

Functional Programming Principles In Scala

Functional Programming in Kotlin is a serious tutorial for programmers looking to learn FP and apply it to the everyday business of coding. Based on the bestselling Functional Programming in Scala, this book guides intermediate Java and Kotlin programmers from basic techniques to advanced topics in a logical, concise, and clear progression. In this authoritative guide, you'll take on the challenge of learning functional programming from first principles, and start writing Kotlin code that's easier to read, easier to reuse, better for concurrency, and less prone to bugs and errors. Functional Programming in Kotlin is a serious tutorial for programmers looking to learn FP and apply it to the everyday business of coding. Based on the bestselling Functional Programming in Scala, this book guides intermediate Java and Kotlin programmers from basic techniques to advanced topics in a logical, concise, and clear progression. In it, you'll find concrete examples and exercises that open up the world of functional programming. The book will deliver practical mastery of FP using Kotlin and a valuable perspective on program design that you can apply to other languages. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Scala is now an established programming language developed by Martin Oderskey and his team at the EPFL. The name Scala is derived from Sca(lable) La(nguage). Scala is a multi-paradigm language, incorporating object oriented approaches with functional programming. Although some familiarity with standard computing concepts is assumed (such as the idea of compiling a program and executing this compiled from etc.) and with basic procedural language concepts (such as variables and allocation of values to these variables) the early chapters of the book do not assume any familiarity with object orientation nor with functional programming These chapters also step through other concepts with which the reader may not be familiar (such as list processing). From this background, the book provides a practical introduction to both object and functional approaches using Scala. These concepts are introduced through practical experience taking the reader beyond the level of the language syntax to the philosophy and practice of object oriented development and functional programming. Students and those actively involved in the software industry will find this comprehensive introduction to Scala invaluable.

Many languages have embraced Functional Programming paradigms to augment the tools available for programmers to solve problems. It facilitates writing code that is easier to understand, easier to test, and able to take advantage of parallelization making it a good fit for building modern, scalable solutions. PHP introduced anonymous function and closures in 5.3, providing a more succinct way to tackle common problems. More recent releases have added generators and variadics which can help write more concise, functional code. However, making the mental leap from programming in the more common imperative style requires understanding how and when to best use lambdas, closures, recursion, and more. It also requires learning to think of data in terms of collections that can be mapped, reduced, flattened, and filtered. Functional Programming in PHP will show you how to leverage these new language features by understanding functional programming principles. With over twice as much content as its predecessor, this second edition expands upon its predecessor with updated code examples and coverage of advances in PHP 7 and Hack. Plenty of examples are provided in each chapter to illustrate each concept as it's introduced and to show how to implement it with PHP. You'll learn how to use map/reduce, currying, composition, and more. You'll see what external libraries are available and new language features are proposed to extend PHP's functional programming capabilities.

Hands-on Scala teaches you how to use the Scala programming language in a practical, project-based fashion. This book is designed to quickly teach an existing programmer everything needed to go from "hello world" to building production applications like interactive websites, parallel web crawlers, and distributed systems in Scala. In the process you will learn how to use the Scala language to solve challenging problems in an elegant and intuitive manner.

Programming in Scala

Functional Programming in Scala

Get Started With Big Data Analytics Using Apache Spark

Seven Languages in Seven Weeks

Introduction to the Art of Programming Using Scala

Object-oriented programming meets functional reactive to create Scalable and Concurrent programs

Packed with examples and exercises, Get Programming with Scala is perfect starting point for developers with some OO knowledge who want to learn this multi-style programming language for the JVM, and pick up a few FP skills along the way. Master Scala, and you'll be well-equipped to match your programming approach to the type of problem you're dealing with. Packed with examples and exercises, Get Programming with Scala is perfect starting point for developers with some OO knowledge who want to learn this multi-style programming language for the JVM, and pick up a few FP skills along the way. Master Scala, and you'll be well-equipped to match your programming approach to the type of problem you're dealing with. Get Programming with Scala teaches you the core skills you'll need to code with Scala. You'll start by reviewing OOP concepts in the Scala language. Then, you'll gradually open up the world of functional programming. You'll explore functions and types and learn how to combine them to create powerful, flexible abstractions. Scala can be daunting at first, especially if you're seeing FP ideas for the first time. Fortunately, with the examples and exercises in this book, you'll get over the initial learning hump quickly and start doing interesting projects before you know it! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Haskell Programming makes Haskell as clear, painless, and practical as it can be, whether you're a beginner or an experienced hacker. Learning Haskell from the ground up is easier and works better. With our exercise-driven approach, you'll build on previous chapters such that by the time you reach the notorious Monad, it'll seem trivial.

