

## Practical Clojure

A book that brings out the strengths of Clojure programming that have to facilitate machine learning. Each topic is described in substantial detail, and examples and libraries in Clojure are also demonstrated. This book is intended for Clojure developers who want to explore the area of machine learning. Basic understanding of the Clojure programming language is required, but thorough acquaintance with the standard Clojure library or any libraries are not required. Familiarity with theoretical concepts and notation of mathematics and statistics would be an added advantage.

ClojureScript is a pragmatic functional programming language for building web applications. Whether you are an experienced JavaScript developer or a brand-new programmer, this book is your guide to creating impressive web apps in the simple and elegant ClojureScript language. The tutorial-style lessons are easy to follow at your own pace, and the practical capstone projects will reinforce what you have learned. By the end of the book, you will have created: - A weather forecast widget - A personal contact manager - A text-based adventure game - A group chat app - And more! If you're an experienced programmer who has not worked with Clojure before, this guide is the perfect thorough but gentle introduction for you. Author Carin Meier not only provides a practical overview of this JVM language and its functional programming concepts, but also includes a complete hands-on training course to help you learn Clojure in a structured way. The first half of the book takes you through Clojure's unique design and lets you try your hand at two Clojure projects, including a web app. The holistic course in second half provides you with critical tools and resources, including ways to plug into the Clojure community. Understand the basic structure of a Clojure expression Learn how to shape and control code in a functional way Discover how Clojure handles real-world state and concurrency Take advantage of Java classes and learn how Clojure handles polymorphism Manage and use libraries in a Clojure project Use the core.async library for asynchronous and concurrent communication Explore the power of macros in Clojure programming Learn how to think in Clojure by following the book's seven-week training course

This book is the first definitive reference for the Clojure language, providing both an introduction to functional programming in general and a more specific introduction to Clojure's features. This book demonstrates the use of the language through examples, including features such as software transactional memory (STM) and immutability, which may be new to programmers coming from other languages. Overview of functional programming and description of what sets Clojure apart from other languages Detailed explanation of Clojure's special features Examples of real-world tasks that are well-suited to Clojure's capabilities, starting with simple tasks and moving on to more complex applications The common patterns and practices of the microservice architecture and their application using the Clojure programming language. Key Features Relevance of the microservice architecture and benefits of Clojure's functional and simple features to implement it. Learn best practices and common principles to avoid common pitfalls while developing microservices. Learn how to use Pedestal to build your next microservices, secure them using JWT, and monitor them using the ELK stack Book Description The microservice architecture is sweeping the world as the de facto pattern with which to design and build scalable, easy-to-maintain web applications. This book will teach you common patterns and practices, and will show you how to apply these using the Clojure programming language. This book will teach you the fundamental concepts of architectural design and RESTful communication, and show you patterns that provide manageable code that is supportable in development and at scale in production. We will provide you with examples of how to put these concepts and patterns into practice with Clojure. This book will explain and illustrate, with practical examples, how teams of all sizes can start solving problems with microservices. You will learn the importance of writing code that is asynchronous and non-blocking and how Pedestal helps us do this. Later, the book explains how to build Reactive microservices in Clojure that adhere to the principles underlying the Reactive Manifesto. We finish off by showing you various ways to monitor, test, and secure your microservices. By the end, you will be fully capable of setting up, modifying, and deploying a microservice with Clojure and Pedestal. What you will learn Explore the pros and cons of monolithic and microservice architectures Use Clojure to effectively build a real-life application using Microservices Gain practical knowledge of the Clojure Pedestal framework and how to use it to build Microservices Explore various persistence patterns and learn how to use Apache Kafka to build event-driven microservice architectures Secure your Microservices using JWT Monitor Microservices at scale using the ELK stack Deploy Microservices at scale using container orchestration platforms such as Kubernetes Who this book is for You should have a working knowledge of programming in Clojure. However, no knowledge of RESTful architecture, microservices, or web services is expected. If you are looking to apply techniques to your own projects, taking your first steps into microservice architecture, this book is for you.

Behind every programming language lies a vision of how programs should be built. The vision behind Clojure is of a radically simple language framework holding together a sophisticated collection of programming features. Learning Clojure involves much more than just learning the mechanics of the language. To really get Clojure you need to understand the ideas underlying this structure of framework and features. You need this book: an accessible introduction to Clojure that focuses on the ideas behind the language as well as the practical details of writing code. Clojure attracts developers on the cutting edge and is arguably the best language for learning to program in the functional style without compromise. But this comes with a steep learning curve. Getting Clojure directly addresses this by teaching you how to think functionally as it teaches you the language. You'll learn about Clojure's powerful data structures and high-level functions, but you'll also learn what it means for a language to be functional, and how to think in Clojure's functional way. Each chapter of Getting Clojure takes a feature or two or three from the language, explains the syntax and the mechanics behind that feature so that you can make it work before digging into the deeper questions: What is the thinking behind the feature? And how does it fit in with the rest of the language? In Getting Clojure you'll learn Clojure's very simple syntax,

but you'll also learn why that syntax is integral the way the language is constructed. You'll discover that most data structures in Clojure are immutable, but also why that leads to more reliable programs. And you'll see how easy it is to write Clojure functions and also how you can use those functions to build complex and capable systems. With real-world examples of how working Clojure programmers use the language, Getting Clojure will help you see the challenges of programming through the eye of experienced Clojure developers. What You Need: You will need to some background in programming. To follow along with the examples in the book, you will need Java 6 or new, Clojure 1.8 or 1.9, and Leiningen 2.

