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Functional And Reactive Domain Modeling

Learn from F#'s inventor to become an expert in the latest version of this powerful programming language so you can seamlessly integrate functional, imperative, object-oriented, and query programming style flexibly and elegantly to solve any programming problem. Expert F# 4.0 will help you achieve unrivaled levels of

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programmer productivity and program clarity across multiple platforms including Windows, Linux, Android, OSX, and iOS as well as HTML5 and GPUs. F# 4.0 is a mature, open source, cross-platform, functional-first programming language which empowers users and organizations to tackle complex computing problems with simple, maintainable, and robust code. Expert F# 4.0 is:

A comprehensive guide to the latest version of F#

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by the inventor of the language A treasury of F# techniques for practical problem-solving An in-depth case book of F# applications and F# 4.0 concepts, syntax, and features Written by F#'s inventor and two major F# community members, Expert F# 4.0 is a comprehensive and in-depth guide to the language and its use. Designed to help others become experts, the book quickly yet carefully describes the paradigms

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supported by F# language, and then shows how to use F# elegantly for a practical web, data, parallel and analytical programming tasks. The world's experts in F# show you how to program in F# the way they do!

Summary Functional Reactive Programming teaches the concepts and applications of FRP. It offers a careful walk-through of core FRP operations and introduces the concepts and techniques you'll

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need to use FRP in any language. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Today's software is shifting to more asynchronous, event-based solutions. For decades, the Observer pattern has been the go-to event infrastructure, but it is known to be bug-prone. Functional reactive programming (FRP) replaces Observer, radically improving the

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quality of event-based code. About the Book Functional Reactive Programming teaches you how FRP works and how to use it. You'll begin by gaining an understanding of what FRP is and why it's so powerful. Then, you'll work through greenfield and legacy code as you learn to apply FRP to practical use cases. You'll find examples in this book from many application domains using both Java and JavaScript. When you're finished, you'll

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be able to use the FRP approach in the systems you build and spend less time fixing problems. What's Inside Think differently about data and events FRP techniques for Java and JavaScript Eliminate Observer one listener at a time Explore Sodium, RxJS, and Kefir.js FRP systems About the Reader Readers need intermediate Java or JavaScript skills. No experience with functional programming or FRP required. About

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the Authors Stephen Blackheath and Anthony Jones are experienced software developers and the creators of the Sodium FRP library for multiple languages. Foreword by Heinrich Apfelmus. Illustrated by Duncan Hill. Table of Contents Stop listening! Core FRP Some everyday widget stuff Writing a real application New concepts FRP on the web Switch Operational primitives Continuous time Battle of the paradigms Programming in

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the real world Helpers
and patterns Refactoring
Adding FRP to existing
projects Future
directions

Written for developers
who need to create user-
facing DSLs, Domain-
Specific Languages Made
Easy unlocks clear and
practical methods to
create DSLs with easy-to-
use interfaces. Imagine
if your non-technical
clients could safely
produce software without
the need for anyone to
manually write code.
Domain-specific

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languages are purpose-built programming interfaces that make that possible—no programming experience required. Written for developers who need to create user-facing DSLs, Domain-Specific Languages Made Easy unlocks clear and practical methods to create DSLs with easy-to-use interfaces. Author Meinte Boersma lays out an iterative process for creating languages accessible to domain experts such as

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operations specialists, data analysts, and financial experts. You'll start with an overview of software language engineering before diving into the unique projectional editing paradigm that makes it easy to produce DSLs for business. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. Functional and Reactive Domain Modeling Simon and Schuster

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Bring the power of functional programming to Swift to develop clean, smart, scalable and reliable applications. About This Book Written for the latest version of Swift, this is a comprehensive guide that introduces iOS, Web and macOS developers to the all-new world of functional programming that has so far been alien to them Get familiar with using functional programming alongside existing OOP techniques so you can

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get the best of both worlds and develop clean, robust, and scalable code Develop a case study on example backend API with Swift and Vapor Framework and an iOS application with Functional Programming, Protocol-Oriented Programming, Functional Reactive Programming, and Object-Oriented Programming techniques Who This Book Is For Meant for a reader who knows object-oriented programming, has some experience with

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Objective-C/Swift programming languages and wants to further enhance his skills with functional programming techniques with Swift 3.x. What You Will Learn

Understand what functional programming is and why it matters

Understand custom operators, function composition, currying, recursion, and memoization

Explore algebraic data types, pattern matching, generics, associated type protocols, and type

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erasure Get acquainted with higher-kinded types and higher-order functions using practical examples Get familiar with functional and non-functional ways to deal with optionals Make use of functional data structures such as semigroup, monoid, binary search tree, linked list, stack, and lazy list Understand the importance of immutability, copy constructors, and lenses Develop a backend API with Vapor Create an iOS

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app by combining FP, OOP, FRP, and POP paradigms In Detail Swift is a multi-paradigm programming language enabling you to tackle different problems in various ways. Understanding each paradigm and knowing when and how to utilize and combine them can lead to a better code base. Functional programming (FP) is an important paradigm that empowers us with declarative development and makes applications

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more suitable for testing, as well as performant and elegant. This book aims to simplify the FP paradigms, making them easily understandable and usable, by showing you how to solve many of your day-to-day development problems using Swift FP. It starts with the basics of FP, and you will go through all the core concepts of Swift and the building blocks of FP. You will also go through important

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aspects, such as function composition and currying, custom operator definition, monads, functors, applicative functors, memoization, lenses, algebraic data types, type erasure, functional data structures, functional reactive programming (FRP), and protocol-oriented programming (POP). You will then learn to combine those techniques to develop a fully functional iOS

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application from scratch
Style and approach An
easy-to-follow guide
that is full of hands-on
coding examples of real-
world applications. Each
topic is explained
sequentially and placed
in context, and for the
more inquisitive, there
are more details of the
concepts used. It
introduces the Swift
language basics and
functional programming
techniques in simple,
non-mathematical
vocabulary with examples
in Swift.