Intermediate level, for programmers fairly familiar with Java, but new to the functional style of programming and lambda expressions. Get ready to program in a whole new way. Functional Programming in Java will help you quickly get on top of the new, essential Java 8 language features and the functional style that will change and improve your code. This short, targeted book will help you make the paradigm shift from the old imperative way to a less error-prone, more elegant, and concise coding style that's also a breeze to parallelize. You'll explore the syntax and semantics of lambda expressions, method and constructor references, and functional interfaces. You'll design and write applications better using the new standards in Java 8 and the JDK. Lambda expressions are lightweight, highly concise anonymous methods backed by functional interfaces in Java 8. You can use them to leap forward into a whole new world of programming in Java. With functional programming capabilities, which have been around for decades in other languages, you can now write elegant, concise, less error-prone code using standard Java. This book will guide you though the paradigm change, offer the essential details about the new features, and show you how to transition from your old way of coding to an improved style. In this book you'll see popular design patterns, such as decorator, builder, and strategy, come to life to solve common design problems, but with little ceremony and effort. With these new capabilities in hand, Functional Programming in Java will help you pick up techniques to implement designs that were beyond easy reach in earlier versions of Java. You'll see how you can reap the benefits of tail call optimization, memoization, and effortless parallelization techniques. Java 8 will change the way you write applications. If you're eager to take advantage of the new features in the language, this is the book for you. What you need: Java 8 with support for lambda expressions and the JDK is required to make use of the concepts and the examples in this book.

Save time and trouble building object-oriented, functional, and concurrent applications with Scala. The latest edition of this comprehensive cookbook is packed with more than 250 ready-to-use recipes and 1,000 code examples to help you solve the most common problems when working with Scala 3 and its popular libraries. Scala changes the way you think about programming--and that's a good thing. Whether you're working on web, big data, or distributed applications, this cookbook provides recipes based on real-world scenarios for both experienced Scala developers and programmers just learning to use this JVM language. Author Alvin Alexander includes practical solutions from his experience using Scala for component-based, highly scalable applications that support concurrency and distribution. Recipes cover: Strings, numbers, and control structures Classes, methods, objects, traits, packaging, and imports Functional programming techniques Scala's wealth of collections classes and methods Building and publishing Scala applications with sbt Actors and concurrency with Scala Future and Akka Typed Popular libraries, including Spark, Scala.js, Play Framework, and GraalVM Types, such as variance, givens, intersections, and unions Best practices, including pattern matching, modules, and functional error handling

ML for the Working Programmer

Scalability = Functional Programming + Objects

Haskell Programming from First Principles

Build scalable, functional reactive microservices with Akka, Play, and Lagom

Functional Programming in PHP (2nd Ed)

Learning Concurrent Programming in Scala

With its flexibility for programming both small and large projects, Scala is an ideal language for teaching beginning programming. Yet there are no textbooks on Scala currently available for the CS1/CS2 levels. Introduction to the Art of Programming Using Scala presents many concepts from CS1 and CS2 using a modern, JVM-based language that works well

Build fault-tolerant, robust, and distributed applications in Scala Key Features - Understand and use the concepts of reactive programming to build distributed systems running on multiple nodes. - Learn how reactive architecture reduces complexity throughout the development process. - Get to grips with functional reactive programming and Reactive Microservices. Book Description Reactive programming is a scalable, fast way to build applications, and one that helps us write code that is concise, clear, and readable. It can be used for many purposes such as GUIs, robotics, music, and others, and is central to many concurrent systems. This book will be your guide to getting started with Reactive programming in Scala. You will begin with the fundamental concepts of Reactive programming and gradually move on to working with asynchronous data streams. You will then start building an application using Akka Actors and extend it using the Play framework. You will also learn about reactive stream specifications, event sourcing techniques, and different methods to integrate Akka Streams into the Play Framework. This book will also take you one step forward by showing you the advantages of the Lagom framework while working with reactive microservices. You will also learn to scale applications using multi-node clusters and test, secure, and deploy your microservices to the cloud. By the end of the book, you will have gained the knowledge to build robust and distributed systems with Scala and Akka. What you will learn Understand the fundamental principles of Reactive and Functional programming Develop applications utilizing features of the Akka framework Explore techniques to integrate Scala, Akka, and Play together Learn about Reactive Streams with real-time use cases Develop Reactive Web Applications with Play, Scala, Akka, and Akka Streams Develop and deploy Reactive microservices using the Lagom framework and ConductR Who this book is for This book is for Scala developers who would like to build fault-tolerant, scalable distributed systems. No knowledge of Reactive programming is required. Software development today is embracing functional programming (FP), whether it's for writing concurrent programs or for managing Big Data. Where does that leave Java developers? This concise book offers a pragmatic, approachable introduction to FP for Java developers or anyone who uses an object-oriented language. Dean Wampler, Java expert and author of Programming Scala (O'Reilly), shows you how to apply FP principles such as immutability, avoidance of side-effects, and higher-order functions to your Java code. Each chapter provides exercises to help you practice what you've learned. Once you grasp the benefits of functional programming, you'll discover that it improves all of the code you write. Learn basic FP principles and apply them to object-oriented programming Discover how FP is more concise and modular than OOP Get useful FP lessons for your Java type design—such as avoiding nulls Design data structures and algorithms using functional programming principles Write concurrent programs using the Actor model and software transactional memory Use functional libraries and frameworks for Java—and learn where to go next to deepen your functional programming skills Summary Functional Programming in Scala is a serious tutorial for programmers looking to learn FP and apply it to the everyday business of coding. The book guides readers from basic techniques to advanced topics in a logical, concise, and clear progression. In it, you'll find concrete examples and exercises that open up the world of functional programming. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Functional programming (FP) is a style of software development emphasizing functions that don't depend on program state. Functional code is easier to test and reuse, simpler to parallelize, and less prone to bugs than other code. Scala is an emerging JVM language that offers strong support for FP. Its familiar syntax and transparent interoperability with Java make Scala a great place to start learning FP. About the Book Functional Programming in Scala is a serious tutorial for programmers looking to learn FP and apply it to their everyday work. The book guides readers from basic techniques to advanced topics in a logical, concise, and clear progression. In it, you'll find concrete examples and exercises that open up the world of functional programming. This book assumes no prior experience with functional programming. Some prior exposure to Scala or Java is helpful. What's Inside Functional programming concepts The whys and hows of FP How to write multicore programs Exercises and checks for understanding About the Authors Paul Chiusano and Rúnar Bjarnason are recognized experts in functional programming with Scala and are core contributors to the Scalaz library. Table of Contents PART 1 INTRODUCTION TO FUNCTIONAL PROGRAMMING What is functional programming? Getting started with functional programming in Scala Functional data structures Handling errors without exceptions Strictness and laziness Purely functional state PART 2 FUNCTIONAL DESIGN AND COMBINATOR LIBRARIES Purely functional parallelism Property-based testing Parser combinators PART 3 COMMON STRUCTURES IN FUNCTIONAL DESIGN Monoids Monads Applicative and traversable functors PART 4 EFFECTS AND I/O External effects and I/O Local effects and mutable state Stream processing and incremental I/O Get Programming with Scala Scala and Spark for Big Data Analytics