Learn how to build complete client-side applications with ClojureScript, the Clojure language variant that compiles to optimized JavaScript. This hands-on introduction shows you how ClojureScript not only has similarities to JavaScript—without the flaws—but also supports the full semantics of its parent language. You'll delve into ClojureScript's immutable data structures, lazy sequences, first-class functions, macros, and support for JavaScript libraries. No previous experience with Clojure or ClojureScript is necessary. If you're familiar with JavaScript, HTML, CSS, and the DOM, you'll quickly discover that ClojureScript has the same reach as JavaScript, but with more power. Start writing ClojureScript code with the Leiningen build system Learn how the ClojureScript compiler works to produce optimized JavaScript Use JavaScript functions and libraries directly from ClojureScript code Explore functions in Clojure's sequence library such as map, reduce, and filter Use macros to define new control structures or embed domain-specific languages Compile manually or script your own workflow with ClojureScript's compiler tools Integrate ClojureScript with Clojure on the JVM to build powerful client-server applications

Summary The Well-Grounded Java Developer offers a fresh and practical look at new Java 7 features, new JVM languages, and the array of supporting technologies you need for the next generation of Java-based software. About the Book The Well-Grounded Java Developer starts with thorough coverage of Java 7 features like try-with-resources and NIO.2. You'll then explore a cross-section of emerging JVM-based languages, including Groovy, Scala, and Clojure. You will find clear examples that are practical and that help you dig into dozens of valuable development techniques showcasing modern approaches to the dev process, concurrency, performance, and much more. Written for readers familiar with Java. No experience with Java 7 or new JVM languages required. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book. What's Inside New Java 7 features Tutorials on Groovy, Scala, and Clojure Discovering multicore processing and concurrency Functional programming with new JVM languages Modern approaches to testing, build, and CI Table of Contents PART 1 DEVELOPING WITH JAVA 7 Introducing Java 7 New I/O PART 2 VITAL TECHNIQUES Dependency Injection Modern concurrency Class files and bytecode Understanding performance tuning PART 3 POLYGLOT PROGRAMMING ON THE JVM Alternative JVM languages Groovy: Java's dynamic friend Scala: powerful and concise Clojure: safer programming PART 4 CRAFTING THE POLYGLOT PROJECT Test-driven development Build and continuous integration Rapid web development Staying well-grounded

There is an easier way to build Hadoop applications. With this hands-on book, you'll learn how to use Cascading, the open source abstraction framework for Hadoop that lets you easily create and manage powerful enterprise-grade data processing applications—without having to learn the intricacies of MapReduce. Working with sample apps based on Java and other JVM languages, you'll quickly learn Cascading's streamlined approach to data processing, data filtering, and workflow optimization. This book demonstrates how this framework can help your business extract meaningful information from large amounts of distributed data. Start working on Cascading example projects right away Model and analyze unstructured data in any format, from any source Build and test applications with familiar constructs and reusable components Work with the Scalding and Cascalog Domain-Specific Languages Easily deploy applications to Hadoop, regardless of cluster location or data size Build workflows that integrate several big data frameworks and processes Explore common use cases for Cascading, including features and tools that support them Examine a case study that uses a dataset from the Open Data Initiative

Clear, practical Clojure for the professional programmer Professional Clojure is the experienced developer's guide to functional programming using the Clojure language. Designed specifically to meet the needs of professional developers, this book briefly introduces functional programming before skipping directly to the heart of using Clojure in a real-world setting. The discussion details the read—eval—print workflow that enables fast feedback loops, then dives into enterprise-level Clojure development with expert guidance on web services, testing, datomics, performance, and more. Read from beginning to end, this book serves as a clear, direct guide to Clojure programming—but the comprehensive coverage and detail makes it extraordinarily useful as a quick reference for mid-project snags. The author team includes four professional Clojure developers, ensuring professional-level instruction from a highly practical perspective. Clojure is an open-source programming language maintained and supported by Cognitect., and quickly gaining use across industries at companies like Amazon, Walmart, Facebook, Netflix, and more. This guide provides a concise, yet thorough resource for professional developers needing to quickly put Clojure to work. Parse the difference between functional and object-oriented programming Understand Clojure performance and capabilities Develop reactive web pages using ClojureScript Adopt an REPL-driven development workflow Clojure is a modern dialect of Lisp, designed for concurrency and Java compatibility. It can be used with the Java virtual machine, Microsoft's Common Language Runtime, and JavaScript engines, providing a level of both versatility and functionality that is appealing to more and more enterprise-level developers. As requirements grow increasingly complex, stepping away from imperative programming can dramatically streamline the development workflow. Professional Clojure provides the expert instruction that gets professionals up to speed and back to work quickly.

