / 17 Shared-memory Programming / 18 Combining MPI and OpenMP / Appendices / A: MPI Functions / B: Utility Functions / C: Debugging MPI Programs / D: Review of Complex Numbers / E: OpenMP Functions

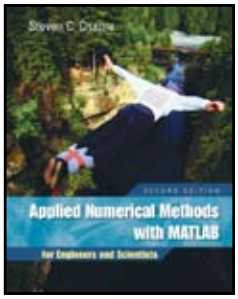
NUMERICAL ANALYSIS/SCIENTIFIC COMPUTING

Applied Numerical Methods with MATLAB® for Engineers and Scientists, 2E

Steven C. Chapra, Tufts University

2008 / Hardcover / 544 pgs / ISBN 0-07-313290-X

The web site features student and instructor resources such as an image bank, lecture slides, helpful web links, study objectives, and more! (Browse http://www.mhhe.com/chapra)



New Edition

Steven Chapra's new second edition, *Applied Numerical Methods with MATLAB® for Engineers and Scientists*, is written for engineers and scientists who want to learn numerical problem solving. This text focuses on problem-solving (applications) rather than theory, using MATLAB®, and is intended for Numerical Methods users; hence theory is included only to inform key concepts. The new second edition feature new material such as Numerical Differentiation and ODE's: Boundary-Value Problems.

NEW TO THIS EDITION

- Based on response from users and reviewers, 4 New Chapters have been added to the second edition to provide a more accessible presentation, while maintaining its student-friendly flavor.
  - ~Optimization
  - ~Numerical Differentiation
  - ~ODES: Boundary-Value Problems
  - ~Fast Fourier Transform. This appendix chapter is presented in an introductory fashion to illustrate the power of MATLAB® and to let students go away recognizing that although they have just scratched the surface, they might want to pursue the topic in greater depth in future courses.
- 50% new or revised chapter and homework problems

FEATURES

- Explanations are straight-forward and practically oriented. The math level is considered, just to be at the right level—not too easy or rigorous, just right.
- Extensive use of engineering examples, case studies, and applications are given throughout the text.
- Each chapter is well integrated with MATLAB® M-files. In addition, relevant MATLAB® functions are introduced in each chapter.
- MATLAB® is used as the primary computing environment. All algorithms are presented as m-files.
- A text Web site is available at http://www.mhhe.com/chapra

CONTENTS

Part One Modeling, Computers, and Error Analysis / 1 Mathematical Modeling Numerical Methods and Problem Solving / 2 MATLAB® Fundamentals / 3 Programming with MATLAB® / 4 Roundoff and Trunication Errors / Part Two Roots and Optimization / 5 Roots: Bracketing Methods / 6 Roots: Open Methods / 7 Optimization / Part Three Linear Systems / 8 Linear Algebraic Equations and Matrices / 9 Gauss Elimination / 10 LU Factorization / 11 Matrix Inverse and Condition / 12 Iterative Methods / Part Four Curve Fitting / 13 Linear Regression / 14 General Linear Least-Squares and Non-Linear Regression / 15 Polynomial Interpolation / 16 Splines and Piecewise Interpolation / Part Five Integration and Differentiation / 17 Numerical Integration Formulas / 18 Numerical Integration of Functions / 19 Numerical Differentiation / Part Six Ordinary Differential Equations / 20 Initial-Value Problems / 21 Adaptive Methods and Stiff Systems / 22 Boundary-Value Problems / Appendices / A: Eigenvalues Appendix / B: MATLAB® Built-in Functions / C: MATLAB® M-File Functions / Bibliography / Index

Numerical Methods for Engineers, 5E

Steven C. Chapra
Tufts University
Raymond P. Canale
Emeritus University of Michigan

2006 / Hardcover / 960 pgs / ISBN 0-07-310156-7

Browse http://www.mhhe.com/chapra

The fifth edition of *Numerical Methods for Engineers* continues its tradition of excellence. Instructors love this text because it is a comprehensive text that is easy to teach from. Students love it because it is written for them—with great pedagogy and clear explanations and examples throughout. The text features a broad array of applications, including all engineering disciplines.

The revision retains the successful pedagogy of the prior editions. Chapra and Canale's unique approach opens each part of the text with sections called Motivation, Mathematical Background, and Orientation, preparing the student for what is to come in a motivating and engaging manner. Each part closes with an Epilogue containing sections called Trade-Offs, Important Relationships and Formulas, and Advanced Methods and Additional References. Much more than a summary, the Epilogue deepens understanding of what has been learned and provides a peek into more advanced methods. Users will find use of software packages, specifically MATLAB and Excel with VBA. This includes material on developing MATLAB m-files and VBA macros.

Approximately 80% of the problems are new or revised for this edition. The expanded breadth of engineering disciplines covered is especially evident in the problems, which now cover such areas as biotechnology and biomedical engineering.

NEW TO THIS EDITION

- Approximately 80% of the problems are new or revised for this edition.
- Users will have access to an Online Learning Center which will house PPT slides of all text figures, M-Files, general textbook information and more!
- Available to instructors only, the detailed solutions for all text problems will be delivered via CD-ROM, in our new, Complete Online Solutions Manual Organization System (COSMOS).

FEATURES

- Challenging problems drawn from all engineering disciplines are included in the text.
- Chapra is know for his clear explanations and elegantly rendered examples.
- The text includes a helpful appendix chapter, Getting Started with MATLAB.

