Common Lisp A Gentle Introduction To Symbolic Computation

Teaching users new and more powerful ways of thinking about programs, this two-in-one text contains a tutorial--full of examples--that explains all the essential concepts of Lisp programming, plus an up-to-date summary of ANSI Common Lisp. Informative and fun, it gives users everything they need to start writing programs in Lisp and highlights innovative Lisp features.
The authors introduce this new approach to programming language design, describe its evolution and design principles, and present a formal specification of a metaobject protocol for CLOS. The CLOS metaobject protocol is an elegant, high-performance extension to the CommonLisp Object System. The authors, who developed the metaobject protocol and who were among the group that developed CLOS, introduce this new approach to programming language design, describe its evolution and design principles, and present a formal specification of a metaobject protocol for CLOS. Kiczales, des Rivières, and Bobrow show that the "art of metaobject protocol design" lies in creating a synthetic combination of object-oriented and reflective techniques that can be applied under existing software engineering considerations to yield a new approach to programming language design that meets a broad set of design criteria. One of the major benefits of including the metaobject protocol in programming languages is that it allows users to adjust the language to better suit their needs. Metaobject protocols also disprove the adage that adding more flexibility to a programming language reduces its performance. In presenting the principles of metaobject protocols, the authors work with actual code for a simplified implementation of CLOS and its metaobject protocol, providing an opportunity for the reader to gain hands-on experience with the design process. They also include a number of exercises that address important concerns and open issues. Gregor Kiczales and Jim des Rivières, are Members of the Research Staff, and Daniel Bobrow is a Research Fellow, in the System Sciences Laboratory at Xerox Palo Alto Research Center.
Let Over Lambda is one of the most hardcore computer programming books out there. Starting with the fundamentals, it describes the most advanced features of the most advanced language: Common Lisp. Only the top percentile of programmers use lisp and if you can understand this book you are in the top percentile of lisp programmers. If you are looking for a dry coding manual that re-hashes common-sense techniques in whatever langue du jour, this book is not for you. This book is about pushing the boundaries of what we know about programming. While this book teaches useful skills that can help solve your programming problems today and now, it has also been designed to be entertaining and inspiring. If you have ever wondered what lisp or even programming itself is really about, this is the book you have been looking for.
The defacto standard - a must-have for all LISP programmers. In this greatly expanded edition of the defacto standard, you'll learn about the nearly 200 changes already made since original publication - and find out about gray areas likely to be revised later. Written by the Vice-Chairman of X3J13 (the ANSI committee responsible for the standardization of Common Lisp) and co-developer of the language itself, the new edition contains the entire text of the first edition plus six completely new chapters. They cover: - CLOS, the Common Lisp Object System, with new features to support function overloading and object-oriented programming, plus complete technical specifications * Loops, a powerful control structure for multiple variables * Conditions, a generalization of the error signaling mechanism * Series and generators * Plus other subjects not part of the ANSI standards but of interest to professional programmers. Throughout, you'll find fresh examples, additional clarifications, warnings, and tips - all presented with the author's customary vigor and wit.
In this book, Harley Hahn demystifies Emacs for programmers, students, and everyday users. The first part of the book carefully creates a context for your work with Emacs. What exactly is Emacs? How does it relate to your personal need to work quickly and to solve problems? Hahn then explains the technical details you need to understand to work with your operating system, the various interfaces, and your file system. In the second part of the book, Hahn provides an authoritative guide to the fundamentals of thinking and creating within the Emacs environment. You start by learning how to install and use Emacs with Linux, BSD-based Unix, Mac OS X, or Microsoft Windows. Written with Hahn's clear, comfortable, and engaging style, Harley Hahn's Emacs Field Guide will surprise you: an engaging book to enjoy now, a comprehensive reference to treasure for years to come. What You Will Learn Special Emacs keys Emacs commands Buffers and windows Cursor, point, and region Kill/delete, move/copy, correcting, spell checking, and filling Searching, including regular expressions Emacs major modes and minor modes Customizing using your .emacs file Built-in tools, including Dired Games and diversions Who This Book Is For Programmers, students, and everyday users, who want an engaging and authoritative introduction to the complex and powerful Emacs working environment.
Introduction: getting acquainted. Functions and data. Lists. EVAL notation. Conditionals. Global variables and side effects. List data structures. Applicative operators. Recursion. Elementary input/output. Iteration. Property lists. Recommended further reading. Dialects of Lisp. Extensions to Lisp. Index.