\* 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.

Annotation 'Professional Clojure' is the experienced developer's guide to functional programming using the Clojure language. Designed specifically to meet the needs of professional developers, it briefly introduces functional programming before skipping directly to the heart of using Clojure in a real-world setting.

Think in the Clojure way! Once you're familiar with Clojure, take the next step with extended lessons on the best practices and most critical decisions you'll need to make while developing. Learn how to model your domain with data, transform it with pure functions, manage state, spread your work across cores, and structure apps with components. Discover how to use Clojure in the real world, and unlock the speed and power of this beautiful language on the Java Virtual Machine. Clojure Applied gives you the practical, realistic advice and depth of field that's been missing from your development practice. You want to develop software in the most effective, efficient way possible. This book gives you the answers you've been looking for in friendly, clear language. Dive into the core concepts of Clojure: immutable collections, concurrency, pure functions, and state management. You'll finally get the complete picture you've been looking for, rather than dozens of puzzle pieces you must assemble yourself. First, explore the core concepts of Clojure development: learn how to model your domain with immutable data; choose the ideal collection; and write simple, pure functions for efficient transformation. Next you'll apply those core concepts to build applications: discover how Clojure manages state and identity; spread your work for concurrent programming; and create and assemble components. Finally, see how to manage external integration and deployment concerns by developing a testing strategy, connecting with other data sources, and getting your libraries and applications out the door. Go beyond the toy box and into Clojure's way of thinking. By the end of this book, you'll have the tools and information to put Clojure's strengths to work. What You Need: To follow along with the examples in the book, you will need Clojure 1.6, Leinegen 2, and Java 6 or higher.

"Clojure programming ... This functional programming language not only lets you take advantage of Java libraries, services, and other JVM resources, it rivals other dynamic languages such as Ruby and Python. With this comprehensive guide, you'll learn Clojure fundamentals with examples that relate it to languages you already know"--P. [4] of cover.

What others in the trenches say about The Pragmatic Programmer... "The cool thing about this book is that it's great for keeping the programming process fresh. The book helps you to continue to grow and clearly comes from people who have been there." —Kent Beck, author of Extreme Programming Explained: Embrace Change "I found this book to be a great mix of solid advice and wonderful analogies!" —Martin Fowler, author of Refactoring and UML Distilled "I would buy a copy, read it twice, then tell all my colleagues to run out and grab a copy. This is a book I would never loan because I would worry about it being lost." —Kevin Ruland, Management Science, MSG-Logistics "The wisdom and practical experience of the authors is obvious. The topics presented are relevant and useful.... By far its greatest strength for me has been the outstanding analogies—tracer bullets, broken windows, and the fabulous helicopter-based explanation of the need for orthogonality, especially in a crisis situation. I have little doubt that this book will eventually become an excellent source of useful information for journeymen programmers and expert mentors alike." —John Lakos, author of Large-Scale C++ Software Design "This is the sort of book I will buy a dozen copies of when it comes out so I can give it to my clients." —Eric Vought, Software Engineer "Most modern books on software development fail to cover the basics of what makes a great software developer, instead spending their time on syntax or technology where in reality the greatest leverage possible for any software team is in having talented developers who really know their craft well. An excellent book." —Pete McBreen, Independent Consultant "Since reading this book, I have implemented many of the practical suggestions and tips it contains. Across the board, they have saved my company time and money while helping me get my job done quicker! This should be a desktop reference for everyone who works with code for a living." —Jared Richardson, Senior Software Developer, iRenaissance, Inc. "I would like to see this issued to every new employee at my company...." —Chris Cleeland, Senior Software Engineer, Object Computing, Inc. "If I'm putting together a project, it's the authors of this book that I want. . . . And failing that I'd settle for people who've read their book." —Ward Cunningham Straight from the programming trenches, The Pragmatic Programmer cuts through the increasing specialization and technicalities of modern software development to examine the core process--taking a requirement and producing working, maintainable code that delights its users. It covers topics ranging from personal responsibility and career development to architectural techniques for keeping your code flexible and easy to adapt and reuse. Read this book, and you'll learn how to Fight software rot; Avoid the trap of duplicating knowledge; Write flexible, dynamic, and adaptable code; Avoid programming by coincidence; Bullet-proof your code with contracts, assertions, and exceptions; Capture real requirements; Test ruthlessly and effectively; Delight your users; Build teams of pragmatic programmers; and Make your developments more precise with automation. Written as a series of self-contained sections and filled with entertaining anecdotes, thoughtful examples, and interesting analogies, The Pragmatic Programmer illustrates the best practices and major pitfalls of many different aspects of software development. Whether you're a new coder, an experienced programmer, or a manager responsible for software projects, use these lessons daily, and you'll quickly see improvements in personal productivity, accuracy, and job satisfaction. You'll learn skills and develop habits and attitudes that form the foundation for long-term success in your career. You'll become a Pragmatic Programmer.