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Grokking Functional Programming

Streaming Data

Domain Modeling Made Functional

Mastering Akka

Domain-Driven Design Distilled

System Design, Modeling, and Simulation Using Ptolemy II

Summary Reactive Design Patterns is a clearly written guide for building message-driven distributed systems that are resilient, responsive, and elastic. In this book you'll find patterns for messaging, flow control, resource management, and concurrency, along with practical issues like test-friendly designs. All patterns include concrete examples using Scala and Akka. Foreword

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by Jonas Bonér. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Modern web applications serve potentially vast numbers of users - and they need to keep working as servers fail and new ones come online, users overwhelm limited resources, and information is distributed globally. A Reactive application adjusts to partial failures and varying loads, remaining responsive in an ever-changing distributed environment. The secret is message-driven architecture - and design patterns to organize it. About the Book Reactive Design Patterns presents the principles, patterns, and best practices of Reactive application design. You'll learn how to keep one slow component from bogging down others with the Circuit Breaker pattern, how to shepherd a many-staged transaction to completion with the Saga pattern, how to divide datasets

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by Sharding, and more. You'll even see how to keep your source code readable and the system testable despite many potential interactions and points of failure. What's Inside The definitive guide to the Reactive Manifesto Patterns for flow control, delimited consistency, fault tolerance, and much more Hard-won lessons about what doesn't work Architectures that scale under tremendous load About the Reader Most examples use Scala, Java, and Akka. Readers should be familiar with distributed systems. About the Author Dr. Roland Kuhn led the Akka team at Lightbend and coauthored the Reactive Manifesto. Brian Hanafee and Jamie Allen are experienced distributed systems architects. Table of Contents PART 1 - INTRODUCTION Why Reactive? A walk-through of the Reactive Manifesto Tools of the trade PART 2 - THE PHILOSOPHY IN A NUTSHELL Message passing Location transparency

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Divide and conquer Principled failure handling Delimited consistency Nondeterminism by need Message flow PART 3 - PATTERNS Testing reactive applications Fault tolerance and recovery patterns Replication patterns Resource-management patterns Message flow patterns Flow control patterns State management and persistence patterns

Master the art of creating scalable, concurrent, and reactive applications using Akka About This Book This book will help you cure anemic models with domain-driven design We cover major Akka programming concepts such as concurrency, scalability, and reactivity You will learn concepts like Event Sourcing and CQRS via Akka Persistence, Akka Streams, Akka Http as well as Akka Clustering Who This Book Is For If you want to use the Lightbend platform to create highly performant reactive applications, then this book is for

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you. If you are a Scala developer looking for techniques to use all features of the new Akka release and want to incorporate these solutions in your current or new projects, then this book is for you. Expert Java developers who want to build scalable, concurrent, and reactive application will find this book helpful. What You Will Learn Use Akka actors to enable parallel execution Build out domain-driven design based components like entities and aggregates Respond to command requests on that aggregate root that affect the internal state Leverage Akka Persistence, protobuf and Cassandra to save the persistent state of you entities Build out complex processing graphs with the Graph Builder DSL Understand the dynamic push/pull nature of backpressure handling within Akka Streams Route HTTP requests to an actor and return a response Deploy actor instances across a set of nodes via ConductR for high

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availability In Detail For a programmer, writing multi-threaded applications is critical as it is important to break large tasks into smaller ones and run them simultaneously. Akka is a distributed computing toolkit that uses the abstraction of the Actor model, enabling developers to build correct, concurrent, and distributed applications using Java and Scala with ease. The book begins with a quick introduction that simplifies concurrent programming with actors. We then proceed to master all aspects of domain-driven design. We'll teach you how to scale out with Akka Remoting/Clustering. Finally, we introduce Conductr as a means to deploy to and manage microservices across a cluster. Style and approach This comprehensive, fast-paced guide is packed with several real-world use cases that will help you understand concepts, issues, and resolutions while using Akka to create highly

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performant, scalable, and concurrency-proof reactive applications.

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 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

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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

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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

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Your success—and sanity—are closer at hand when you work at a higher level of abstraction, allowing your attention to be on the business problem rather than the details of the programming platform. Domain Specific Languages—"little languages" implemented on top of conventional programming languages—give you a way to do this because they model the domain of your business problem. DSLs in Action introduces the concepts and definitions a developer needs to build high-quality domain specific languages. It provides a solid foundation to the usage as well as implementation aspects of a DSL, focusing on the necessity of applications speaking the language of the domain. After reading this book, a programmer will be able to design APIs that make better domain models. For experienced developers, the book addresses the intricacies of domain language design without the pain of writing parsers by hand.