Hands-on Scala Programming: Learn Scala in a Practical, Project-Based Way

Scala Cookbook

How to improve your JavaScript programs using functional techniques

Presents an introduction to the Scala programming language which is an abbreviated version of object-orientated programming combined with the power of concurrency capable of running on the Java Virtual Machine.

Summary Functional Programming in JavaScript teaches JavaScript developers functional techniques that will improve extensibility, modularity, reusability, testability, and performance. Through concrete examples and jargon-free explanations, this book teaches you how to apply functional programming to real-life development tasks Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology In complex web applications, the low-level details of your JavaScript code can obscure the workings of the system as a whole. As a coding style, functional programming (FP) promotes loosely coupled relationships among the components of your application, making the big picture easier to design, communicate, and maintain. About the Book Functional Programming in JavaScript teaches you techniques to improve your web applications - their extensibility, modularity, reusability, and testability, as well as their performance.

This easy-to-read book uses concrete examples and clear explanations to show you how to use functional programming in real life. If you're new to functional programming, you'll appreciate this guide's many insightful comparisons to imperative or object-oriented programming that help you understand functional design. By the end, you'll think about application design in a fresh new way, and you may even grow to appreciate monads! What's Inside High-value FP techniques for real-world uses Using FP where it makes the most sense Separating the logic of your system from implementation details FP-style error handling, testing, and debugging All code samples use JavaScript ES6 (ES 2015) About the Reader Written for developers with a solid grasp of JavaScript fundamentals and web application design. About the Author Luis Atencio is a software engineer and architect building enterprise applications in Java, PHP, and JavaScript. Table of Contents PART 1 THINK FUNCTIONALLY Becoming functional Higher-order JavaScript PART 2 GET FUNCTIONAL Few data structures, many operations Toward modular, reusable code Design patterns against complexity PART 3 ENHANCING YOUR FUNCTIONAL SKILLS Bulletproofing your code Functional optimizations Managing asynchronous events and data

Summary Functional and Reactive Domain Modeling teaches you how to think of the domain model in terms of pure functions and how to compose them to build larger abstractions. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Traditional distributed applications won't cut it in the reactive world of microservices, fast data, and sensor networks. To capture their dynamic relationships and dependencies, these systems require a different approach to domain modeling. A domain model composed of pure functions is a more natural way of representing a process in a reactive system, and it maps directly onto technologies and patterns like Akka, CQRS, and event sourcing. About the Book Functional and Reactive Domain Modeling teaches you consistent, repeatable techniques for building domain models in reactive systems. This book reviews the relevant concepts of FP and reactive architectures and then methodically introduces this new approach to domain modeling. As you read, you'll learn where and how to apply it, even if your systems aren't purely reactive or functional. An expert blend of theory and practice, this book presents strong examples you'll return to again and again as you apply these principles to your own projects. What's Inside Real-world libraries and frameworks Establish meaningful reliability guarantees Isolate domain logic from side effects Introduction to reactive design patterns About the Reader Readers should be comfortable with functional programming and traditional domain modeling. Examples use the Scala language. About the Author Software architect Debasis Ghosh was an early adopter of reactive design using Scala and Akka. He's the author of DSLs in Action, published by Manning in 2010. Table of Contents Functional domain modeling: an introduction Scala for functional domain models Designing functional domain models Functional patterns for domain models Modularization of domain models Being reactive Modeling with reactive streams Reactive persistence and event sourcing Testing your domain model Summary - core thoughts and principles