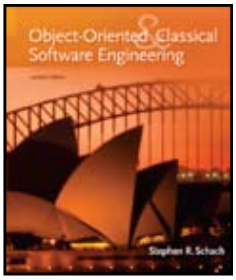
CONTENTS

Part 1 Modeling, Computers, and Error Analysis / 1 Mathematical Modeling and Engineering Problem Solving / 2 Programming and Software / 3 Approximations and Round-Off Errors / 4 Truncation Errors and the Taylor Series / Part 2 Roots of Equations / 5 Bracketing Methods / 6 Open Methods / 7 Roots of Polynomials / 8 Case Studies: Roots of Equations / Part 3 Linear Algebraic Equations / 9 Gauss Elimination / 10 LU Decomposition and Matrix Inversion /

11 Special Matrices and Gauss-Seidel / 12 Case Studies: Linear Algebraic Equations / Part 4 Optimization / 13 One-Dimensional Unconstrained Optimization / 14 Multidimensional Unconstrained Optimization / 15 Constrained Optimization / 16 Case Studies: Optimization / Part 5 Curve Fitting / 17 Least-Squares Regression / 18 Interpolation / 19 Fourier Approximation / 20 Case Studies: Curve Fitting / Part 6 Numerical Differentiation and Integration / 21 Newton-Cotes Integration Formulas / 22 Integration of Equations / 23 Numerical Differentiation / 24 Case Studies: Numerical Integration and Differentiation / Part 7 Ordinary Differential Equations / 25 Runge-Kutta Methods / 26 Stiffness and Multistep Methods / 27 Boundary-Value and Eigenvalue Problems / 28 Case Studies: Ordinary Differential Equations / Part 8 Partial Differential Equations / 29 Finite Difference: Elliptic Equations / 30 Finite Difference: Parabolic Equations / 31 Finite-Element Method / 32 Case Studies: Partial Differential Equations / Appendices / A: The Fourier Series / B: Getting Started with Matlab / Bibliography / Index

SOFTWARE ENGINEERING

Object-Oriented and Classical Software Engineering, 7E



New Edition

Stephen R. Schach
Vanderbilt University-Nashville

2007 / Hardcover / 608 pgs / ISBN 0-07-319126-4

PowerPoints, Solutions, Self-Quizzes, and Source Code for Case Study and Term Project (Browse http://www.mhhe.com/schach)

Classical and Object-Oriented Software Engineering, 7/e is designed for an introductory software engineering course. This book provides an excellent introduction to software engineering fundamentals, covering both traditional and object-oriented techniques.

Schach's unique organization and style makes it excellent for use in a classroom setting. Agile processes have been considerably expanded Open-Source Software has been considerably expanded The Osbert Oglesby running case study has been replaced with a new case study that highlights even more aspects of the Unified Process. 30% more problems in the new 7/e

NEW TO THIS EDITION

- Expanded material on agile processes
- New Case Study—Martha Stockton Greengage Foundation Case Study Name.
- Updated and expanded material on Open-Source software
- 30% new problems
- Many new references have been added to Schach's extensive collection of over 600 references that help students access relevant reading in the field.

FEATURES

- This book is accompanied by a website that contains PowerPoints, solutions, and C++ and Java code for the Term Project and Case Studies.

CONTENTS

Part I Introduction to Software Engineering / 1 The Scope of Software Engineering / 2 Software Life-Cycle Models / 3 The Software Process / 4 Teams / 5 The Tools of the Trade / 6 Testing / 7 From Modules to Objects / 8 Reusability and Portability / 9 Planning and Estimating / Part II The Workflows of the Software Life Cycle / 10 Requirements / 11 Classical Analysis / 12 Object-Oriented Analysis / 13 Design / 14 Implementation / 15 Postdelivery Maintenance / 16 More on UML / Appendices / A: Term Project: Ophelia's Oasis in the Amlet Desert / B: Software Engineering Resources / C: Requirements Workflow: The Osbert Oglesby Case Study / D: Structured Systems Analysis: The Osbert Oglesby Case Study / E: Analysis Workflow: The Osbert Oglesby Case Study / F: Software Project Management Plan: The Osbert Oglesby Case Study Plan / G: Design Workflow: The Osbert Oglesby Case Study / H: Implementation Workflow: The Osbert Oglesby Case Study (C++ Version) / I: Implementation Workflow: The Osbert Oglesby Case Study (Java Version) / J: Test Workflow: The Osbert Oglesby Case Study

SOFTWARE ENGINEERING: A Practitioner's Approach, 6E

Roger S. Pressman
R.S. Pressman & Associates

2005 / Hardcover / 912 pages / ISBN 0-07-301933-X

Browse http://www.mhhe.com/pressman

For over 20 years, *Software Engineering: A Practitioner's Approach* has been the best selling guide to software engineering for students and industry professionals alike.

The sixth edition continues to lead the way in software engineering. A new Part 4 on Web Engineering presents a complete engineering approach for the analysis, design, and testing of Web Applications, increasingly important for today's students. Additionally, the UML coverage has been enhanced and signficantly increased in this new edition.

The pedagogy has also been improved in the new edition to include sidebars. They provide information on relevant softare tools, specific work flow for specific kinds of projects, and additional information on various topics. Additionally, Pressman provides a running case study called "Safe Home" throughout the book, which provides the application of software engineering to an industry project.

New additions to the book also include chapters on the Agile Process Models, Requirements Engineering, and Design Engineering. The book has been completely updated and contains hundreds of new references to software tools that address all important topics in the book.

The ancillary material for the book includes an expansion of the case study, which illustrates it with UML diagrams. The On-Line Learning Center includes resources for both instructors and students such as checklists, 700 categorized web references, Powerpoints, a test bank, and a software engineering library-containing over 500 software engineering papers. TAKEAWY HERE IS THE FOLLOWING: 1. AGILE PROCESS METHODS ARE COVERED EARLY IN CH. 4 2. NEW PART ON WEB APPLICATIONS—5 CHAPTERS

NEW TO THIS EDITION

- Five new chapters on Web Engineering (Part 3) present methods for formulation, planning, analysis, design and testing of Web applications.
- The new modular organization allows instructors to use the book in a variety of different course formats. Options include a "design course," a "survey course," "management course," and a "web engineering course."
- The SafeHome case study has been enhanced and extended to illustrate important topics and to allow the student to better understand the inner workings of a project team as software is engineered and built.
- New sidebars are used extensively to present complimentary software engineering topics, suggest relevant tools, and define workflow for various technical and management activities.
- A new chapter on design engineering emphasizes important design concepts and principles and lays the foundation for the four design chapter that follow.
- The coverage on UML(Unified Modeling Language)has been significantly enhanced for the sixth edition.
- A new chapter on agile development considers Extreme Programming and other agile methods.
- A new chapter on requirements engineering that emphasizes technique that emphasizes techniques for requirements inception, elicitation, elaboration, negotiation, specification, validation, and management.
- Object-oriented design has been integrated throughout the text in this edition.