This book presents a selection of papers from the 2017 World Conference on Information Systems and Technologies

(WorldCIST'17), held between the 11st and 13th of April 2017 at Porto Santo Island, Madeira, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges involved in modern Information Systems and Technologies research, together with technological developments and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human-Computer Interaction; Ethics, Computers & Security; Health Informatics; Information Technologies in Education; and Information Technologies in Radiocommunications.

If you are a Clojure developer who is interested in using Reactive Programming to build asynchronous and concurrent applications, this book is for you. Knowledge of Clojure and Leiningen is required. Basic understanding of ClojureScript will be helpful for the web chapters, although it is not strictly necessary.

Summary The Joy of Clojure, Second Edition is a deep look at the Clojure language. Fully updated for Clojure 1.6, this new edition goes beyond just syntax to show you the "why" of Clojure and how to write fluent Clojure code. You'll learn functional and declarative approaches to programming and will master the techniques that make Clojure so elegant and efficient. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology The Clojure programming language is a dialect of Lisp that runs on the Java Virtual Machine and JavaScript runtimes. It is a functional programming language that offers great performance, expressive power, and stability by design. It gives you built-in concurrency and the predictable precision of immutable and persistent data structures. And it's really, really fast. The instant you see long blocks of Java or Ruby dissolve into a few lines of Clojure, you'll know why the authors of this book call it a "joyful language." It's no wonder that enterprises like Staples are betting their infrastructure on Clojure. About the Book The Joy of Clojure, Second Edition is a deep account of the Clojure language. Fully updated for Clojure 1.6, this new edition goes beyond the syntax to show you how to write fluent Clojure code. You'll learn functional and declarative approaches to programming and will master techniques that make Clojure elegant and efficient. The book shows you how to solve hard problems related to concurrency, interoperability, and performance, and how great it can be to think in the Clojure way. Appropriate for readers with some experience using Clojure or common Lisp. What's Inside Build web apps using ClojureScript Master functional programming techniques Simplify concurrency Covers Clojure 1.6 About the Authors Michael Fogus and Chris Houser are contributors to the Clojure and ClojureScript programming languages and the authors of various Clojure libraries and language features. Table of Contents PART 1 FOUNDATIONS Clojure philosophy Drinking from the Clojure fire hose Dipping your toes in the pool PART 2 DATA TYPES On scalars Collection types PART 3 FUNCTIONAL PROGRAMMING Being lazy and set in your ways Functional programming PART 4 LARGE-SCALE DESIGN Macros Combining data and code Mutation and concurrency Parallelism PART 5 HOST SYMBIOSIS Java.next Why ClojureScript? PART 6 TANGENTIAL CONSIDERATIONS Data-oriented programming Performance Thinking programs Clojure changes the way you think

This book constitutes the post conference proceedings of the 7th International Workshop on Enterprise and Organizational Modeling and Simulation, EOMAS 2011, held in conjunction with CAiSE 2011 in London, UK, in June 2011. Enterprises are purposefully designed systems used to fulfill certain functions. An extended enterprise and organizational study involves both analysis and design activities, in which modeling and simulation play prominent roles. The related techniques and methods are effective, efficient, economic, and widely used in enterprise engineering, organizational study, and business process management. The 14 contributions in this volume were carefully reviewed and selected from 29 submissions, and they explore these topics, address the underlying challenges, find and improve on solutions, and demonstrate the application of modeling and simulation in the domains of enterprises, their organizations and underlying business processes.

This book is the first definitive reference for the Clojure language, providing both an introduction to functional programming in general and a more specific introduction to Clojure's features. This book demonstrates the use of the language through examples, including features such as software transactional memory (STM) and immutability, which may be new to programmers coming from other languages. Overview of functional programming and description of what sets Clojure apart from other languages Detailed explanation of Clojure's special features Examples of real-world tasks that are well-suited to Clojure's capabilities, starting with simple tasks and moving on to more complex applications

Provides a guide to using Scala and Clojure to solve in-depth programming problems.