Get up to speed on Scala, the JVM language that offers all the benefits of a modern object model, functional programming, and an advanced type system. Packed with code examples, this comprehensive book shows you how to be productive with the language and ecosystem right away, and explains why Scala is ideal for today's highly scalable, data-centric applications that support concurrency and distribution. This second edition covers recent language features, with new chapters on pattern matching, comprehensions, and advanced functional programming. You'll also learn about Scala's command-line tools, third-party tools, libraries, and language-aware plugins for editors and IDEs. This book is ideal for beginning and advanced Scala developers alike. Program faster with Scala's succinct and flexible syntax Dive into basic and advanced functional programming (FP) techniques Build killer big-data apps, using Scala's functional combinators Use traits for mixin composition and pattern matching for data extraction Learn the sophisticated type system that combines FP and object-oriented programming concepts Explore Scala-specific concurrency tools, including Akka Understand how to develop rich domain-specific languages Learn good design techniques for building scalable and robust Scala applications

Recipes for Object-Oriented and Functional Programming

Functional Programming in JavaScript

Harnessing the Power Of Java 8 Lambda Expressions

Functional and Reactive Domain Modeling

Functional Programming for Java Developers

Functional Programming in C++

In large projects, programmers tend to get overwhelmed by their complexity. It can be hard to keep track of all the interdependencies in the code-base and how its state changes on runtime. The solution to these problems is Functional Programming, a paradigm specifically designed to deal with the complexity of software development. Mastering ...

A book for intermediate to advanced Scala developers. Aimed at those who understand functional effects, referential transparency and the benefits of functional programming to some extent but who are missing some pieces to put all these concepts together to build a large application in a time-constrained manner.Throughout the chapters we will design, architect and develop a

complete stateful application serving an API via HTTP, accessing a database and dealing with cached data, using the best practices and best functional libraries available in the Cats ecosystem such as Cats Effect, Fs2, Http4s, Skunk, Refined and others. You will also learn about common design patterns such as managing state, error handling and anti-patterns, all accompanied by clear examples. Furthermore, in the Bonus Chapter, we will dive into some advanced concepts such as MTL and Optics, and will explore Fs2 streams with a few interesting examples. A digital version is also available on LeanPub.

Write modern, scalable, and reactive applications in Scala About This Book * Craft a completely reactive functional application from front end to back end * Step-by-step instructions, examples, and hands-on practices designed to help you learn the key secrets and intricacies of Scala app development * Comprehensive coverage of all the most popular tools in the Scala ecosystem Who This Book Is For If you are a Java or JVM developer who wants to use Scala to build reactive functional applications for the JVM platform, then this book is for you. Prior knowledge of Java or functional programming would help. No Scala knowledge is required. What You Will Learn * Use Akka to create a chat service for your app * Equip yourself with the techniques and tools to build reports and build database persistence with Scala and Slick * Develop a customer-facing Rest API that makes use of Scala and Spray * Make use of the Scala web development principles and scale up the architecture of your application * Get familiar with the core principles and concepts of Functional Programming * Use the Play framework to create models, controllers, and views * Develop reactive backing frameworks by writing code with RxScala * Discover what proper testing entails with Scala using behavior-driven development In Detail Scala is known for incorporating both object-oriented and functional programming into a concise and extremely powerful package. However, creating an app in Scala can get a little tricky because of the complexity. This book will help you dive straight into app development by creating a real, reactive, and functional application. We will provide you with practical examples and instructions using a hands-on approach that will give you a firm grounding in reactive functional principles. The book will take you through all the fundamentals of app development within Scala as you build an application piece by piece. We've made sure to incorporate everything you need from setting up to building reports and scaling architecture. This book also covers the most useful tools available in the Scala ecosystem, such as Slick, Play, and Akka, and a whole lot more. It will help you unlock the secrets of building your own up-to-date Scala application while maximizing performance and scalability.

This new edition of a successful text treats modules in more depth, and covers the revision of ML language.

A Beginner's Guide to Scala, Object Orientation and Functional Programming

Functional Programming in Java

Scala Design Patterns

How functional techniques improve your Java programs

A Php[architect] Guide

The Science of Functional Programming (draft version)