This book had its genesis in the following piece of computer mail: From allegra!joan-b Tue Dec 18 09:15:54 1984 To: sola!hjb Subject: lispm Hank, I've been talking with Mark Plotnik and Bill Gale about asking you to conduct a basic course on using the lisp machine. Mark, for instance, would really like to cover basics like the flavor system, etc., so he could start doing his own programming without a lot of trial and error, and Bill and I would be interested in this, too. I'm quite sure that Mark Jones, Bruce, Eric and Van would also be really interested. Would you like to do it? Bill has let me know that if you'd care to set something up, he's free to meet with us anytime this week or next (although I'll only be here on Wed. next week) so we can come up with a plan. What do you think? Joan.
Find solutions to problems and answers to questions you are likely to encounter when writing real-world applications in Common Lisp. This book covers areas as diverse as web programming, databases, graphical user interfaces, integration with other programming languages, multi-threading, and mobile devices as well as debugging techniques and optimization, to name just a few. Written by an author who has used Common Lisp in many successful commercial projects over more than a decade, Common Lisp Recipes is also the first Common Lisp book to tackle such advanced topics as environment access, logical pathnames, Gray streams, delivery of executables, pretty printing, setf expansions, or changing the syntax of Common Lisp. The book is organized around specific problems or questions each followed by ready-to-use example solutions and clear explanations of the concepts involved, plus pointers to alternatives and more information. Each recipe can be read independently of the others and thus the book will earn a special place on your bookshelf as a reference work you always want to have within reach. Common Lisp Recipes is aimed at programmers who are already familiar with Common Lisp to a certain extent but do not yet have the experience you typically only get from years of hacking in a specific computer language. It is written in a style that mixes hands-on no-frills pragmatism with precise information and prudent mentorship. If you feel attracted to Common Lisp's mix of breathtaking features and down-to-earth utilitarianism, you'll also like this book.
If you've ever wondered how to build your own programming language or wanted to learn C but weren't sure where to start, this is the book for you. In under 1000 lines of code you'll start building your very own programming language, and in doing so learn how to program in C, one of the world's most important programming languages. Along the way we'll

learn about the weird and wonderful nature of Lisps, the unique techniques behind function programming, the methods used to concisely solve problems, and the art of writing beautiful code. Build Your Own Lisp is a fun and creative journey through a fascinating area of computer science, and an essential read for any programmer, new or old!
Lisp has been hailed as the world’s most powerful programming language, but its cryptic syntax and academic reputation can be enough to scare off even experienced programmers. Those dark days are finally over—Land of Lisp brings the power of functional programming to the people! With his brilliantly quirky comics and out-of-this-world games, longtime Lisper Conrad Barski teaches you the mysteries of Common Lisp. You’ll start with the basics, like list manipulation, I/O, and recursion, then move on to more complex topics like macros, higher order programming, and domain-specific languages. Then, when your brain overheats, you can kick back with an action-packed comic book interlude! Along the way you’ll create (and play) games like Wizard Adventure, a text adventure with a whiskey-soaked twist, and Grand Theft Wumpus, the most violent version of Hunt the Wumpus the world has ever seen. You'll learn to: –Master the quirks of Lisp’s syntax and semantics –Write concise and elegant functional programs –Use macros, create domain-specific languages, and learn other advanced Lisp techniques –Create your own web server, and use it to play browser-based games –Put your Lisp skills to the test by writing brain-melting games like Dice of Doom and Orc Battle With Land of Lisp, the power of functional programming is yours to wield.
Most of the GNU Emacs integrated environment is written in the programming language called Emacs Lisp. The code written in this programming language is the software (the sets of instructions) that tell the computer what to do when you give it commands. Emacs is designed so that you can write new code in Emacs Lisp and easily install it as an extension to the editor. This introduction to Emacs Lisp is designed to get you started: to guide you in learning the fundamentals of programming, and more importantly, to show you how you can teach yourself to go further. This manual is available online for free at gnu.org. This manual is printed in grayscale.