FEATURES

- The book is geared toward both the practitioner and the student, giving it added value for sudents even after they graduate.
- A robust On-line Learning Center accompanies this book and provides: PowerPoints, testbank, reference library (over 500) software engineering papers, study guides, and over 700 web references.
- Comprehensive and up-to-date coverage of all important Software Engineering topics.
- Customize this book through Primis Online! This title is part of the Primis Online Database: www.mhhe.com/primis/online

CONTENTS
1 Software and Software Engineering / Part One The Software Process / 2 Process: A Generic View / 3 Prescriptive Process Models / 4 Agile Development / Part Two Software Engineering Practice / 5 Practice: A Generic View / 6 System Engineering / 7 Requirements Engineering / 8 Analysis Modeling / 9 Design Engineering / 10 Architectural Design / 11 Component-Level Design / 12 User Interface Design / 13 Software Testing Strategies / 14 Software Testing Techniques / 15 Product Metrics for Software / Part Three Applying Web Engineering / 16 Web Engineering / 17 Formulation and Planning / 18 Analysis Modeling for Web Applications / 19 Design Modeling for Web Applications / 20 Testing Web Applications / Part Four Managing Software Projects / 21 Project Management Concepts / 22 Process and Project Metrics / 23 Estimation for Software Projects / 24 Software Project Scheduling / 25 Risk Management / 26 Quality Management / 27 Change Management / Part Five Advanced Topics in Software Engineering / 28 Formal Methods / 29 Cleanroom Software Engineering / 30 Component-Based Software Engineering / 31 Reengineering / 32 The Road Ahead

Object-Oriented Technology from Diagram to Code with Visual Paradigm for UML

Curtis HK Tsang

2005 / Softcover / 456 pgs / ISBN 0-07-321450-7

FEATURES

* This text covers theoretical and practical aspects of object-oriented technology using an award-winning CASE tool.
* The coverage of the entire development life cycle System Analysis and Design to Implementation is particularly comprehensive. The use of an easy-to-use CASE tool (Visual Paradigm for UML) conveniently and effectively demonstrates these concepts.
* This text proposes a novel technique for modeling and analysis, called the Activity Analysis Approach, which helps developers to build robust software efficiently. This technique has been applied to develop the Visual Paradigm CASE tool.
* Together with tricks and tips that have been gained by the authors from field experiences, the key chapters in the book provide practical modeling and analysis techniques.
* The book comes with the free Community Edition of the Visual Paradigm for UML, and award winning CASE tool.

CONTENTS
1 Introduction / 2 Structural Modeling and Analysis / 3 Use Case Modeling and Analysis / 4 Dynamic Modeling and Analysis / 5 Implementing UML Specification / 6 View Alignment Techniques and Method Customization / 7 A Case Study: Applying the Activity Analysis Approach / Appendices / A: Getting Started with VP-UML / B: Basic UML Concepts / C: Implementation of the Lift Control system in Chapter 5

Object-Oriented Software Engineering, 2E

Timothy Lethbridge
Robert Laganiere

2004 / Softcover / 528 pgs / ISBN 0-07-322034-5

NEW TO THIS EDITION

* New sections on model-driven development and architectures and middleware
* Integrates discussion of agile approaches, and techniques made popular by those approaches including refactoring and test-driven development.
* Wide variety of examples and exercises throughout
* Features nine contemporary themes in software engineering, such as understanding the user, iterative and agile modeling, and risk management.

PRELIMINARY CONTENTS
Contents / Foreword / Preface / Acknowledgements / 1 Software and software engineering / 2 Review of object orientation / 3 Basing software development on reusable technology / 4 Developing Requirements / 5 Modeling with classes / 6 Using design patterns / 7 Focusing on users and their tasks / 8 Modeling interactions and behaviors / 9 Architecting and designing software / 10 Testing and inspecting to ensure high quality / 11 Managing the software process / 12 Review / Appendices / A: Summary of the ULM notation used in this book / B: Summary of the documentation types recommended in this book / C: System descriptions / Glossary / Index

C/CS1

INTRODUCTION TO COMPUTING SYSTEMS: From Bits & Gates to Programming & Beyond, 3E

Yale N. Patt
University of Texas at Austin
Sanjay J. Patel
University of Illinois-Champaign

2007 / Hardcover / 640 pgs / ISBN 0-07-299465-7

An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board. (Browse http://www.mhhe.com/patt3)

NEW TO THIS EDITION

- **NEW! Privilege:** Based on market feedback, the coverage of privilege will be augmented in this edition.
- **NEW! Computer Organization Topics:** Optional, supplemental material on topics such as virtual memory, cache and pipelining will be provided at the book's website.
- **NEW! C++:** Optional, supplemental material highlighting key features for the usage of the C++ language will also be provided at the book's website.

FEATURES

- **Bottom-Up Organization:** For Patt and Patel, the bottom level abstraction is the switch level representation of a MOS transistor. From there, they quickly move to logic gates, latches, logic structures (MUX, decoder, full adder, and gated latches), finally culminating in an implementation of memory. Then the book moves on to finite state control, its implementation as a sequential circuit, the von Neumann model of execution, a simple computer (the LC-3), machine language programming and assembly language programming of the LC-3, the high level language C, recursion, and finally elementary data structures.
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- **Website:** An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board.