Grok and perform effective functional programming in Scala About This Book Understand functional programming patterns by comparing them with the traditional object-oriented design patterns Write robust, safer, and better code using the declarative programming paradigm An illustrative guide for programmers to create functional programming patterns with Scala Who This Book Is For If you have done Java programming before and have a basic knowledge of Scala and its syntax, then this book is an ideal choice to help you to understand the context, the traditional design pattern applicable, and the Scala way. Having previous knowledge of design patterns will help, though it is not strictly necessary. What You Will Learn Get to know about functional programming and the value Scala's FP idioms bring to the table Solve day-to-day programming problems using functional programming idioms Cut down the boiler-plate and express patterns simply and elegantly using Scala's concise syntax Tame system complexity by reducing the moving parts Write easier to reason about concurrent code using the actor paradigm and the Akka library Apply recursive thinking and understand how to create solutions without mutation Reuse existing code to compose new behavior Combine the object-oriented and functional programming approaches for effective programming using Scala In Detail Scala is used to construct elegant class hierarchies for maximum code reuse and extensibility and to implement their behavior using higher-order functions. Its functional programming (FP) features are a boon to help you design “easy to reason about” systems to control the growing software complexities. Knowing how and where to apply the many Scala techniques is challenging. Looking at Scala best practices in the context of what you already know helps you grasp these concepts quickly, and helps you see where and why to use them. This book begins with the rationale behind patterns to help you understand where and why each pattern is applied. You will discover what tail recursion brings to your table and will get an understanding of how to create solutions without mutations. We then explain the concept of memorization and infinite sequences for on-demand computation. Further, the book takes you through Scala's stackable traits and dependency injection, a popular technique to produce loosely-coupled software systems. You will also explore how to currying favors to your code and how to simplify it by de-construction via pattern matching. We also show you how to do pipeline transformations using higher order functions such as the pipes and filters pattern. Then we guide you through the increasing importance of concurrent programming and the pitfalls of traditional code concurrency. Lastly, the book takes a paradigm shift to show you the different techniques that functional programming brings to your plate. This book is an invaluable source to help you understand and perform functional programming and solve common programming problems using Scala's programming patterns. Style and approach This is a hands-on guide to Scala's game-changing features for programming. It is filled with many code examples and figures that illustrate various Scala idioms and best practices.

Discover the power that functional programming brings to your Scala code. This international bestseller has been revised with new exercises, annotations, and full coverage of Scala 3. The first edition of Functional Programming in Scala has helped over 30,000 developers discover the power of functional programming. This second edition is fully updated to Scala 3 and the latest standards of FP. Inside, you'll find a serious tutorial for programmers looking to apply functional programming to improve their everyday coding practices. Functional Programming in Scala, Second Edition teaches you functional programming from first principles using the powerful Scala language. You'll develop the unique skills you need to start thinking functionally through hands-on exercises and coding challenges. New to the revised second edition, each exercise comes with extensive annotations to help you understand functional programming in-depth. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Gain the key language concepts and programming techniques of Scala in the context of big data analytics and Apache Spark. The book begins by introducing you to Scala and establishes a firm contextual understanding of why you should learn this language, how it stands in comparison to Java, and how Scala is related to Apache Spark for big data analytics. Next, you'll set up the Scala environment ready for examining your first Scala programs. This is followed by sections on Scala fundamentals including mutable/immutable variables, the type hierarchy system, control flow expressions and code blocks. The author discusses functions at length and highlights a number of associated concepts such as functional programming and anonymous functions. The book then delves deeper into Scala's powerful collections system because many of Apache Spark's APIs bear a strong resemblance to Scala collections. Along the way you'll see the development life cycle of a Scala program. This involves compiling and building programs using the industry-standard Scala Build Tool (SBT). You'll cover guidelines related to dependency management using SBT as this is critical for building large Apache Spark applications. Scala Programming for Big Data Analytics concludes by demonstrating how you can make use of the concepts to write programs that run on the Apache Spark framework. These programs will provide distributed and parallel computing, which is critical for big data analytics. What You Will Learn See the fundamentals of Scala as a general-purpose programming language Understand functional programming and object-oriented programming constructs in Scala Use Scala collections and functions Develop, package and run Apache Spark applications for big data analytics Who This Book Is For Data scientists, data analysts and data engineers who intend to use Apache Spark for large-scale analytics. /div

This book, written by one of the designers of generics, is a thorough explanation of how to use generics, and particularly, the effect this facility has on the way developers use collections.

Functional Programming in Scala, Second Edition

Java Generics and Collections

Functional techniques for sequential and parallel programming with Scala

Practical FP in Scala: a Hands-On Approach (2nd Edition)

Learning Scala Programming

Scala Programming for Big Data Analytics

Save time and trouble when using Scala to build object-oriented, functional, and concurrent applications. With more than 250 ready-to-use recipes and 700 code examples, this comprehensive cookbook covers the most common problems you'll encounter when using the Scala language, libraries, and tools. It's ideal not only for experienced Scala developers, but also for programmers learning to use this JVM language. Author Alvin Alexander (creator of DevDaily.com) provides solutions based on his experience using Scala for highly scalable, component-based applications that support concurrency and distribution. Packed with real-world scenarios, this book provides recipes for: Strings, numeric types, and control structures Classes, methods, objects, traits, and packaging Functional programming in a variety of situations Collections covering Scala's wealth of classes and methods Concurrency, using the Akka Actors library Using the Scala REPL and the Simple Build Tool (SBT) Web services on both the client and server sides Interacting with SQL and NoSQL databases Best practices in Scala development