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The book discusses DSL usage and implementations in the real world based on a suite of JVM languages like Java, Ruby, Scala, and Groovy. It contains code snippets that implement real world DSL designs and discusses the pros and cons of each implementation. 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 Tested, real-world examples How to find the right level of abstraction Using language features to build internal DSLs Designing parser/combinator-based little languages

Extend your OOP skills and implement Functional techniques in Kotlin and Arrow DSLs in Action

APPLYING UML & PATTERNS 3RD EDITION

Type-Driven Development with Idris

Learning Functional Programming in Go

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Feedback Systems

Summary Maintaining poor legacy code, interpreting cryptic comments, and writing the same boilerplate over and over can suck the joy out of your life as a Java developer. Fear not! There's hope! Kotlin is an elegant JVM language with modern features and easy integration with Java. The Joy of Kotlin teaches you practical techniques to improve abstraction and design, to write comprehensible code, and to build maintainable bug-free applications. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Your programming language should be expressive, safe, flexible, and intuitive, and Kotlin

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checks all the boxes! This elegant JVM language integrates seamlessly with Java, and makes it a breeze to switch between OO and functional styles of programming. It's also fully supported by Google as a first-class Android language. Master the powerful techniques in this unique book, and you'll be able to take on new challenges with increased confidence and skill. About the Book The Joy of Kotlin teaches you to write comprehensible, easy-to-maintain, safe programs with Kotlin. In this expert guide, seasoned engineer Pierre-Yves Saumont teaches you to approach common programming challenges with a fresh, FP-inspired perspective. As you work through the many examples, you'll dive deep into

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handling errors and data properly, managing state, and taking advantage of laziness. The author's down-to-earth examples and experience-driven insights will make you a better—and more joyful—developer! What's inside

Programming with functions
Dealing with optional data
Safe handling of errors and exceptions
Handling and sharing state
mutation
About the Reader
Written for intermediate Java or Kotlin developers.

About the Author
Pierre-Yves Saumont is a senior software engineer at Alcatel-Submarine Networks. He's the author of *Functional Programming in Java* (Manning, 2017).

Table of Contents
Making programs safer
Functional programming in Kotlin: An overview
Programming with functions

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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 problems with advanced trees
Functional input/output
Sharing mutable states with actors
Solving common problems functionally
USE THE ACTOR MODEL TO BUILD SIMPLER SYSTEMS WITH BETTER PERFORMANCE AND SCALABILITY
Enterprise software development has been much more difficult and failure-prone than it needs to be. Now, veteran software engineer and author Vaughn Vernon offers an easier and more rewarding method to succeeding with Actor

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model. Reactive Messaging Patterns with the Actor Model shows how the reactive enterprise approach, Actor model, Scala, and Akka can help you overcome previous limits of performance and scalability, and skillfully address even the most challenging non-functional requirements. Reflecting his own cutting-edge work, Vernon shows architects and developers how to translate the longtime promises of Actor model into practical reality. First, he introduces the tenets of reactive software, and shows how the message-driven Actor model addresses all of them—making it possible to build systems that are more responsive, resilient, and elastic. Next, he presents a practical Scala bootstrap tutorial, a

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thorough introduction to Akka and Akka Cluster, and a full chapter on maximizing performance and scalability with Scala and Akka. Building on this foundation, you'll learn to apply enterprise application and integration patterns to establish message channels and endpoints; efficiently construct, route, and transform messages; and build robust systems that are simpler and far more successful. Coverage Includes How reactive architecture replaces complexity with simplicity throughout the core, middle, and edges The characteristics of actors and actor systems, and how Akka makes them more powerful Building systems that perform at scale on one or many computing nodes Establishing

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channel mechanisms, and choosing appropriate channels for each application and integration challenge
Constructing messages to clearly convey a sender's intent in communicating with a receiver
Implementing a Process Manager for your Domain-Driven Designs
Decoupling a message's source and destination, and integrating appropriate business logic into its router
Understanding the transformations a message may experience in applications and integrations
Implementing persistent actors using Event Sourcing and reactive views using CQRS
Find unique online training on Domain-Driven Design, Scala, Akka, and other software craftsmanship topics using

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the `for{comprehension}` website at forcomprehension.com.

Summary Rx.NET in Action teaches developers how to build event-driven applications using the Reactive Extensions (Rx) library. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Modern applications must react to streams of data such as user and system events, internal messages, and sensor input. Reactive Extensions (Rx) is a .NET library containing more than 600 operators that you can compose together to build reactive client- and server-side applications to handle events asynchronously in a way that maximizes responsiveness, resiliency,

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and elasticity. About the Book Rx.NET in Action teaches developers how to build event-driven applications using the Rx library. Starting with an overview of the design and architecture of Rx-based reactive applications, you'll get hands-on with in-depth code examples to discover firsthand how to exploit the rich query capabilities that Rx provides and the Rx concurrency model that allows you to control both the asynchronicity of your code and the processing of event handlers. You'll also learn about consuming event streams, using schedulers to manage time, and working with Rx operators to filter, transform, and group events. What's Inside Introduction to Rx in C# Creating and consuming streams of

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data and events Building complex queries on event streams Error handling and testing Rx code About the Reader Readers should understand OOP concepts and be comfortable coding in C#. About the Author Tamir Dresher is a senior software architect at CodeValue and a prominent member of Israel's Microsoft programming community.

Table of Contents

PART 1 - GETTING STARTED WITH REACTIVE EXTENSIONS

Reactive programming Hello, Rx Functional thinking in C#

PART 2 - CORE IDEAS

Creating observable sequences Creating observables from .NET asynchronous types Controlling the observer-observable relationship Controlling the observable

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temperature Working with basic query operators Partitioning and combining observables Working with Rx concurrency and synchronization Error handling and recovery APPENDIXES Writing asynchronous code in .NET The Rx Disposables library Testing Rx queries and operators

Even experienced developers struggle with software systems that sprawl across distributed servers and APIs, are filled with redundant code, and are difficult to reliably test and modify. Grokking Simplicity is a friendly, practical guide that will change the way you approach software design and development. Even experienced developers struggle with software systems that sprawl