The essential reference to SuperCollider, a powerful, flexible, open-source, cross-platform audio programming language. SuperCollider is one of the most important domain-specific audio programming languages, with potential applications that include real-time interaction, installations, electroacoustic pieces, generative music, and audiovisuals. The SuperCollider Book is the essential reference to this powerful and flexible language, offering students and professionals a collection of tutorials, essays, and projects. With contributions from top academics, artists, and technologists that cover topics at levels from the introductory to the specialized, it will be a valuable sourcebook both for beginners and for advanced users. SuperCollider, first developed by James McCartney, is an accessible blend of Smalltalk, C, and further ideas from a number of programming languages. Free, open-source, cross-platform, and with a diverse and supportive developer community, it is often the first programming language sound artists and computer musicians learn. The SuperCollider Book is the long-awaited guide to the design, syntax, and use of the SuperCollider language. The first chapters offer an introduction to the basics, including a friendly tutorial for absolute beginners, providing the reader with skills that can serve as a foundation for further learning. Later chapters cover more advanced topics and particular topics in computer music, including programming, sonification, spatialization, microsound, GUIs, machine listening, alternative tunings, and non-real-time synthesis; practical applications and philosophical insights from the composer's and artist's perspectives; and "under the hood," developer's-eye views of SuperCollider's inner workings. A Web site accompanying the book offers code, links to the application itself and its source code, and a variety of third-party extras, extensions, libraries, and examples.
Well-respected text for computer science students provides an accessible introduction to functional programming. Cogent examples illuminate the central ideas, and numerous exercises offer reinforcement. Includes solutions. 1989 edition.
Common LISPA Gentle Introduction to Symbolic ComputationCourier Corporation
Paradigms of AI Programming is the first text to teach advanced Common Lisp techniques in the context of building major AI systems. By reconstructing authentic, complex AI programs using state-of-the-art Common Lisp, the book teaches students and professionals how to build and debug robust practical programs, while demonstrating superior programming style and important AI concepts. The author strongly emphasizes the practical performance issues involved in writing real working programs of significant size. Chapters on troubleshooting and efficiency are included, along with a discussion of the fundamentals of object-oriented programming and a description of the main CLOS functions. This volume is an excellent text for a course on AI programming, a useful supplement for general AI courses and an indispensable reference for the professional programmer.
Highly accessible treatment covers cons cell structures, evaluation rules, programs as data, recursive and applicable programming styles. Nearly 400 illustrations, answers to exercises, "toolkit" sections, and a variety of complete programs. 1990 edition.
Written by a Lisp expert, this is the most comprehensive tutorial on the advanced features of Lisp for experienced programmers. It shows how to program in the bottom-up style that is ideal for Lisp programming, and includes a unique, practical collection of Lisp programming techniques that shows how to take advantage of the language's design for efficient programming in a wide variety of applications.
Artificial intelligence research has thrived in the years since this best-selling AI classic was first published. The revision encompasses these advances by adapting its coding to Common Lisp, the well-documented language standard, and by bringing together even more useful programming tools. Today's programmers in AI will find this volume's superior coverage of programming techniques and easily applicable style anything but common.
Learn Lisp programming in a data structures context, including tables, functions, forms, expressions, typed-pointers, I/O, garbage collection and some applications. This short primer contains a careful description of the data structures manipulated by Lisp functions. These data structures and others, notably hash tables, are also used in constructing a Lisp interpreter. Interpreting Lisp will be of special interest to those learning and using programming languages and computer architecture as well as data structures. This book will be useful to autodidacts, professional programmers, and computer enthusiasts in a wide variety of fields. What You'll Learn Use the atom table and the number table in Lisp Master expressions, typed pointers, arguments and results in typed pointers, and more Write lambda expressions in Lisp Bind actual values to formal arguments Develop games in Lisp Who This Book Is For Experienced programmers new to Lisp.
The notion that "thinking about computing is one of the most exciting things the human mind can do" sets both The Little Schemer (formerly known as The Little LISPer) and its new companion volume, The Seasoned Schemer, apart from other books on LISP. The authors'

enthusiasm for their subject is compelling as they present abstract concepts in a humorous and easy-to-grasp fashion. Together, these books will open new doors of thought to anyone who wants to find out what computing is really about. The Little Schemer introduces computing as an extension of arithmetic and algebra; things that everyone studies in grade school and high school. It introduces programs as recursive functions and briefly discusses the limits of what computers can do. The authors use the programming language Scheme, and interesting foods to illustrate these abstract ideas. The Seasoned Schemer informs the reader about additional dimensions of computing: functions as values, change of state, and exceptional cases. The Little LISPer has been a popular introduction to LISP for many years. It had appeared in French and Japanese. The Little Schemer and The Seasoned Schemer are worthy successors and will prove equally popular as textbooks for Scheme courses as well as companion texts for any complete introductory course in Computer Science.