Understand the philosophy of the Clojure language and dive into its inner workings to unlock its advanced features, methodologies, and constructs About This Book Learn to handle data using sequences, reducers, and transducers in Clojure Explore the lesser known and more advanced features, constructs, and methodologies of the Clojure language and its ecosystem, such as asynchronous channels, actors, logic programming, and reactive programming Sharpen your Clojure skills through illustrative and comprehensive examples Who This Book Is For If you're looking to learn more about the core libraries and dive deep into the Clojure language, then this book is ideal for you. Prior knowledge of the Clojure language is required. What You Will Learn Maximize the impact of parallelization, functional composition, and process transformation by composing reducers and transducers Process and manipulate data using sequences, reducers, and transducers in Clojure Modify and add features to the Clojure language using macros Explore the features of category theory and custom data sources for logic programming in Clojure Orchestrate parallelism and concurrency using built-in primitives as well as community libraries in Clojure Handle data with asynchronous and reactive programming methodologies and leverage it using the core.async library Test your code with unit tests, specs, and type checks to write testable code Troubleshoot and style your Clojure code to make it more maintainable In Detail Clojure is a general-purpose language from the Lisp family with an emphasis on functional programming. It has some interesting concepts and features such as immutability, gradual typing, thread-safe concurrency primitives, and macro-based metaprogramming, which makes it a great choice to create modern, performant, and scalable applications. Mastering Clojure gives you an insight into the nitty-gritty details and more advanced features of the Clojure programming language to create more scalable, maintainable, and elegant applications. You'll start off by learning the details of sequences, concurrency primitives, and macros. Packed with a lot of examples, you'll get a walkthrough on orchestrating concurrency and parallelism, which will help you understand Clojure reducers, and we'll walk through composing transducers so you know about functional composition and

process transformation inside out. We also explain how reducers and transducers can be used to handle data in a more performant manner. Later on, we describe how Clojure also supports other programming paradigms such as pure functional programming and logic programming. Furthermore, you'll level up your skills by taking advantage of Clojure's powerful macro system. Parallel, asynchronous, and reactive programming techniques are also described in detail. Lastly, we'll show you how to test and troubleshoot your code to speed up your development cycles and allow you to deploy the code faster. Style and approach This is an easy-to-follow project-based guide that throws you directly into the excitement of Clojure code. Mastering Clojure is for anyone who is interested in expanding their knowledge of language features and advanced functional programming.

Transition smoothly from Java to the most widely used functional JVM-based language – Clojure About This Book Write apps for the multithreaded world with Clojure's flavor of functional programming Discover Clojure's features and advantages and use them in your existing projects The book is designed so that you'll be able put to use your existing skills and software knowledge to become a more effective Clojure developer Who This Book Is For This book is intended for Java developers, who are looking for a way to expand their skills and understand new paradigms of programming. Whether you know a little bit about functional languages, or you are just getting started, this book will get you up and running with how to use your existing skills in Clojure and functional programming. What You Will Learn Understand the tools for the Clojure world and how they relate to Java tools and standards (like Maven) Learn about immutable data structures, and what makes them feasible for everyday programming Write simple multi-core programs using Clojure's core concepts, like atoms, agents and refs Understand that in Clojure, code is data, and how to take advantage of that fact by generating and manipulating code with macros Learn how Clojure interacts with Java, how the class loaders work and how to use Clojure from Java or the other way around Discover a new, more flexible meaning of polymorphism and understand that OOP is not the only way to get it In Detail We have reached a point where machines are not getting much faster, software projects need to be delivered quickly, and high quality in software is more demanding as ever. We need to explore new ways of writing software that helps achieve those goals. Clojure offers a new possibility of writing high quality, multi-core software faster than ever, without having to leave your current platform. Clojure for Java developers aims at unleashing the true potential of the Clojure language to use it in your projects. The book begins with the installation and setup of the Clojure environment before moving on to explore the language in-depth. Get acquainted with its various features such as functional programming, concurrency, etc. with the help of example projects. Additionally, you will also, learn how the tooling works, and how it interacts with the Java environment. By the end of this book, you will have a firm grip on Clojure and its features, and use them effectively to write more robust programs. Style and approach An easy to follow, step-by-step, guide on how to start writing Clojure programs making use of all of its varied features and advantages. As this is a new language, certain new concepts are supported with theoretical section followed by simple projects to help you gain a better understanding and practice of how Clojure works. Summary A fully revised edition that covers the new features available in Clojure 1.6. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Clojure is a modern Lisp for the JVM. It has the strengths you expect: first-class functions, macros, and Lisp's clean programming style. It supports functional programming, making it ideal for concurrent programming and for creating domain-specific languages. Clojure lets you solve harder problems, make faster changes, and end up with a smaller code base. It's no wonder that there are so many Clojure success stories. About the Book Clojure in Action, Second Edition is an expanded and improved version that's been updated to cover the new features of Clojure 1.6. The book gives you a rapid introduction to the Clojure language, moving from abstract theory to practical examples. You'll start by learning how to use Clojure as a general-purpose language. Next, you'll explore Clojure's efficient concurrency model, based on the database concept of Software Transactional Memory (STM). You'll gain a new level of productivity through Clojure DSLs that can run on the JVM. Along the way, you'll learn countless tips, tricks, and techniques for writing smaller, safer, and faster code. What's Inside Functional programming basics Metaprogramming with Clojure's macros Interoperating with Java Covers Clojure 1.6 About the Reader Assumes readers are familiar with a programming language like C, Java, Ruby, or Python. Table of Contents Introducing Clojure Clojure elements: Data structures and functions Building blocks of Clojure Multimethod polymorphism Exploring Clojure and Java interop State and the concurrent world Evolving Clojure through macros More on functional programming Protocols, records, and types Test-driven development and more More macros and DSL