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across distributed servers and APIs, are filled with redundant code, and are difficult to reliably test and modify. *Grokking Simplicity* is a friendly, practical guide that will change the way you approach software design and development. *Grokking Simplicity* guides you to a crystal-clear understanding of why certain features of modern software are so prone to complexity and introduces you to the functional techniques you can use to simplify these systems so that they're easier to read, test, and debug. Through hands-on examples, exercises, and numerous self-assessments, you'll learn to organize your code for maximum reusability and internalize methods to keep unwanted complexity out of your

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codebase. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Larman covers how to investigate requirements, create solutions and then translate designs into code, showing developers how to make practical use of the most significant recent developments. A summary of UML notation is included

Rx.NET in Action

Domain-Driven Design and
Microservices

Change the way you approach your applications using functional programming in Go

Domain-Specific Languages Made Easy

Tackle Software Complexity with

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Domain-Driven Design and F#
Reactive Design Patterns

Domain-Driven Design (DDD) is an approach to software development for complex businesses and other domains. DDD tackles that complexity by focusing the team's attention on knowledge of the domain, picking apart the most tricky, intricate problems with models, and shaping the software around those models. Easier said than done! The techniques of DDD help us approach this systematically. This reference gives a quick and authoritative summary of the key concepts of DDD. It is not meant as a learning introduction to the subject. Eric Evans' original book and a handful of others explain

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DDD in depth from different perspectives. On the other hand, we often need to scan a topic quickly or get the gist of a particular pattern. That is the purpose of this reference. It is complementary to the more discursive books. The starting point of this text was a set of excerpts from the original book by Eric Evans, Domain-Driven-Design: Tackling Complexity in the Heart of Software, 2004 - in particular, the pattern summaries, which were placed in the Creative Commons by Evans and the publisher, Pearson Education. In this reference, those original summaries have been updated and expanded with new content. The practice and understanding of DDD has not

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stood still over the past decade, and Evans has taken this chance to document some important refinements. Some of the patterns and definitions have been edited or rewritten by Evans to clarify the original intent. Three patterns have been added, describing concepts whose usefulness and importance has emerged in the intervening years. Also, the sequence and grouping of the topics has been changed significantly to better emphasize the core principles. This is an up-to-date, quick reference to DDD. Domain-Driven Design (DDD) concept was introduced by first Eric Evans in 2003. The concept of microservices did not exist at that time. So basically DDD was

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introduced to solve the problem of a large monolithic code base. In the monolithic world, once the codebase starts growing with the growth of the business, it becomes difficult to maintain the code organized and structured as it was originally designed. Monolithic applications designed using MVC architecture have good separation between the business layer and the presentation layer. But in the absence of the strict architectural guidelines, the business layer does not provide specific rules to maintain responsibility boundaries between different modules and classes. That's why as the code base grows it increases the risk of logic breakdown,

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responsibility leakage between the different components of the application.

This book constitutes thoroughly revised and selected papers from the 5th International Conference on Model-Driven Engineering and Software Development, MODELSWARD 2017, held in Porto, Portugal, in February 2017. The 20 thoroughly revised and extended papers presented in this volume were carefully reviewed and selected from 91 submissions. They contribute to the development of highly relevant research trends in model-driven engineering and software development such as methodologies for MDD development and exploitation, model-based testing, model

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simulation, domain-specific modeling, code generation from models, new MDD tools, multi-model management, model evolution, and industrial applications of model-based methods and technologies.

Learn how to apply Functional Programming with Kotlin to real-life projects with popular libraries like Arrow. Key Features Focus on the functional aspects of Kotlin and identify the advantages that functional programming brings to the table and the associated coding benefits. Implement common functional programming design patterns and techniques. Learn to combine OOP and Reactive Programming with Functional Programming and how RxKotlin

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and funkTionale can help you implementing Functional Programming in Kotlin Book Description Functional programming makes your application faster, improves performance, and increases your productivity. Kotlin supports many of the popular and advanced functional features of functional languages. This book will cover the A-Z of functional programming in Kotlin. This book bridges the language gap for Kotlin developers by showing you how to create and consume functional constructs in Kotlin. We also bridge the domain gap by showing how functional constructs can be applied in business scenarios. We'll take you through lambdas, pattern

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matching, immutability, and help you develop a deep understanding of the concepts and practices of functional programming. If you want learn to address problems using Recursion, Kotlin has support for it as well. You'll also learn how to use the funKtionale library to perform currying and lazy programming and more. Finally, you'll learn functional design patterns and techniques that will make you a better programmer. By the end of the book, you will be more confident in your functional programming skills and will be able to apply them while programming in Kotlin. What you will learn Learn the Concepts of Functional Programming with Kotlin

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**Discover the Coroutines in Kotlin
Uncover Using funkTionale plugin
Learn Monads, Functors and
Applicatives Combine Functional
Programming with OOP and
Reactive Programming Uncover
Using Monads with funkTionale
Discover Stream Processing Who
this book is for Kotlin developers
who have no functional
programming experience, will
benefit from this book.
Methods for managing complex
software construction following
the practices, principles and
patterns of Domain-Driven
Design with code examples in C#
This book presents the
philosophy of Domain-Driven
Design (DDD) in a down-to-earth
and practical manner for
experienced developers building**

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applications for complex domains. A focus is placed on the principles and practices of decomposing a complex problem space as well as the implementation patterns and best practices for shaping a maintainable solution space. You will learn how to build effective domain models through the use of tactical patterns and how to retain their integrity by applying the strategic patterns of DDD. Full end-to-end coding examples demonstrate techniques for integrating a decomposed and distributed solution space while coding best practices and patterns advise you on how to architect applications for maintenance and scale. Offers a thorough introduction to the