Write efficient, clean, and reusable code with Scala About This Book Unleash the power of Scala and apply it in the real world Increase your efficiency by leveraging the power of Creational, Structural, Behavioural, and Functional design patterns Build object oriented and functional applications quickly and effectively Who This Book Is For If you want to increase your understanding of Scala and apply it to real-life application development, then this book is for you. We've also designed the book to be used as a quick reference guide while creating applications. Previous Scala programming knowledge is expected. What You Will Learn Immerse yourself in industry-standard design patterns—structural, creational, and behavioral—to create extraordinary applications Feel the power of traits and their application in Scala Implement abstract and self types and build clean design patterns Build complex entity relationships using structural design patterns Create applications faster by applying functional design patterns In Detail Scala has become increasingly popular in many different IT sectors. The language is exceptionally feature-rich which helps developers write less code and get faster results. Design patterns make developer's lives easier by helping them write great software that is easy to maintain, runs efficiently and is valuable to the company or people concerned. You will learn about the various features of Scala and be able to apply well-known, industry-proven design patterns in your work. The book starts off by focusing on some of the most interesting features of Scala while using practical real-world examples. We will also cover the popular "Gang of Four" design patterns and show you how to incorporate functional patterns effectively. By the end of this book, you will have enough knowledge and understanding to quickly assess problems and come up with elegant solutions. Style and approach The design patterns in the book will be explained using real-world, step-by-step examples. For each design pattern, there will be hints about when to use it and when to look for something more suitable. This book can also be used as a practical guide, showing you how to leverage design patterns effectively.

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.

Summary Functional Programming in C++ teaches developers the practical side of functional programming and the tools that C++ provides to develop software in the functional style. This in-depth guide is full of useful diagrams that help you understand FP concepts and begin to think functionally. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Well-written code is easier to test and reuse, simpler to parallelize, and less error prone. Mastering the functional style of programming can help you tackle the demands of modern apps and will lead to simpler expression of complex program logic, graceful error handling, and elegant concurrency. C++ supports FP with templates, lambdas, and other core language features, along with many parts of the STL. About the Book Functional Programming in C++ helps you unleash the functional side of your brain, as you gain a powerful new perspective on C++ coding. You'll discover dozens of examples, diagrams, and illustrations that break down the functional concepts you can apply in C++, including lazy evaluation, function objects and invocables, algebraic data types, and more. As you read, you'll match FP techniques with practical scenarios where they offer the most benefit. What's inside Writing safer code with no performance penalties Explicitly handling errors through the type system Extending C++ with new control structures Composing tasks with DSLs About the Reader Written for developers with two or more years of experience coding in C++. About the Author Ivan ?uki? is a core developer at KDE and has been coding in C++ since 1998. He teaches modern C++ and functional programming at the Faculty of Mathematics at the University of Belgrade. Table of Contents Introduction to functional programming Getting started with functional programming Function objects Creating new functions from the old ones Purity: Avoiding mutable state Lazy evaluation Ranges Functional data structures Algebraic data types and pattern matching Monads Template metaprogramming Functional design for concurrent systems Testing and debugging

Explore the concepts of functional programming, data streaming, and machine learning

Scala Reactive Programming

Programming Scala

Tools for Better Concurrency, Abstraction, and Agility

A Pragmatic Guide to Learning Programming Languages

Learning Scala

Programming in Scala Artima Inc

Scala is a modern programming language for the Java Virtual Machine (JVM) that combines the best features of object-oriented and functional programming languages. Using Scala, you can write programs more concisely than in Java, as well as leverage the full power of concurrency. Since Scala runs on the JVM, it can access any Java library and is interoperable with Java frameworks. Scala for the Impatient concisely shows developers what Scala can do and how to do it. In this book, Cay Horstmann, the principal author of the international best-selling Core Java™, offers a rapid, code-based introduction that's completely practical. Horstmann introduces Scala concepts and techniques in “blog-sized” chunks that you can quickly master and apply. Hands-on activities guide you through well-defined stages of competency, from basic to expert. Coverage includes Getting started quickly with Scala's interpreter, syntax, tools, and unique idioms Mastering core language features: functions, arrays, maps, tuples, packages, imports, exception handling, and more Becoming familiar with object-oriented programming in Scala: classes, inheritance, and traits Using Scala for real-world programming tasks: working with files, regular expressions, and XML Working with higher-order functions and the powerful Scala collections library Leveraging Scala's powerful pattern matching and case classes Creating concurrent programs with Scala actors Implementing domain-specific languages Understanding the Scala type system Applying advanced “power tools” such as annotations, implicits, and delimited continuations Scala is rapidly reaching a tipping point that will reshape the experience of programming. This book will help object-oriented programmers build on their existing skills, allowing them to immediately construct useful applications as they gradually master advanced programming techniques.

Presents an introduction to the new programming language for the Java Platform.

Helps programmers learn functional programming and apply it to the everyday business of coding. Original.