PRELIMINARY CONTENTS
1 Welcome Aboard / 2 Bits, Data Types, and Operations / 3 Digital Logic Structures / 4 The Von Neumann Model / 5 The LC-3 / 6 Programming / 7 Assembly Language / 8 I/O / 9 TRAP Routines and Subroutines / 10 And, Finally...The Stack / 11 Introduction to Programming in C / 12 Variables and Operators / 13 Control Structures / 14 Functions / 15 Testing and Debugging / 16 Pointers and Arrays / 17 Recursion / 18 I/O in C / 19 Data Structures / Appendices / A: The LC-3 ISA / B: From LC-3 to x86 / C: The Microarchitecture of the LC-3 / D: The C Programming Language / E: Useful Tables / :F Selected Solutions (available at website)

C++/CS1

Programming In C++: Lessons and Applications

Tim B. D'Orazio
San Francisco State University

2004 / Softcover / 976 pgs / ISBN 0-07-242412-5

This site contains solutions, PowerPoint slides, links, and more. (Browse http://mhhe.com/dorazio)

D'Orazio's *Programming in C++: Lessons and Applications* provides an accessible introduction to programming in C++. It teaches the C++ language and object-oriented design to students with no previous programming experience. The focus is on developing programs for solving a variety of problems. Each chapter of the book is divided into two parts—Lessons and Applications. The Lessons teach C++ language elements and simple programming techniques, and the Applications teach program design. A step-by-step methodology for program development is presented early in the text and reinforced throughout with the help of the application examples and over thirty case studies.

FEATURES

- More than 30 case studies. These application examples illustrate how to solve problems from many fields of practice.
- Multi-level approach to get students involved in reading and understanding source code. Each lesson uses a number of techniques (code annotations, questions, topic lists, and exercises) to get students engaged in the code.
- Early introduction to debugging. At the end of Chapter 2, students are presented with a methodology for finding bugs and developing their first programs.
- Detailed description of tracing and debugging loops. A method for developing and checking the reliability of both simple and complex loops is included in several chapters.
- Numerous figures. Figures are generously used to illustrate many of the difficult C++ concepts.
- Step-by-step methodology for program development. Each of the application examples illustrates a structured approach to developing programs.
- Simple, straightforward introduction to the C++ standard template library. The purpose of this coverage is to give students the ability to use the standard template library as soon as possible. The terminology is not intimidating so students can quickly use the basic parts of the library.
- Numerical method examples. The application examples include illustrations of some fundamental numerical methods and how to code them.
- Modification exercises. These exercises are good for courses with a two- or three-hour lab. Students can prepare for the lab by reading a particular Application Example. If they have done this, many of these exercises can be done in a two- or three-hour timeframe.
- Introduction to UML. Students are presented with a description of the basics of the UML and are shown how to convert some UML diagrams into C++ code.

CONTENTS

1 Computers and Computing Fundamentals / 2 Getting Started—Program Structure, Screen Output, and Comments / 3 Variables and Arithmetic Operations / 4 Basic Input/Output / 5 Decision Making / 6 Iteration / 7 Functions / 8 Introduction to Classes and Objects / 9 One-Dimensional Numeric Arrays / 10 Multidimensional Numeric Arrays / 11 Pointer Variables / 12 Character Arrays / 13 The C++ String Class / 14 More About Classes, Objects, and Object-Oriented Design / 15 Inheritance and Polymorphism / 16 Data Structures and Recursion / 17 Templates and the C++ Standard Template Library / 18 Miscellaneous Topics

JAVA/CS1

A Comprehensive Introduction to Object-Oriented Programming with Java

New!

C. Thomas Wu (Otani)
Naval Postgraduate School

2008 / Softcover / 256 pgs / ISBN 0-07-331708-X

Browse http://www.mhhe.com/wu

An Introduction to Object-Oriented Programming with Java provides an accessible and technically thorough introduction to the basics of programming using java. The text takes a truly object-oriented approach. Objects are used early so that students think in objects right from the beginning.

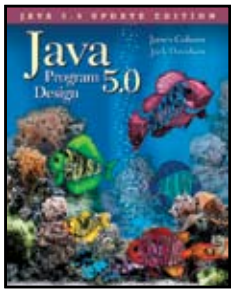
FEATURES

- The Comprehensive Edition of Wu includes chapters on Memory Allocation Schemes and Linked Data Structures, Generics, Lists, Queues, and Stacks.
- New Java 5.0 features are incorporated into the text including two new classes, the Scanner Class for input and the Formatter class. Revisions for the Comprehensive edition include introducing the Scanner Class at the outset rather than starting students off with JOption Pane as Wu did in the 4th edition.
- The fundamentals of incremental program design are emphasized by taking students through large Sample Development Programs that reinforce software engineering principles. CONSISTENT PROBLEM SOLVING APPROACH AT THE END OF EVERY CHAPTER FOLLOWS:
  - — Problem Statement
  - — Overall Plan
  - — Design
  - — Code
  - — Test.
- Wu presents concepts visually. His diagrams representing objects and classes make these concepts easier for students to understand. WU HAS MORE DIAGRAMS THAN ANY OTHER TEXT.
- The accompanying ARIS site contains solutions for instructors, Anitmated PowerPoint Slides, Labs, Source Code, an Example Bank, Compiler HowTos and more.
- A Testbank is available to instructors, with questions that can be assigned as exam questions or homework.

PRELIMINARY CONTENTS

Introduction to Computers and Programming Languages / 1 Introduction to Object-Oriented Programming and Software Development / 2 Getting Started with Java / 3 Numerical Data / 4 Defining Your Own Classes—Part 1 / 5 Selection Statements / 6 Repetition Statements / 7 Defining Your Own Classes—Part 2 / 8 Exceptions and Assertions / 9 Characters and Strings / 10 Arrays / 11 Sorting and Searching / 12 File Input and Output / 13 Inheritance and Polymorphism / 14 GUI and Event-Driven Programming / 15 Recursion / 16 Memory Allocation Schemes and Linked Data Structures / 17 Generics / 18 List ADT / 19 Queue ADT / 20 Stack ADT

Java 5.0 Program Design



James P. Cohoon
University Of Virginia-Charlottesville
Jack W. Davidson
University Of Virginia-Charlottesville

2006 / Softcover / 920 pgs / ISBN 0-07-325030-9

This site includes solutions, powerpoints, labs, source code, and more. (Browse http://www.mhhe.com/cohoon)

Java 5.0 Program Design is about the fundamentals of programming and software development using Java. It is targeted for a first programming course and has been designed to be appropriate for people from all disciplines. The authors assume no prior programming skills and use mathematics and science at a level appropriate to first-year college students. The breadth of coverage and the arrangement of the chapters provide flexibility for the instructor in what and when topics are introduced.