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philosophy of DDD for professional developers Includes masses of code and examples of concept in action that other books have only covered theoretically Covers the patterns of CQRS, Messaging, REST, Event Sourcing and Event-Driven Architectures Also ideal for Java developers who want to better understand the implementation of DDD

Enabling Test-Driven Development, Domain-Driven Design, and Event-Driven Microservices

Reactive Messaging Patterns with the Actor Model

Domain-driven Design

How functional techniques improve your Java programs

Taming Complex Software with

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Functional Thinking

Functional Reactive Programming

Summary Akka in Action is a comprehensive tutorial on building message-oriented systems using Akka. The book takes a hands-on approach, where each new concept is followed by an example that shows you how it works, how to implement the code, and how to (unit) test it. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Akka makes it relatively easy

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to build applications in the cloud or on devices with many cores that efficiently use the full capacity of the computing power available. It's a toolkit that provides an actor programming model, a runtime, and required support tools for building scalable applications. About the Book Akka in Action shows you how to build message-oriented systems with Akka. This comprehensive, hands-on tutorial introduces each concept with a working example. You'll start with the big picture of how

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Akka works, and then quickly build and deploy a fully functional REST service out of actors. You'll explore test-driven development and deploying and scaling fault-tolerant systems. After mastering the basics, you'll discover how to model immutable messages, implement domain models, and apply techniques like event sourcing and CQRS. You'll also find a tutorial on building streaming applications using akka-stream and akka-http. Finally, you'll get practical advice on how to

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customize and extend your Akka system. What's Inside
Getting concurrency right
Testing and performance tuning
Clustered and cloud-based applications
Covers Akka version 2.4
About the Reader
This book assumes that you're comfortable with Java and Scala. No prior experience with Akka required.
About the Authors
A software craftsman and architect, Raymond Roestenburg is an Akka committer. Rob Bakker specializes in concurrent back-end systems and systems integration. Rob Williams has more than 20

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years of product development experience.
Table of Contents
Introducing Akka Up and running Test-driven development with actors
Fault tolerance Futures
Your first distributed Akka app Configuration, logging, and deployment
Structural patterns for actors Routing messages
Message channels Finite-state machines and agents
System integration
Streaming Clustering Actor persistence Performance tips
Looking ahead
The traditional patterns and practices for

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enterprise application development simply can't deliver the millisecond response times and near-perfect reliability these systems require. Reactive applications meet these demands by employing a loosely-coupled system of independent, isolated components that communicate via asynchronous message passing. Reactive Application Development teaches readers how to build reactive applications using the Typesafe stack. Along the way, they'll learn how to

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build distributed domain models for reactive applications and clustered actor systems for elasticity and resilience, as well as how to integrate reactive systems with traditional architectures. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

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.

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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

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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

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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

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traditional domain modeling. Examples use the Scala language. About the Author Software architect Debasish 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

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streams Reactive persistence and event sourcing Testing your domain model Summary - core thoughts and principles

Vaughn Vernon presents concrete and realistic domain-driven design (DDD) techniques through examples from familiar domains, such as a Scrum-based project management application that integrates with a collaboration suite and security provider. Each principle is backed up by realistic Java examples, and all content is tied

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together by a single case study of a company charged with delivering a set of advanced software systems with DDD.

Summary Functional Programming in C# teaches you to apply functional thinking to real-world problems using the C# language. The book, with its many practical examples, is written for proficient C# programmers with no prior FP experience. It will give you an awesome new perspective. Purchase of the print book includes a free eBook in PDF, Kindle,

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and ePub formats from Manning Publications. About the Technology Functional programming changes the way you think about code. For C# developers, FP techniques can greatly improve state management, concurrency, event handling, and long-term code maintenance. And C# offers the flexibility that allows you to benefit fully from the application of functional techniques. This book gives you the awesome power of a new perspective. About the Book Functional Programming in C# teaches

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you to apply functional thinking to real-world problems using the C# language. You'll start by learning the principles of functional programming and the language features that allow you to program functionally. As you explore the many practical examples, you'll learn the power of function composition, data flow programming, immutable data structures, and monadic composition with LINQ. What's Inside Write readable, team-friendly code Master async and data streams Radically improve

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error handling Event sourcing and other FP patterns About the Reader Written for proficient C# programmers with no prior FP experience. About the Author Enrico Buonanno studied computer science at Columbia University and has 15 years of experience as a developer, architect, and trainer. Table of Contents PART 1 - CORE CONCEPTS Introducing functional programming Why function purity matters Designing function signatures and types Patterns in functional programming Designing

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programs with function composition PART 2 - BECOMING FUNCTIONAL
Functional error handling
Structuring an application with functions Working effectively with multi-argument functions
Thinking about data functionally Event sourcing: a functional approach to persistence
PART 3 - ADVANCED TECHNIQUES Lazy computations, continuations, and the beauty of monadic composition
Stateful programs and stateful computations Working with

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asynchronous computations

Data streams and the

Reactive Extensions An

introduction to message-passing concurrency

Domain-Driven Design

Reference

Model-Driven Engineering and Software Development

Grokking Simplicity

Functional techniques for sequential and parallel programming with Scala

Expert F# 4.0

Swift Functional

Programming

You want increased customer satisfaction, faster development cycles, and less wasted

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work. Domain-driven design (DDD) combined with functional programming is the innovative combo that will get you there. In this pragmatic, down-to-earth guide, you'll see how applying the core principles of functional programming can result in software designs that model real-world requirements both elegantly and concisely - often more so than an object-oriented approach. Practical examples in the open-source F#

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functional language, and examples from familiar business domains, show you how to apply these techniques to build software that is business-focused, flexible, and high quality. Domain-driven design is a well-established approach to designing software that ensures that domain experts and developers work together effectively to create high-quality software. This book is the first to combine DDD with techniques from statically typed functional

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programming. This book is perfect for newcomers to DDD or functional programming - all the techniques you need will be introduced and explained. Model a complex domain accurately using the F# type system, creating compilable code that is also readable documentation---ensuring that the code and design never get out of sync. Encode business rules in the design so that you have "compile-time unit tests," and eliminate

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many potential bugs by making illegal states unrepresentable.