Mastering Functional Programming

Practical Functional Programming for the JVM

Scala in Depth

Functional Programming in Kotlin

Building Applications with Scala

Scala for the Impatient

The perfect starting point for your journey into Scala and functional programming. Summary In Get Programming in Scala you will learn: Object-oriented principles in Scala Express program designs in functions Use types to enforce program requirements Use abstractions to avoid code duplication Write meaningful tests and recognize code smells Scala is a multi-style programming language for the JVM that supports both object-oriented and functional programming. Master Scala, and you'll be well-equipped to match your programming approach to the type of problem you're dealing with. Packed with examples and exercises, Get Programming with Scala is the perfect starting point for developers with some OO knowledge who want to learn Scala and pick up a few FP skills along the way. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Scala developers are in high demand. This flexible language blends object-oriented and functional programming styles so you can write flexible, easy-to-maintain code. Because Scala runs on the JVM, your programs can interact seamlessly with Java libraries and tools. If you're comfortable writing Java, this easy-to-read book will get you programming with Scala fast. About the book Get Programming with Scala is a fast-paced introduction to the Scala language, covering both Scala 2 and Scala 3. You'll learn through lessons, quizzes, and hands-on projects that bring your new skills to life. Clear explanations make Scala's features and abstractions easy to understand. As you go, you'll learn to write familiar object-oriented code in Scala and also discover the possibilities of functional programming. What's inside Apply object-oriented principles in Scala Learn the core concepts of functional programming Use types to enforce program requirements Use abstractions to avoid code duplication Write meaningful tests and recognize code smells About the reader For developers who know an OOP language like Java, Python, or C#. No experience with Scala or functional programming required. About the author Daniela Sfregola is a Senior Software Engineer and a Scala user since 2013. She is an active contributor to the Scala Community, a public speaker at Scala conferences and meetups, and a maintainer of open-source projects. Table of Contents Unit 0 HELLO SCALA! Unit 1 THE BASICS Unit 2 OBJECT-ORIENTED FUNDAMENTALS Unit 3 HTTP SERVER Unit 4 IMMUTABLE DATA AND STRUCTURES Unit 5 LIST Unit 6 OTHER COLLECTIONS AND ERROR HANDLING Unit 7 CONCURRENCY Unit 8 JSON (DE)SERIALIZATION

Summary Functional Programming in Java teaches Java developers how to incorporate the most powerful benefits of functional programming into new and existing Java code. You'll learn to think functionally about coding tasks in Java and use FP to make your applications easier to understand, optimize, maintain, and scale. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Here's a bold statement: learn functional programming and you'll be a better Java developer. Fortunately, you don't have to master every aspect of FP to get a big payoff. If you take in a few core principles, you'll see an immediate boost in the scalability, readability, and maintainability of your code. And did we mention that you'll have fewer bugs? Let's get started! About the Book Functional Programming in Java teaches you how to incorporate the powerful benefits of functional

programming into new and existing Java code. This book uses easy-to-grasp examples, exercises, and illustrations to teach core FP principles such as referential transparency, immutability, persistence, and laziness. Along the way, you'll discover which of the new functionally inspired features of Java 8 will help you most. What's Inside Writing code that's easier to read and reason about Safer concurrent and parallel programming Handling errors without exceptions Java 8 features like lambdas, method references, and functional interfaces About the Reader Written for Java developers with no previous FP experience. About the Author Pierre-Yves Saumont is a seasoned Java developer with three decades of experience designing and building enterprise software. He is an R&D engineer at Alcatel-Lucent Submarine Networks. Table of Contents What is functional programming? Using functions in Java Making Java more functional Recursion, corecursion, and memoization Data handling with lists Dealing with optional data Handling errors and exceptions Advanced list handling Working with laziness More data handling with trees Solving real problems with advanced trees Handling state mutation in a functional way Functional input/output Sharing mutable state with actors Solving common problems functionally Why learn Scala? You don't need to be a data scientist or distributed computing expert to appreciate this object-oriented functional programming language. This practical book provides a comprehensive yet approachable introduction to the language, complete with syntax diagrams, examples, and exercises. You'll start with Scala's core types and syntax before diving into higher-order functions and immutable data structures. Author Jason Swartz demonstrates why Scala's concise and expressive syntax make it an ideal language for Ruby or Python developers who want to improve their craft, while its type safety and performance ensures that it's stable and fast enough for any application. Learn about the core data types, literals, values, and variables Discover how to think and write in expressions, the foundation for Scala's syntax Write higher-order functions that accept or return other functions Become familiar with immutable data structures and easily transform them with type-safe and declarative operations Create custom infix operators to simplify existing operations or even to start your own domain-specific language Build classes that compose one or more traits for full reusability, or create new functionality by mixing them in at instantiation Learn how to write scalable and concurrent programs in Scala, a language that grows with you. Key Features Get a grip on the functional features of the Scala programming language Understand and develop optimal applications using object-oriented and functional Scala constructs Learn reactive principles with Scala and work with the Akka framework Book Description Scala is a general-purpose programming language that supports both functional and object-oriented programming paradigms. Due to its concise design and versatility, Scala's applications have been extended to a wide variety of fields such as data science and cluster computing. You will learn to write highly scalable, concurrent, and testable programs to meet everyday software requirements. We will begin by understanding the language basics, syntax, core data types, literals, variables, and more. From here you will be introduced to data structures with Scala and you will learn to work with higher-order functions. Scala's powerful collections framework will help you get the best out of immutable data structures and utilize them effectively. You will then be introduced to concepts such as pattern matching, case classes, and functional programming features. From here, you will learn to work with Scala's object-oriented features. Going forward, you will learn about asynchronous and reactive programming with Scala, where you will be introduced to the Akka framework. Finally, you will learn the interoperability of Scala and Java. After reading this book, you'll be well versed with this language and its features, and you will be able to write scalable, concurrent, and reactive programs in Scala. What you will learn Get to know the reasons for choosing Scala: its use and the advantages it provides over other languages Bring together functional and object-oriented programming constructs to make a manageable application Master basic to advanced Scala constructs Test your applications using advanced testing methodologies such as TDD Select preferred language constructs from the wide variety of constructs provided by Scala Make the transition from the object-oriented paradigm to the functional programming paradigm Write clean, concise, and powerful code with a functional mindset Create concurrent, scalable, and reactive applications utilizing the advantages of Scala Who this book is for This book is for programmers who choose to get a grip over Scala to write concurrent, scalable, and reactive programs. No prior experience with any programming language is required to learn the concepts explained in this book. Knowledge of any programming language would help the reader understanding concepts faster though.