Key to *Java 5.0 Program Design* is an introduction to problem solving. The basics of problem-solving techniques are introduced in chapter one and then reinforced during the explanations of Java programming and design. In addition, software engineering design concepts are introduced via problem studies and software projects.

This updated version of *Java Program Design* takes advantage of the improvements to the language introduced with Java 5.0. The additions are especially important for beginning programmers because they help make program design and development a clearer and more straightforward process.

Key Handles:
- Good Problem Solving Techniques
- Wide Variety of Examples
- Placement of Objects first—Aids students in Problem Solving
- 5.0 update is included in this revision

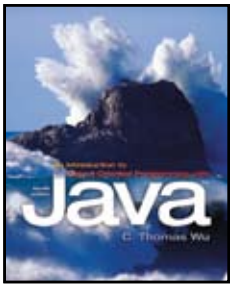
FEATURES

- Java is given broad coverage. The authors provide in-depth coverage of all materials that an introductory course would need, introduce much of the remaining material, and give pointers to the rest.
- Introduction to problem solving. The basics of problem-solving techniques are presented in chapter one, and each successive chapter contains a self-check section, an exercise section offering a variety of problems requiring a wide array of efforts, and one or more interesting case studies presented in a manner that makes it suitable as a class assignment.
- Classes are introduced early. Chapter one includes a gentle introduction to the object-oriented paradigm, and the next several chapters introduce standard Java classes and packages, and a limited number of objects. After this solid introduction, over 50 classes are demonstrated in the remaining chapters.
- Software-engineering design concepts are introduced via problem studies and software projects.
- Coverage of testing and debugging. Students learn various testing techniques (such as unit testing, integration testing, and code inspections), and sections on debugging teach students how to use the scientific method to find bugs.
- Programming and style tips are presented in boxes that clearly delineate this material from the main text. There are important tips on such things as avoiding common programming errors, writing readable code, performance, and software engineering.

CONTENTS

1 Background / 2 Java Basics / 3 Using Objects / 4 Being Classy / 5 Decisions / 6 Iteration / Graphics Interlude 1: GUI-Based Programming / 7 Programming with Methods and Classes / 8 Arrays and Collections / 9 Inheritance and Polymorphism / Graphics Interlude 2: GUI-Based Programming / 10 Exceptions / 11 Recursive Problem Solving / 12 Threads / 13 Testing and Debugging / Appendices / A: Tables and Operators / B: Number Representation / C: Formatted I/O / D: Applets / E: Standard Java Packages

An Introduction to Object-Oriented Programming with Java, 4E



C. Thomas Wu (Otani)
Naval Postgraduate School

2006 / Softcover / 976 pgs / ISBN 0-07-294652-0

Browse http://www.mhhe.com/wu

An Introduction to Object-Oriented Programming with Java provides an accessible and technically thorough introduction to the basics of programming using java. The fourth edition continues to take a truly object-oriented approach. Objects are used early so that students think in objects right from the beginning.

In the fourth edition, the coverage on defining classes has been made more accessible. The material has been broken down into smaller chunks and spread over two chapters, making it more student-friendly.

Also, new to this edition is the incorporation of Java 5.0 features, including use of the Scanner Class and the Formatter Class.

The hallmark feature of the book, Sample Development Programs, are continued in this edition. These provide students with an opportunity to incrementally, step by step, walk through program design, learning the fundamentals of software engineering.

Object diagrams, using a subset of UML, also continue to be an important element of Wu's approach. The consistent, visual approach assists students in understanding concepts.

Handles:
- Consistent Problem solving approach at the end of each chapter, that follows:
  - Problem Statement
  - Overall Plan
  - Design
  - Code
  - Test
- Diagrams—SHOW Problem Solving
- Placement of Objects first—Aids students in Problem Solving
- 5.0 update is included in this revision
- With the 5.0 Revision is the incorporation of two new classes.
  1. The Scanner Class
  2. Formatter Class Pedagogy:
     - Tools to Problem Solve
     - Design Guidelines
     - Helpful Reminders
     - Take My Advice Boxes
     - You Might Want to Know Boxes
     - Quick Check Exercises

NEW TO THIS EDITION

- New Java 5.0 features are incorporated into the text including two new classes, the Scanner Class for input and the Formatter class.
- The fourth edition contains many new examples geared toward being student-motivating and accessible.
- A Testbank is available to instructors, with questions that can be assigned as exam questions or homework.

FEATURES

- Objects are emphasized from the start, training students to think about programming in an object-oriented way.
- THINK OBJECTS EARLY
- The fundamentals of incremental program design are emphasized by taking students through large Sample Development Programs that reinforce software engineering principles.
- Wu presents concepts visually. His diagrams representing objects and classes make these concepts easier for students to understand.
- WU HAS MORE DIAGRAMS THAN ANY OTHER TEXT. POINT OUT THE FOLLOWING, TO SHOW HOW WU'S DIAGRAMS ARE UNIQUE:
  - Page 22 Cafeteria Objects
  - Page 393 Parameter Passing
  - Page 172 Examples of two objects pointing to the same object
- An Online Learning Center (OLC) containing solutions for instructors, PowerPoint Slides, Labs, Source Code, an Example Bank, Compiler HowTos and more is available with this book at www.mhhe.com/wu.
- Small complete programs are used the book throughout to provide students with small and digestible examples, making material easier to comprehend.