For weeks, months—nay!—from the very moment you were born, you've felt it calling to you. At long last you'll be united with the programming language you've been longing for: Clojure! As a Lisp-style functional programming language, Clojure lets you write robust and elegant code, and because it runs on the Java Virtual Machine, you can take advantage of the vast Java ecosystem. Clojure for the Brave and True offers a "dessert-first" approach: you'll start playing with real programs immediately, as you steadily acclimate to the abstract but powerful features of Lisp and functional programming. Inside you'll find an offbeat, practical guide to Clojure, filled with quirky sample programs that catch cheese thieves and track glittery vampires. Learn how to: –Wield Clojure's core functions –Use Emacs for Clojure development –Write macros to modify Clojure itself –Use Clojure's tools to simplify concurrency and parallel programming Clojure for the Brave and True assumes no prior experience with Clojure, the Java Virtual Machine, or functional programming. Are you ready, brave reader, to meet your true destiny? Grab your best pair of parentheses—you're about to embark on an epic journey into the world of Clojure!

With more than 150 detailed recipes, this cookbook shows experienced Clojure developers how to solve a variety of programming tasks with this JVM language. The solutions cover everything from building dynamic websites and working with databases to network communication, cloud computing, and advanced testing strategies. And more than 60 of the world's best Clojurians contributed recipes. Each recipe includes code that you can use right away, along with a discussion on how and why the solution works, so you can adapt these patterns, approaches, and techniques to situations not specifically covered in this cookbook. Master built-in primitive and composite data structures Create, develop and publish libraries, using the Leiningen tool Interact with the local computer that's running your application Manage network communication protocols and libraries Use techniques for connecting to and using a variety of databases Build and maintain dynamic websites, using the Ring HTTP server library Tackle application tasks such as packaging, distributing, profiling, and logging Take on cloud computing and heavyweight distributed data crunching Dive into unit, integration, simulation, and property-based testing Clojure Cookbook is a collaborative project with contributions from some of the world's best Clojurians, whose backgrounds range from aerospace to social media, banking to robotics, AI research to e-commerce.

Drowning in unnecessary complexity, unmanaged state, and tangles of spaghetti code? In the best tradition of Lisp, Clojure gets out of your way so you can focus on expressing simple solutions to hard problems. Clojure cuts through complexity by providing a set of composable tools--immutable data, functions, macros, and the interactive REPL. Written by members of the Clojure core team, this book is the essential, definitive guide to Clojure. This new edition includes information on all the newest features of Clojure, such as transducers and specs. Clojure

joins the flexibility and agility of Lisp with the reach, stability, and performance of Java. Combine Clojure's tools for maximum effectiveness as you work with immutable data, functional programming, and safe concurrency to write programs that solve real-world problems. Start by reading and understanding Clojure syntax and see how Clojure is evaluated. From there, find out about the sequence abstraction, which combines immutable collections with functional programming to create truly reusable data transformation code. Clojure is a functional language; learn how to write programs in a functional style, and when and how to use recursion to your advantage. Discover Clojure's unique approach to state and identity, techniques for polymorphism and open systems using multimethods and protocols, and how to leverage Clojure's metaprogramming capabilities via macros. Finally, put all the pieces together in a real program. New to this edition is coverage of Clojure's spec library, one of the most interesting new features of Clojure for describing both data and functions. You can use Clojure spec to validate data, destructure data, explain invalid data, and generate large numbers of tests to verify the correctness of your code. With this book, you'll learn how to think in Clojure, and how to take advantage of its combined strengths to build powerful programs quickly. What You Need: Java 6 or higher Clojure 1.9

Describes the fundamentals of Clojure, covering such topics as data structures, concurrency, macros, multimethods, JVM, REPL-oriented programming, and relational databases.

Clojure is a new version of Lisp that runs on the Java Virtual Machine. "Clojure in Action" is a hands-on tutorial for the working programmer who has written code in a language like Java or Ruby, but has no prior experience with Lisp.

Get up to speed with Clojure in this quick and practical primer. You'll learn the nuts and bolts of functional programming, data structures, sequences, destructuring, pattern matching, polymorphism, concurrency, conventions, and more. Author Mark McDonnell talks about organization with namespaces; how to change the language via macros; object-oriented programming; and creating command-line apps. Finally, he shows you how to write Clojure from shell languages and interfaces such as Vim. After reading and using Quick Clojure, you'll come away with first-hand knowledge and advice on how to quickly adopt, use, and apply Clojure without all the theoretical baggage that bigger books can sometimes bring. What You'll Learn Work with data structures and their syntax Discover OOP in Clojure with patterns, polymorphisms, pattern matching, and concurrency Use conventions, organization, and namespaces in Clojure Create command-line apps Build various Clojure projects with the Leiningen IDE tool and framework Who This Book Is For Programmers with experience. A Java background would be helpful, but not required.