Assemble a series of small, testable functions into a complete use case, and compose these individual scenarios into a large-scale design.

Discover why the combination of functional programming and DDD leads naturally to service-oriented and hexagonal architectures. Finally, create a functional domain model that works with traditional databases, NoSQL, and

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**event stores, and safely expose your domain via a website or API. Solve real problems by focusing on real-world requirements for your software. What You Need: The code in this book is designed to be run interactively on Windows, Mac and Linux. You will need a recent version of F# (4.0 or greater), and the appropriate .NET runtime for your platform. Full installation instructions for all platforms at fsharp.org.
Function literals, Monads,**

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**Lazy evaluation,
Currying, and more About
This Book Write concise
and maintainable code
with streams and high-
order functions
Understand the benefits
of currying your Golang
functions Learn the most
effective design patterns
for functional
programming and learn
when to apply each of
them Build distributed
MapReduce solutions
using Go Who This Book
Is For This book is for
Golang developers
comfortable with OOP**

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and interested in learning how to apply the functional paradigm to create robust and testable apps. Prior programming experience with Go would be helpful, but not mandatory. What You Will Learn Learn how to compose reliable applications using high-order functions Explore techniques to eliminate side-effects using FP techniques such as currying Use first-class functions to implement pure functions Understand how to

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**implement a lambda expression in Go
Compose a working application using the decorator pattern
Create faster programs using lazy evaluation
Use Go concurrency constructs to compose a functionality pipeline
Understand category theory and what it has to do with FP
In Detail Functional programming is a popular programming paradigm that is used to simplify many tasks and will help you write flexible and succinct code. It allows**

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you to decompose your programs into smaller, highly reusable components, without applying conceptual restraints on how the software should be modularized. This book bridges the language gap for Golang developers by showing you how to create and consume functional constructs in Golang. The book is divided into four modules. The first module explains the functional style of programming; pure

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functional programming (FP), manipulating collections, and using high-order functions. In the second module, you will learn design patterns that you can use to build FP-style applications. In the next module, you will learn FP techniques that you can use to improve your API signatures, to increase performance, and to build better Cloud-native applications. The last module delves into the underpinnings of FP with an introduction to category theory for

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software developers to give you a real understanding of what pure functional programming is all about, along with applicable code examples. By the end of the book, you will be adept at building applications the functional way. Style and approach This book takes a pragmatic approach and shows you techniques to write better functional constructs in Golang. We'll also show you how use these concepts to

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build robust and testable apps.

Learn how to use RxClojure to deal with stateful computations
Key Features
Leverage the features of Functional Reactive Programming using Clojure
Create dataflow-based systems that are the building blocks of Reactive Programming
Use different Functional Reactive Programming frameworks, techniques, and patterns to solve real-world problems
Book Description
Reactive

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Programming is central to many concurrent systems, and can help make the process of developing highly concurrent, event-driven, and asynchronous applications simpler and less error-prone. This book will allow you to explore Reactive Programming in Clojure 1.9 and help you get to grips with some of its new features such as transducers, reader conditionals, additional string functions, direct linking, and socket

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**servers. Hands-On
Reactive Programming
with Clojure starts by
introducing you to
Functional Reactive
Programming (FRP) and
its formulations, as well
as showing you how it
inspired Compositional
Event Systems (CES). It
then guides you in
understanding Reactive
Programming as well as
learning how to develop
your ability to work with
time-varying values
thanks to examples of
reactive applications
implemented in different**

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frameworks. You'll also gain insight into some interesting Reactive design patterns such as the simple component, circuit breaker, request-response, and multiple-master replication.

Finally, the book introduces microservices-based architecture in Clojure and closes with examples of unit testing frameworks. By the end of the book, you will have gained all the knowledge you need to create applications using different Reactive

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Programming approaches. What you will learn
Understand how to think in terms of time-varying values and event streams
Create, compose, and transform observable sequences using Reactive extensions
Build a CES framework from scratch using core.async as its foundation
Develop a simple ClojureScript game using Reagent
Integrate Om and RxJS in a web application
Implement a reactive API in Amazon Web Services (AWS)

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Discover helpful approaches to backpressure and error handling. Get to grips with futures and their applications. Who this book is for: If you're interested in using Reactive Programming to build asynchronous and concurrent applications, this is the book for you. Basic knowledge of Clojure programming is necessary to understand the concepts covered in this book. Domain-Driven Design (DDD) software modeling

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delivers powerful results in practice, not just in theory, which is why developers worldwide are rapidly moving to adopt it. Now, for the first time, there's an accessible guide to the basics of DDD: What it is, what problems it solves, how it works, and how to quickly gain value from it.

Concise, readable, and actionable, Domain-Driven Design Distilled never buries you in detail-it focuses on what you need to know to get results. Vaughn Vernon,

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author of the best-selling Implementing Domain-Driven Design, draws on his twenty years of experience applying DDD principles to real-world situations. He is uniquely well-qualified to demystify its complexities, illuminate its subtleties, and help you solve the problems you might encounter. Vernon guides you through each core DDD technique for building better software. You'll learn how to segregate domain models using the

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powerful Bounded Contexts pattern, to develop a Ubiquitous Language within an explicitly bounded context, and to help domain experts and developers work together to create that language. Vernon shows how to use Subdomains to handle legacy systems and to integrate multiple Bounded Contexts to define both team relationships and technical mechanisms. Domain-Driven Design Distilled brings DDD to

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life. Whether you're a developer, architect, analyst, consultant, or customer, Vernon helps you truly understand it so you can benefit from its remarkable power.