After working through Building Problem Solvers, readers should have a deep understanding of pattern directed inference systems, constraint languages, and truth maintenance systems.
Computer-Aided Reasoning: ACL2 Case Studies illustrates how the computer-aided reasoning system ACL2 can be used in productive and innovative ways to design, build, and maintain hardware and software systems. Included here are technical papers written by twenty-one contributors that report on self-contained case studies, some of which are sanitized industrial projects. The papers deal with a wide variety of ideas, including floating-point arithmetic, microprocessor simulation, model checking, symbolic trajectory evaluation, compilation, proof checking, real analysis, and several others. Computer-Aided Reasoning: ACL2 Case Studies is meant for two audiences: those looking for innovative ways to design, build, and maintain hardware and software systems faster and more reliably, and those wishing to learn how to do this. The former audience includes project managers and students in survey-oriented courses. The latter audience includes students and professionals pursuing rigorous approaches to hardware and software engineering or formal methods. Computer-Aided Reasoning: ACL2 Case Studies can be used in graduate and upper-division undergraduate courses on Software Engineering, Formal Methods, Hardware Design, Theory of Computation, Artificial Intelligence, and Automated Reasoning. The book is divided into two parts. Part I begins with a discussion of the effort involved in using ACL2. It also contains a brief introduction to the ACL2 logic and its mechanization, which is intended to give the reader sufficient background to read the case studies. A more thorough, textbook introduction to ACL2 may be found in the companion book, Computer-Aided Reasoning: An Approach. The heart of the book is Part II, where the case studies are presented. The case studies contain exercises whose solutions are on the Web. In addition, the complete ACL2 scripts necessary to formalize the models and prove all the properties discussed are on the Web. For example, when we say that one of the case studies formalizes a floating-point multiplier and proves it correct, we mean that not only can you read an English description of the model and how it was proved correct, but you can obtain the entire formal content of the project and replay the proofs, if you wish, with your copy of ACL2. ACL2 may be obtained from its home page. The results reported in each case study, as ACL2 input scripts, as well as exercise solutions for both books, are available from this page.
This book makes use of the LISP programming language to provide readers with the necessary background to understand and use fuzzy logic to solve simple to medium-complexity real-world problems. It introduces the basics of LISP required to use a Fuzzy LISP programming toolbox, which was specifically implemented by the author to “teach” the theory behind fuzzy logic and at the same time equip readers to use their newly-acquired knowledge to build fuzzy models of increasing complexity. The book fills an important gap in the literature, providing readers with a practice-oriented reference guide to fuzzy logic that offers more complexity than popular books yet is more accessible than other mathematical treatises on the topic. As such, students in first-year university courses with a basic tertiary mathematical background and no previous experience with programming should be able to easily follow the content. The book is intended for students and professionals in the fields of computer science and engineering, as well as disciplines including astronomy, biology, medicine and earth sciences. Software developers may also benefit from this book, which is intended as both an introductory textbook and self-study reference guide to fuzzy logic and its applications. The complete set of functions that make up the Fuzzy LISP programming toolbox can be downloaded from a companion book’s website.
Thinking Recursively Eric S. Roberts Digital Equipment Corporation Recursion: The process of solving large problems by breaking them down into smaller, more simple problems that have identical forms. Thinking Recursively: A small text to solve large problems. Concentrating on the practical value of recursion. this text, the first of its kind, is essential to computer science students’ education. In this text, students will learn the concept and programming applications of recursive thinking. This will ultimately prepare students for advanced topics in computer science such as compiler construction, formal language theory, and the mathematical foundations of computer science. Key Features: Concentration on the practical value of recursion. Eleven chapters emphasizing recursion as a unified concept. Extensive discussion of the mathematical concepts which help the students to develop an appropriate conceptual model. Large number of imaginative examples with solutions. Large sets of exercises.
* Treats LISP as a language for commercial applications, not a language for academic AI concerns. This could be considered to be a secondary text for the Lisp course that most schools teach . This would appeal to students who sat through a LISP course in college without quite getting it – so a "nostalgia" approach, as in "wow-lisp can be practical..." * Discusses the Lisp programming model and environment. Contains an introduction to the language and gives a thorough overview of all of Common Lisp’s main features. * Designed for experienced programmers no matter what languages they may be coming from and written for a modern audience—programmers who are familiar with languages like Java, Python, and Perl. * Includes several examples of working code that actually does something useful like Web programming and database access.