CONTENTS

Introduction to Computers and Programming Languages / 1 Introduction to Object-Oriented Programming and Software Development / 2 Getting Started with Java / 3 Numerical Data / 4 Defining Your Own Classes—Part 1 / 5 Selection Statements / 6 Repetition Statements / 7 Defining Your Own Classes—Part 2 / 8 Exceptions and Assertions / 9 Characters and Strings / 10 Arrays / 11 Sorting and Searching / 12 File Input and Output / 13 Inheritance and Polymorphism / 14 GUI and Event-Driven Programming / 15 Recursive Algorithms

JAVA DATA STRUCTURES/CSII

Data Structures and the Java Collections Framework, 2E

William Collins
Lafayette College

2005 / Hardcover / 784 pages / ISBN 0-07-302265-9

PowerPoints, Labs, Solutions (Browse http://www.mhhe.com/collins)

Data Structures and the Java Collections Framework, 2/e by William Collins teaches the fundamentals of data structures using java. This student-friendly book focuses on teaching students how to apply the concepts presented. To that end many applications and examples are included throughout the book. Collins also provides programming projects at the end of each chapter, which get students hands on with code.

In the second edition, Collins has increased his coverage on teaching students to build data structures from scratch. He also continues to use the Java Collections Framework where appropriate. His goal is give students an excellent background in creating data structures themselves, as well as make them comfortable using the standard library.

On-line Labs accompany this book and make it easy to have students start practice what they are learning. These labs can be used as open-labs, closed labs, or homework assignments and are designed to give students hands-on experience in programming.

Key Handles:
- Teaches the fundamentals of data structures using JAVA
- Applications and examples are included throughout the text
- New!! On-Line labs make it easy for the students to apply what they are learning
- Emphasis is on building structures from scratch Increased coverage on teaching students to build data structures from scratch
- Goal of text is to give students background in creating data structures themselves and then making them comfortable using the standard library

NEW TO THIS EDITION

- This text is extremely student-friendly. Throughout the book, there are examples, hints, notes, and marginal notes to help students navigate through the concepts. Collins also motivates by providing many applications throughout.
- Collins uses the Java Collections Framework, as well as presenting other implementations. This allows students to get comfortable using an industry standard java library, which they will be able to use even after they finish the course.
- An extensive suite of accompanying labs can be found at www.mhhe.com/collins. Labs allow students to get hands-on with material they are learning. Icons in the book let readers know when they are prepared to complete the next lab.
- The new edition has given added emphasis to buidling data structures from scratch.
- Programming projects at the end of chapters give students an opportunity for hands on learning that reinforces concepts.
- More extensive java review has been added in the first two chapters of the book, preparing students to study data structures.
- Incorporates Java 2 Standard Edition, Version 1.5, making use of the newest features of the java language including generics, boxing and unboxing and the enhanced for statement.
- UML (Unified Modeling Language) and javadoc notation are introduced in Chapter 1 and utilized throughout the text-over 30 UML diagrams are included.
- Includes generics-now part of the Java Collections Framework.

CONTENTS

1 Object-Oriented Concepts / 2 Additional Features of Java / 3 Analysis of Algorithms / 4 The Java Collections Framework / 5 Recursion / 6 Array-Based Lists / 7 Linked Lists / 8 Queues and Stacks / 9 Binary Trees / 10 Binary Search Trees / 11 Sorting / 12 Tree Maps and Tree Sets / 13 Priority Queues / 14 Hashing / 15 Graphs, Trees, and Networks / Appendices / 1 Java Review / 2 Mathematical Background / 3 Additional Features of the Java Collections Framework

COMPUTER ARCHITECTURE

INTRODUCTION TO COMPUTING SYSTEMS: From Bits & Gates to Programming & Beyond, 3E

Yale N. Patt
University of Texas at Austin
Sanjay J. Patel
University of Illinois-Champaign

2007 / Hardcover / 640 pgs / ISBN 0-07-299465-7

An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board. (Browse http://www.mhhe.com/patt3)

NEW TO THIS EDITION

- **NEW! Privilege:** Based on market feedback, the coverage of privilege will be augmented in this edition.
- **NEW! Computer Organization Topics:** Optional, supplemental material on topics such as virtual memory, cache and pipelining will be provided at the book's website.
- **NEW! C++:** Optional, supplemental material highlighting key features for the usage of the C++ language will also be provided at the book's website.

FEATURES

- **Bottom-Up Organization:** For Patt and Patel, the bottom level abstraction is the switch level representation of a MOS transistor. From there, they quickly move to logic gates, latches, logic structures (MUX, decoder, full adder, and gated latches), finally culminating in an implementation of memory. Then the book moves on to finite state control, its implementation as a sequential circuit, the von Neumann model of execution, a simple computer (the LC-3), machine language programming and assembly language programming of the LC-3, the high level language C, recursion, and finally elementary data structures.
- **Debugging:** Because students are taught debugging techniques from the first program they write and are required to use the LC-3 Simulator's debugging tools from the start, they are better able to master the art of programming and can complete their programming assignments with a lot less help from the TA.
- **The LC-3 Simulator:** Central to the student's learning is hands-on access to the LC-3 Simulator, which has been created specifically to aid the student's mastery of the concepts. (Students can download the LC-3 Simulator from the book's website at no cost).
- **Programming Methodology:** Students are provided with numerous meaningful, simple examples on how to take a problem and transform it into a computer program via systematic decomposition. Students are exposed to the fundamental similarities in programming, whether it be in the LC-3 or in C, which provides the student with the useful ability to quickly understand other programming languages.
- **Website:** An expanded website for the text, www.mhhe.com/patt3, includes for instructors: the complete Solutions Manual, Source Code of the examples, JPEGs of all of the figures, and Test Questions for Efficient Grading. For instructors and students, the site has: the LC-3 Simulator (Windows and UNIX versions), lab manuals for both versions of the LC-3, PowerPoint presentations created by instructors using the book in their course, selected solutions (Appendix F), Appendices A, D & E (for easy reference) and a Message Board.