Coverage includes What DDD can do for you and your organization-and why it's so important The cornerstones of strategic design with DDD:

Bounded Contexts and

Ubiquitous Language

Strategic design with

Subdomains Context

Mapping: helping teams

work together and

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integrate software more strategically Tactical design with Aggregates and Domain Events Using project acceleration and management tools to establish and maintain team cadence

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

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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

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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

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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

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experience coding in C++. About the Author Ivan Čukić 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

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**evaluation Ranges
Functional data
structures Algebraic data
types and pattern
matching Monads
Template
metaprogramming
Functional design for
concurrent systems
Testing and debugging
Functional Programming
in Scala
Reactive Application
Development
How to write better C#
code
Akka in Action
Functional Programming
in C#**

Hands-On Reactive Programming with Clojure

Summary Practical Probabilistic Programming introduces the working programmer to probabilistic programming. In it, you'll learn how to use the PP paradigm to model application domains and then express those probabilistic models in code.

Although PP can seem abstract, in this book you'll immediately work on practical examples, like using the Figaro language to build a spam filter and applying Bayesian and Markov networks, to diagnose computer system data problems and recover digital images. Purchase of

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the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology The data you accumulate about your customers, products, and website users can help you not only to interpret your past, it can also help you predict your future! Probabilistic programming uses code to draw probabilistic inferences from data. By applying specialized algorithms, your programs assign degrees of probability to conclusions. This means you can forecast future events like sales trends, computer system failures, experimental outcomes, and many other critical concerns. About the Book Practical

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Probabilistic Programming introduces the working programmer to probabilistic programming. In this book, you'll immediately work on practical examples like building a spam filter, diagnosing computer system data problems, and recovering digital images. You'll discover probabilistic inference, where algorithms help make extended predictions about issues like social media usage. Along the way, you'll learn to use functional-style programming for text analysis, object-oriented models to predict social phenomena like the spread of tweets, and open universe models to gauge real-life social media usage. The book also has chapters on how

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probabilistic models can help in decision making and modeling of dynamic systems. What's Inside Introduction to probabilistic modeling Writing probabilistic programs in Figaro Building Bayesian networks Predicting product lifecycles Decision-making algorithms About the Reader This book assumes no prior exposure to probabilistic programming. Knowledge of Scala is helpful. About the Author Avi Pfeffer is the principal developer of the Figaro language for probabilistic programming. Table of Contents

**PART 1 INTRODUCING
PROBABILISTIC
PROGRAMMING AND FIGARO**

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Probabilistic programming in a nutshell A quick Figaro tutorial
Creating a probabilistic programming application PART 2
WRITING PROBABILISTIC PROGRAMS Probabilistic models and probabilistic programs
Modeling dependencies with Bayesian and Markov networks
Using Scala and Figaro collections to build up models Object-oriented probabilistic modeling
Modeling dynamic systems PART 3
INFERENCE The three rules of probabilistic inference Factored inference algorithms Sampling algorithms Solving other inference tasks
Dynamic reasoning and parameter learning

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Describes ways to incorporate domain modeling into software development.

A growing flood of data is aimed at JavaScript applications, and they need be ready for it. As more and more data is received, applications must scale to stay operational.

There's also the problem of latency when data has to be fetched from remote locations. RxJS, or Reactive Extensions for JavaScript, is a library for transforming, composing, and consuming streams of data.

RxJS combines reactive and functional programming to give an extensible, asynchronous event handling system for JavaScript.

RxJS in Action gives readers the

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development skills they need to create reactive applications with RxJS. This book is full of theory and practical examples that build on each other and help readers begin thinking in a reactive manner. The book begins by teaching the fundamentals of functional programming, and dives in to the basics of RxJS and what it means to be reactive. Next, it teaches how to build real-world applications with RxJS. The last part of the book tackles the advanced topics to take the reader's reactive programming skills to the next level, as they will learn how to deal with error handling, unit testing, and the role of RxJS when combined with

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frameworks such as Angular.js or Cycle.js. Examples in the book use RxJS 5, the latest version of RxJS built with an eye on performance and simplicity. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

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

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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

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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

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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

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External effects and I/O Local effects and mutable state Stream processing and incremental I/O The essential introduction to the principles and applications of feedback systems—now fully revised and expanded This textbook covers the mathematics needed to model, analyze, and design feedback systems. Now more user-friendly than ever, this revised and expanded edition of *Feedback Systems* is a one-volume resource for students and researchers in mathematics and engineering. It has applications across a range of disciplines that utilize feedback in physical, biological, information, and economic systems. Karl Åström and

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Richard Murray use techniques from physics, computer science, and operations research to introduce control-oriented modeling. They begin with state space tools for analysis and design, including stability of solutions, Lyapunov functions, reachability, state feedback observability, and estimators. The matrix exponential plays a central role in the analysis of linear control systems, allowing a concise development of many of the key concepts for this class of models. Åström and Murray then develop and explain tools in the frequency domain, including transfer functions, Nyquist analysis, PID control, frequency domain

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design, and robustness. Features a new chapter on design principles and tools, illustrating the types of problems that can be solved using feedback Includes a new chapter on fundamental limits and new material on the Routh-Hurwitz criterion and root locus plots Provides exercises at the end of every chapter Comes with an electronic solutions manual An ideal textbook for undergraduate and graduate students Indispensable for researchers seeking a self-contained resource on control theory

Functional Programming in Java
Functional and Reactive Domain Modeling
Understanding the real-time pipeline
Rxjs in Action

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Implementing Domain-driven Design

Applications and Integration in Scala and Akka

Grokking Functional Programming is a practical book written especially for object-oriented programmers.