Learn when and how to use Clojure's polymorphic features to develop efficient multithreaded applications Key Features Get to grips with the different polymorphic tools that Clojure offers Develop a taste for good Clojure designs through various engaging examples Study various design principles and learn ways to use them in your applications Book Description Clojure is a modern, dynamic language that you can use to develop robust, multithreaded programs. Clojure Polymorphism is a comprehensive guide that shows you how to use Clojure's features to your advantage. The book begins by describing examples that show how to define and implement abstractions with plain functions and multimethods. Then you'll analyze these examples and separate the good and bad aspects of their design principles. You'll also learn how to perform data transformation abstraction with a plain function and discover how to write new cross-platform predicates while keeping the core of your abstraction free from reader conditionals. The later chapters explain the considerations to keep in mind when implementing Clojure protocols on the Java Virtual Machine (JVM). By the end of this book, you'll know how to use the various polymorphic tools of Clojure to your advantage while designing your applications. What you will learn Explore how polymorphism is implemented in Clojure Discover what design principles to use when creating and implementing abstractions Explore different ways to implement protocols in Clojure Implement various design principles while working with the JVM Write and compare plain functions and multimethods for transforming data Analyze functions and abstractions for their performance and flexibility Learn about common "gotchas" to avoid errors when writing code Who this book is for Clojure Polymorphism is useful for all programmers who want to leverage Clojure's polymorphic tools to build efficient applications. To get the most out of this book, you must be a moderately proficient Clojure programmer.

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.

"There's something for everyone here. . . . You can pick up and read this book and build an industry-standard system in a weekend: It has everything you need to get started with a new project. I also found it helpful in reviewing the structure of existing projects." —Timothy Pratley, developer Developers are discovering the exceptional power of Clojure's functional programming model to quickly solve problems in domains ranging from social networking to Big Data. Clojure is fast and efficient—ideal for rapid prototyping and lean development. And it is highly expressive and extremely extensible, which makes Clojure one of today's leading tools for software innovation. Since it targets the Java Virtual Machine, Clojure also leverages the Java platform's maturity and enormous ecosystem. Clojure Recipes is a wide-ranging, up-to-date "code recipe book" for this increasingly popular language. With practical and self-contained examples, author Julian Gamble illuminates Clojure's key features and best practices, showing how to solve real-world problems one step at a time. Focusing on Clojure 1.7 and higher, Gamble fully reflects recent enhancements that ensure you're getting the most up-to-date code for your project. Gamble first walks you through the essential steps required to set up your Clojure development environment, from setting up the Leiningen build tool to packaging Clojure for Java EE environments. He then shows you how to build both basic and advanced REST servers, before turning to a wide range of increasingly sophisticated applications. In this book you will find Innovative Clojure code for diverse web, security, administration, and development tasks, from log reading and app monitoring to software testing Detailed instructions for using concurrency primitives, writing new DSLs, simplifying cloud database development, and more "Learn by doing" projects, which offer practical experience with Clojurescript, Storm, Pedestal, Datomic, and other advanced tools Coverage of using Clojure with Cascalog 2.0 to write complex Hadoop queries with minimal code The breadth and quality of Gamble's examples make Clojure Recipes uniquely valuable both to developers who are exploring Clojure for the first time and to those already using it in production.

Today, developers are increasingly adopting Clojure as a web-development platform. See for yourself what makes

Clojure so desirable, as you create a series of web apps of growing complexity, exploring the full process of web development using a modern functional language. This fully updated third edition reveals the changes in the rapidly evolving Clojure ecosystem and provides a practical, complete walkthrough of the Clojure web-stack. Stop developing web apps with yesterday's tools. Today, developers are increasingly adopting Clojure as a web-development platform. See for yourself what makes Clojure so desirable, as you work hands-on with Clojure and build a series of web apps of increasing size and scope, culminating in a professional grade web app using all the techniques you've learned along the way. This fully updated third edition will get you up to speed on the changes in the rapidly evolving Clojure ecosystem - the many new libraries, tools, and best practices. Build a fully featured SPA app with re-frame, a popular front-end framework for ClojureScript supporting a functional style MVC approach for managing the UI state in Single-Page Application-style applications. Gain expertise in the powerful Ring stack using the Luminus framework. Learn how Clojure works with databases and speeds development of RESTful services. See why ClojureScript is rapidly becoming a popular front-end platform, and use ClojureScript with the popular re-frame library to build single-page applications. Whether you're already familiar with Clojure or completely new to the language, you'll be able to write web applications with Clojure at a professional level.