ROS (Robot Operating System) is rapidly becoming a de facto standard for writing interoperable and reusable robot software. This book supplements ROS's own documentation, explaining how to interact with existing ROS systems and how to create new ROS programs using C++, with special attention to common mistakes and misunderstandings. The

intended audience includes new or potential ROS users.
Master algorithms programming using Lisp, including the most important data structures and algorithms. This book also covers the essential tools that help in the development of algorithmic code to give you all you need to enhance your code. Programming Algorithms in Lisp shows real-world engineering considerations and constraints that influence the programs that use these algorithms. It includes practical use cases of the applications of the algorithms to a variety of real-world problems. What You Will Learn Program algorithms using the Lisp programming language Work with data structures, arrays, key-values, hash-tables, trees, graphs, and more Use dynamic programming Program using strings Work with approximations and compression Who This Book Is For Intermediate Lisp programmers wanting to do algorithms programming. A very experienced non-Lisp programmer may be able to benefit from this book as well.
Discover the functioning and example uses of the Common Lisp condition system. This book supplements already existing material for studying Common Lisp as a language by providing detailed information about the Lisp condition system and its control flow mechanisms; it also describes an example ANSI-conformant implementation of the condition system. In part 1 of The Common Lisp Condition System, the author introduces the condition system using a bottom-up approach, constructing it piece by piece. He uses a storytelling approach to convey the foundation of the condition system, dynamically providing code to alter the behavior of an existing program. Later, in part 2, you'll implement a full and complete ANSI-conformant condition system while examining and testing each piece of code that you write. Throughout, the author demonstrates how to extend Lisp using Lisp itself by using the condition system as an example. This is done while paying proper attention to the CL restart subsystem, giving it attention on a par with the handler subsystem. After reading and using this book, you'll have learned about the inner functioning of the condition system, how to use it in your own Common Lisp coding and applications, and how to implement it from scratch, should such a need arise. What You Will Learn Examine the condition system and see why it is important in Common Lisp Construct the condition system from scratch using foundational mechanisms provided by Common Lisp Program the condition system and its control flow mechanisms to achieve practical results Implement all parts of a condition system: conditions, restarts, handler- and restart-binding macros, signalling mechanisms, assertions, a debugger, and more Who This Book Is For Beginning and intermediate Lisp programmers, as well as intermediate programmers of other programming languages.
Written for the professional statistician or graduate statistics student, the primary objective of this book is to describe a system, based on the LISP language, for statistical computing and dynamic graphics to show how it can be used as an effective platform for a wide range of statistical computing tasks ranging from basic calculations to customizing dynamic graphs. In addition, it introduces object-oriented programming and graphics programming in a statistical context. The discussion of these ideas is based on the Lisp-Stat system; readers with access to such a system can reproduce the examples presented and use them as a basis for further experimentation and study.
This is a comprehensive account of the semantics and the implementation of the whole Lisp family of languages, namely Lisp, Scheme and related dialects. It describes 11 interpreters and 2 compilers, including very recent techniques of interpretation and compilation. The book is in two parts. The first starts from a simple evaluation function and enriches it with multiple name spaces, continuations and side-effects with commented variants, while at the same time the language used to define these features is reduced to a simple lambda-calculus. Denotational semantics is then naturally introduced. The second part focuses more on implementation techniques and discusses precompilation for fast interpretation: threaded code or bytecode; compilation towards C. Some extensions are also described such as dynamic evaluation, reflection, macros and objects. This will become the new standard reference for people wanting to know more about the Lisp family of languages: how they work, how they are implemented, what their variants are and why such variants exist. The full code is supplied (and also available over the Net). A large bibliography is given as well as a considerable number of exercises. Thus it may also be used by students to accompany second courses on Lisp or Scheme.
[The book] provides a balanced survey of the fundamentals of artificial intelligence, emphasizing the relationship between symbolic and numeric processing. The text is structured around an innovative, interactive combination of LISP programming and AI; it uses the constructs of the programming language to help readers understand the array of artificial intelligence concepts presented. After an overview of the field of artificial intelligence, the text presents the fundamentals of LISP, explaining the language's features in more detail than any other AI text. Common Lisp is then used consistently, in both programming exercises and plentiful examples of actual AI code.- Back cover This text is intended to provide an introduction to both AI and LISp for those having a background in computer science and mathematics. -Pref.