Grokking Functional Programming teaches you first to break down problems in a new way so you can approach them from a FP mindset. Following carefully-selected examples with thorough, carefully-paced explanations, you'll immerse yourself in FP concept by concept. Along the way, exercises, checks for understanding, and even the occasional puzzler give you opportunities to think and practice what you're learning. Grokking

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Functional Programming is a practical book written especially for object-oriented programmers. It will help you map familiar ideas like objects and composition to FP concepts such as programming with immutable data and higher-order functions. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python

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isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query

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*responsibility segregation (CQRS)
Event-driven architecture and reactive
microservices*

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 ...

Summary Streaming Data introduces the concepts and requirements of streaming and real-time data systems. The book is an idea-rich tutorial that teaches you to think about how to efficiently interact with fast-flowing data. Purchase of the print book

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includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology As humans, we're constantly filtering and deciphering the information streaming toward us. In the same way, streaming data applications can accomplish amazing tasks like reading live location data to recommend nearby services, tracking faults with machinery in real time, and sending digital receipts before your customers leave the shop. Recent advances in streaming data technology and techniques make it possible for any developer to build these applications if they have the right mindset. This book will let you join them. About the Book Streaming Data is an idea-rich tutorial that teaches you to think about

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efficiently interacting with fast-flowing data. Through relevant examples and illustrated use cases, you'll explore designs for applications that read, analyze, share, and store streaming data. Along the way, you'll discover the roles of key technologies like Spark, Storm, Kafka, Flink, RabbitMQ, and more. This book offers the perfect balance between big-picture thinking and implementation details. What's Inside

The right way to collect real-time data

Architecting a streaming pipeline

Analyzing the data

Which technologies to use and when

About the Reader

Written for developers familiar with relational database concepts. No experience with streaming or real-time applications required. About the Author

Andrew

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Psaltis is a software engineer focused on massively scalable real-time analytics. Table of Contents PART 1 - A NEW HOLISTIC APPROACH
Introducing streaming data Getting data from clients: data ingestion
Transporting the data from collection tier: decoupling the data pipeline
Analyzing streaming data Algorithms for data analysis Storing the analyzed or collected data Making the data available
Consumer device capabilities and limitations accessing the data
PART 2 - TAKING IT REAL WORLD
Analyzing Meetup RSVPs in real time
Summary Type-Driven Development with Idris, written by the creator of Idris, teaches you how to improve the performance and accuracy of your programs by taking advantage of a

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state-of-the-art type system. This book teaches you with Idris, a language designed to support type-driven development. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Stop fighting type errors! Type-driven development is an approach to coding that embraces types as the foundation of your code - essentially as built-in documentation your compiler can use to check data relationships and other assumptions. With this approach, you can define specifications early in development and write code that's easy to maintain, test, and extend. Idris is a Haskell-like language with first-class, dependent types that's perfect for learning type-

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driven programming techniques you can apply in any codebase. About the Book Type-Driven Development with Idris teaches you how to improve the performance and accuracy of your code by taking advantage of a state-of-the-art type system. In this book, you'll learn type-driven development of real-world software, as well as how to handle side effects, interaction, state, and concurrency. By the end, you'll be able to develop robust and verified software in Idris and apply type-driven development methods to other languages. What's Inside

Understanding dependent types Types as first-class language constructs Types as a guide to program construction Expressing relationships between data About the Reader

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Written for programmers with knowledge of functional programming concepts. About the Author Edwin Brady leads the design and implementation of the Idris language. Table of Contents PART 1 - INTRODUCTION Overview Getting started with Idris PART 2 - CORE IDRIS Interactive development with types User-defined data types Interactive programs: input and output processing Programming with first-class types Interfaces: using constrained generic types Equality: expressing relationships between data Predicates: expressing assumptions and contracts in types Views: extending pattern matching PART 3 - IDRIS AND THE REAL WORLD Streams and processes: working with infinite

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data Writing programs with state State machines: verifying protocols in types

Dependent state machines: handling feedback and errors Type-safe

concurrent programming

The Joy of Kotlin

Architecture Patterns with Python

Patterns, Principles, and Practices of Domain-Driven Design

Practical Probabilistic Programming

Clojure Reactive Programming

This book is a definitive introduction to models of computation for the design of complex, heterogeneous systems. It has a particular focus on cyber-physical systems, which integrate

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computing, networking, and physical dynamics. The book captures more than twenty years of experience in the Ptolemy Project at UC Berkeley, which pioneered many design, modeling, and simulation techniques that are now in widespread use. All of the methods covered in the book are realized in the open source Ptolemy II modeling framework and are available for experimentation through links provided in the book. The book is suitable for engineers, scientists, researchers, and managers who wish to understand the rich possibilities

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offered by modern modeling techniques. The goal of the book is to equip the reader with a breadth of experience that will help in understanding the role that such techniques can play in design.

Mastering Functional Programming

*Functional Programming in C++
Functional Kotlin*

Create asynchronous, event-based, and concurrent applications, 2nd Edition

*5th International Conference,
MODELSWARD 2017, Porto,
Portugal, February 19-21, 2017,
Revised Selected Papers
Tackling Complexity in the*

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Heart of Software