Statistics, big data, and machine learning for Clojure programmers About This Book Write code using Clojure to harness the power of your data Discover the libraries and frameworks that will help you succeed A practical guide to understanding how the Clojure programming language can be used to derive insights from data Who This Book Is For This book is aimed at developers who are already productive in Clojure but who are overwhelmed by the breadth and depth of understanding required to be effective in the field of data science. Whether you're tasked with delivering a specific analytics project or simply suspect that you could be deriving more value from your data, this book will inspire you with the opportunities—and inform you of the risks—that exist in data of all shapes and sizes. What You Will Learn Perform hypothesis testing and understand feature selection and statistical significance to interpret your results with confidence Implement the core machine learning techniques of regression, classification, clustering and recommendation Understand the importance of the value of simple statistics and distributions in exploratory data analysis Scale algorithms to web-sized datasets efficiently using distributed programming models on Hadoop and Spark Apply suitable analytic approaches for text, graph, and time series data Interpret the terminology that you will encounter in technical papers Import libraries from other JVM languages such as Java and Scala Communicate your findings clearly and convincingly to nontechnical colleagues In Detail The term “data science” has been widely used to define this new profession that is expected to interpret vast datasets and translate them to improved decision-making and performance. Clojure is a powerful language that combines the interactivity of a scripting language with the speed of a compiled language. Together with its rich ecosystem of native libraries and an extremely simple and consistent functional approach to data manipulation, which maps closely to mathematical formula, it is an ideal, practical, and flexible language to meet a data scientist's diverse needs. Taking you on a journey from simple summary statistics to sophisticated machine learning algorithms, this book shows how the Clojure programming language can be used to derive insights from data. Data scientists often forge a novel path, and you'll see how to make use of Clojure's Java interoperability capabilities to access libraries such as Mahout and Mllib for which Clojure wrappers don't yet exist. Even seasoned Clojure developers will develop a deeper appreciation for their language's flexibility! You'll learn how to apply statistical thinking to your own data and use Clojure to explore, analyze, and visualize it in a technically and statistically robust way. You can also use Incanter for local data processing and ClojureScript to present interactive visualisations and understand how distributed platforms such as Hadoop sand Spark's MapReduce and GraphX's BSP solve the challenges of data analysis at scale, and how to explain algorithms using those programming models. Above all, by following the explanations in this book, you'll learn not just how to be effective using the current state-of-the-art methods in data science, but why such methods work so that you can continue to be productive as the field evolves into the future. Style and approach This is a practical guide to data science that teaches theory by example through the libraries and frameworks accessible from the Clojure programming language.

Summary Generative Art presents both the technique and the beauty of algorithmic art. The book includes high-quality examples of generative art, along with the specific programmatic steps author and artist Matt Pearson followed to create each unique piece using the Processing programming language. About the Technology Artists have always explored new media, and computer-based artists are no exception. Generative art, a technique where the artist creates print or onscreen images by using computer algorithms, finds the artistic intersection of programming, computer graphics, and individual expression. The book includes a tutorial on Processing, an open source programming language and environment for people who want to create images, animations, and interactions. About the Book Generative Art presents both the techniques and the beauty of algorithmic art. In it, you'll find dozens of high-quality examples of generative art, along with the specific steps the author followed to create each unique piece using the Processing programming language. The book includes concise tutorials for each of the technical components required to create the book's images, and it offers countless suggestions for how you can combine and reuse the various techniques to create your own works. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book. What's Inside The principles of algorithmic art A Processing language tutorial Using organic, pseudo-random, emergent, and fractal processes =====?===== Table of Contents Part 1 Creative Coding Generative Art: In Theory and Practice Processing: A Programming Language for ArtistsPart 2 Randomness and Noise The Wrong Way to Draw A Line The Wrong Way to Draw a Circle Adding Dimensions Part 3 Complexity Emergence Autonomy Fractals Practical ClojureApress

The three-volume set LNCS 12476 - 12478 constitutes the refereed proceedings of the 9th International Symposium on Leveraging Applications of Formal Methods, ISoLA 2020, which was planned to take place during October 20–30, 2020, on Rhodes, Greece. The event itself was postponed to 2021 due to the COVID-19 pandemic. The papers presented were carefully reviewed and selected for inclusion in the proceedings. Each volume focusses on an individual topic with topical section headings within the volume: Part I, Verification Principles: Modularity and (De-)Composition in Verification; X-by-Construction: Correctness meets Probability; 30 Years of Statistical Model Checking; Verification and Validation of Concurrent and Distributed Systems. Part II, Engineering Principles: Automating Software Re-Engineering; Rigorous Engineering of Collective Adaptive Systems. Part III, Applications: Reliable Smart Contracts: State-of-the-art, Applications, Challenges and Future Directions; Automated Verification of Embedded Control Software; Formal methods for DIStributed COmputing in future RAILway systems.

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