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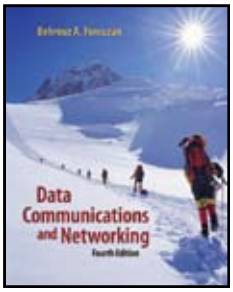
COMMUNICATION NETWORKS

Data Communications Networking, 4E



Behrouz A. Forouzan
De Anza College

2007 / Hardcover / 1,168 pages / 0-07-325032-5

Browse http://www.mhhe.com/forouzan

NEW TO THIS EDITION

- Visual approach is supported with hundreds of figures and animations on the text website
- Strong in-text pedagogy is designed for the beginning student and includes numerous figures, highlighted points, examples and real life applications, key terms, chapter summaries, practice sets and an extensive glossary and list of acronyms.
- Text uses a bottom-up approach where students learn about data communications before learning about networking. This approach allows instructors to cover the material in one course, rather than having separate courses on data communications and networking.
- An On-line Learning Center is available to provide extra material to both students and instructors. Some features of the on-line learning center include: PowerPoint Slides, Solutions, and Animated Figures from the text and solutions of odd-numbered problems for students. (even-numbered solutions for instructor are password protected)
- Added coverage of TCP/IP

FEATURES

- Text lets students learn about data communications before learning about networking.
- More than 700 figures provide complete, visual presentation of the material. Figures replace the need for students to rely on complex formulas.
- An On-line Learning Center is available to provide extra material to both students and instructors. Some features of the on-line learning center include: PowerPoint Slides, Solutions, and Animated Figures.
- The practice set includes and extensive number of review questions, multiple choice questions, and extended exercises.
- Strong in-text pedagogy is designed for the beginning student and includes numerous figures, highlighted points, examples and real-life applications, key terms, chapter summaries, practice sets and an extensive glossary and list of acronyms.
- Using a bottom-up approach, students learn about data communications (lower layers) before learning about networking (upper layers). This approach allows instructors cover the material in one course, rather than having separate courses on data communications and networking.
- Summaries at the end of each chapter emphasize the key points.
- Many examples have been developed in each chapter to demonstrate the concepts.

CONTENTS

Part 1 Overview of Data Communications and Networking / 1 Introduction / 2 Network Models / Part 2 Physical Layer / 3 Signals / 4 Digital Transmission / 5 Analog Transmission / 6 Multiplexing / 7 Transmission Media / 8 Circuit Switching and Telephone Network / 9 High-Speed Digital Access: DSL, Cable Modems, and SONET / Part 3 Data Link Layer / 10 Error Detection and Correction / 11 Data Link Control and Protocols / 12 Point-to-Point Access: PPP / 13 Multiple Access / 14 Local Area Networks: Ethernet / 15 Wireless LANs / 16 Connecting LANs, Backbone Networks, and Virtual LANs / 17 Cellular Telephone and Satellite Networks / 18 Virtual Circuit Switching: Frame Relay and ATM / Part 4 Network Layer / 19 Host-to-Host Delivery: Internetworking, Addressing, and Routing / 20 Network Layer Protocols: ARP, IPv4, ICMP, IPv6, and ICMPv6 / 21 Unicast and Multicast Routing: Routing Protocols / Part 5 Transport Layer / 22 Process-to-Process Delivery: UDP and TCP / 23 Congestion Control and Quality of Service / Part 6 Application Layer / 24 Client-Server Model: Socket Interface / 25 Domain Name System (DNS) / 26 Electronic Mail (SMTP) and File Transfer (FTP) / 27 HTTP and WWW / 28 Multimedia / Part 7 Security / 29 Cryptography / 30 Message Security, User Authentication, and Key Management / 31 Security Protocols in the Internet / Appendices / A: ASCII Code / B: Numbering Systems and Transformation / C: The OSI Model / D: 8B/6T Code / E: Checksum Calculation / F: Structure of a Router / G: ATM LANs / H: Client-Server Programs / I: RFCs / J: UDP and TCP Ports / K: Contact Addresses

Communication Networks, 2E

Alberto Leon-Garcia
University of Toronto
Indra Widjaja

2004 / Hardcover / 928 pgs / ISBN 0-07-246352-X

This website will contain: Solutions Manual for selected problems, Power Point Slides, figures & lecture notes. (Browse http://www.mhhe.com/leongarcia2)

This book is designed for introductory one-semester or one-year courses in communications networks in upper-level undergraduate programs. The second half of the book can be used in more advanced courses. As pre-requisites the book assumes a general knowledge of computer systems and programming, and elementary calculus. The second edition expands on the success of the first edition by updating on technological changes in networks and responding to comprehensive market feedback.