An Introduction to Functional Programming Through Lambda Calculus

Scala Functional Programming Patterns

Scala in Action

Summary Scala in Action is a comprehensive tutorial that introduces Scala through clear explanations and numerous hands-on examples. Because Scala is a rich and deep language, it can be daunting to absorb all the new concepts at once. This book takes a "how-to" approach, explaining language concepts as you explore familiar programming challenges that you face in your day-to-day work. About the Technology Scala runs on the JVM and combines object-orientation with functional programming. It's designed to produce succinct, type-safe code, which is crucial for enterprise applications. Scala implements Actor-based concurrency through the amazing Akka framework, so you can avoid Java's messy threading while interacting seamlessly with Java. About this Book Scala in Action is a comprehensive tutorial that introduces the language through clear explanations and numerous hands-on examples. It takes a "how to" approach, explaining language concepts as you explore familiar programming tasks. You'll tackle concurrent programming in Akka, learn to work with Scala and Spring, and learn how to build DSLs and other productivity tools. You'll learn both the language and how to use it. Experience with Java is helpful but not required. Ruby and Python programmers will also find this book accessible. What's Inside A Scala tutorial How to use Java and Scala open source libraries How to use SBT Test-driven development Debugging Updated for Scala 2.10 Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Author Nilanjan Raychaudhuri is a skilled developer, speaker, and an avid polyglot programmer who works with Scala on production systems. Table of Contents PART 1 SCALA: THE BASICS Why Scala? Getting started OOP in Scala Having fun with functional data structures Functional programming PART 2 WORKING WITH SCALA Building web applications in functional style Connecting to a database Building scalable and extensible components Concurrency programming in Scala Building confidence with testing PART 3 ADVANCED STEPS Interoperability between Scala and Java Scalable and distributed applications using Akka

"Seven Languages in Seven Weeks" presents a meaningful exploration of seven languages within a single book. Rather than serve as a complete reference or installation guide, the book hits what's essential and unique about each language.

Harness the power of Scala to program Spark and analyze tonnes of data in the blink of an eye! About This Book Learn Scala's sophisticated type system that combines Functional Programming and object-oriented concepts Work on a wide array of applications, from simple batch jobs to stream processing and machine learning Explore the most common as well as some complex use-cases to perform large-scale data analysis with Spark Who This Book Is For Anyone who wishes to learn how to perform data analysis by harnessing the power of Spark will find this book extremely useful. No knowledge of Spark or Scala is assumed, although prior programming experience (especially with other JVM languages) will be useful to pick up concepts quicker. What You Will Learn Understand object-oriented & functional programming concepts of Scala In-depth understanding of Scala collection APIs Work with RDD and DataFrame to learn Spark's core abstractions Analysing structured and unstructured data using SparkSQL and GraphX Scalable and fault-tolerant streaming application development using Spark structured streaming Learn machine-learning best practices for classification, regression, dimensionality reduction, and recommendation system to build predictive models with widely used algorithms in Spark MLlib & ML Build clustering models to cluster a vast amount of data Understand tuning, debugging, and monitoring Spark applications Deploy Spark applications on real clusters in Standalone, Mesos, and YARN In Detail Scala has been observing wide adoption over the past few years, especially in the field of data science and analytics. Spark, built on Scala, has gained a lot of recognition and is being used widely in productions. Thus, if you want to leverage the power of Scala and Spark to make sense of big data, this book is for you. The first part introduces you to Scala, helping you understand the object-oriented and functional programming concepts needed for Spark application development. It then moves on to Spark to cover the basic abstractions using RDD and DataFrame. This will help you develop scalable and fault-tolerant streaming applications by analyzing structured and unstructured data using SparkSQL, GraphX, and Spark structured streaming. Finally, the book moves on to some advanced topics, such as monitoring, configuration, debugging, testing, and deployment. You will also learn how to develop Spark applications using SparkR and PySpark APIs, interactive data analytics using Zeppelin, and in-memory data processing with Alluxio. By the end of this book, you will have a thorough understanding of Spark, and you will be able to perform full-stack data analytics with a feel that no amount of data is too big. Style and approach Filled with practical examples and use cases, this book will not only help you get up and running with Spark, but will also take you farther down the road to becoming a data scientist.

This book is a must-have tutorial for software developers aiming to write concurrent programs in Scala, or broaden their existing knowledge of concurrency. This book is intended for Scala programmers that have no prior knowledge about concurrent programming, as well as those seeking to broaden their existing knowledge about concurrency. Basic knowledge of the Scala programming language will be helpful. Readers with a solid knowledge in another programming language, such as Java, should find this book easily accessible.