NEW TO THIS EDITION

- The introduction in Chapter 1 has been simplified by reducing the number of concepts introduced in the discussion of network evolution.
- The introduction of the notion of layering has been improved by elaborating on the interaction between the application layer and transport layer protocols and by simplifying the discussion of the OSI reference model.
- The material in the text has been rearranged so that optional sections can be skipped without a disruption in the topic flow. The sections that contain optional material are still indicated by a diamond in the heading. The optional sections that contain detailed mathematics are now indicated by a sidebar.
- The discussion of PCM speech coding has been moved from Chapter 12 to Chapter 3.
- Chapter 4 provides more detail on SONET and optical transport networks. Satellite cellular networks has been dropped.
- Chapter 5 now consists of two parts to separate the initial focus of the first part, peer-to-peer protocols, from the focus of the second part, data link layer protocols. There is now a new separate section on framing techniques.
- Chapter 6 has also been divided into a section on medium access control in general (Part 1), and the application of medium access controls in LANs (Part 2). We have attempted to concentrate the detailed mathematical discussion of medium access control to the last section in the chapter.
- In Chapter 7 we have streamlined the discussion of packet networks, and we have clearly separated the more advanced discussion of traffic management mechanisms.
- The main change in Chapter 8 is the extensive use of packet capture examples to illustrate the operation of TCP/IP protocols.
- The chapter on advanced network architectures has been revised extensively. The discussion of ATM over IP has been replaced by a discussion of the overlay and peer models to network interconnection. The chapter now contains discussion on virtual networks, and GMPLS. The material on RTP and SIP has been moved from Chapter 12 to this chapter.
- Chapter 11 has been updated with brief discussions of the Advanced Encryption Standard and of 802.11 security.
- **Numerous figures.** Network diagrams, time diagrams, performance graphs, state transition diagrams are essential to effectively convey concepts in networking.
- Numerous Examples. The discussion of fundamental concepts is accompanied with examples illustrating the use of the concept in practice. Numerical examples are included in the text wherever possible.
- **Text Boxes.** Commentaries in text boxes are used to discuss network trends and interesting developments, to speculate about future developments, and to motivate new topics.
- **Problems.** The authors firmly believe that learning must involve problem solving. Each chapter includes problems with a range of difficulties from simple application of concepts to exploring, developing or elaborating various concepts and issues. Quantitative problems range from simple calculations to brief case studies exploring various aspects of certain algorithms, techniques or networks. Simple programming exercises involving sockets and TCP/IP utilities are included where appropriate.
- An Instructor's Solutions Manual is available from the McGraw-Hill web site.
- **Chapter Introductions.** Each chapter includes an introduction previewing the material covered in the chapter and in the context of the ?big picture.?
- **Chapter Summaries and Checklist of Important Terms.** Each chapter includes a summary that reiterates the most important concepts. A checklist of important terms will aid the student in reviewing the material.

- **References.** Each chapter includes a list of references. Given the introductory nature of the text, references concentrate on pointing to more advanced materials. Reference to appropriate Internet Engineering Taskforce (IETF) RFCs and research papers is made where appropriate, especially with more recent topics.
- **A web site.** The following Web site contains links to the online version of the solutions manual, the Powerpoint slides, author information, and other related information: www.mhhe.com/leon-garcia.
- The figures in the book are based on a set of MS PowerPoint course presentations that depend heavily on visual representation of concepts. A set of these presentation charts, some of which use animation, have been prepared and are available to instructors.

FEATURES

- The Big Picture is presented first in chapter one and two with a discussion of network-based applications and services such as the WWW, email, and home video entertainment. The essential functions in the operation of a network are discussed, and examples are given hat motivate the notion of layering, and the OSI Reference model.
- Network performance is introduced as an integral part of network design and operation. Quantitative examples are used to show the tradeoffs involved in various situations.
- The Berkeley API sockets are introduced in an optional section in Chapter 2 and socket programming exercises are included.
  Telnet-based exercises to demonstrate the operation of various TCP/IP protocols are also included.
- Many figures, network graphs, time diagrams, performance curves, etc. are found throughout the text. These diagrams are essential to effectively convey concepts in networking. A set of PowerPoint presentations, upon which the book's figures are based, is available to adopters of the text via the web site for the book.

CONTENTS

1 Communication Networks and Services / 2 Layered Architectures / 3 Digital Transmission Fundamentals / 4 Circuit-Switching Networks / 5 Peer-to-Peer Protocols and Data Link Layer / 6 Medium Access Control Protocols and Local Area Networks / 7 Packet-Switching Networks / 8 TCP/IP / 9 ATM Networks / 10 Advanced Network Architectures / 11 Security Protocols / 12 Multimedia Information and Networking / Appendices / A: Delay and Loss Performance / B: Network Management

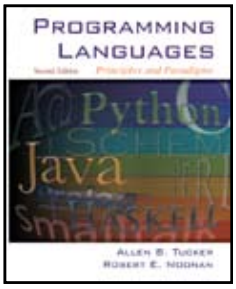
PROGRAMMING LANGUAGES

PROGRAMMING LANGUAGES: Principles and Paradigms, 2E

Allen B. Tucker
Bowdoin College
Robert Noonan
College of William and Mary

2007 / Hardcover / 624 pgs / ISBN 0-07-286609-8

Browse http://www.mhhe.com/tucker2e



New Edition

Most current programming language text that provides a balanced mix of explanation and experimentation. Opening chapters present the fundamental principals of programming languages, while optional companion chapters provide implementation-based, hands-on experience that delves even deeper. This edition also includes a greatly expanded treatment of the four major programming paradigms, incorporating a number of the most current languages such as Perl and Python. Special topics presented include event-handling, concurrency, and an all-new chapter on correctness. Overall, this edition provides both broad and deep coverage of language design principles and the major paradigms, allowing users the flexibility of choosing what topics to emphasize.

NEW TO THIS EDITION

- Depth of coverage & currency: in-depth coverage of core topics includes both modern and historical example languages, including C, Ada, Perl, Java, Smalltalk, Python, Scheme, Haskell, and Prolog
- The authors' approach offers unique coverage of event-handling, concurrent programming and program correctness, with special chapters on each of these topics.
- The authors' emphasize a hands-on approach for implementation-based problems and exercises and include expanded coverage of language design principles and trade-offs.
- Introduces Clite (C Lite), a subset of the language C, as a basis for illustrating the principles of language design.

FEATURES

Flexibile organization and coverage gives instructors the option of adding implementation-based coverage to the principles chapters via optional companion chapters.

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1 Overview / 2 Syntax / 3 Lexical and Syntactic Analysis / 4 Names / 5 Types / 6 Type Systems / 7 Semantics / Semantic Interpretation / 9 Functions / 10 Function Implementation / 11 Memory Management / 12 Imperative Programming / 13 Object-Oriented Programming / 14 Functional Programming / 15 Logic Programming / 16 Event-Driven Programming / 17 Concurrent Programming / 18 Program Correctness / A. Definition of Clite / B. Discrete Math Review / Glossary / Bibliography

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