

Programming (International
Computer Science Series)
***Haskell: The Craft
Of Functional
Programming
(International
Computer Science
Series)***

This is a thorough introduction to the fundamental concepts of functional programming. The book clearly expounds the construction of functional programming as a process of mathematical calculation, but restricts itself to the mathematics relevant to actual program construction. It covers simple and abstract datatypes, numbers, lists, examples, trees, and efficiency. It includes a simple, yet coherent treatment of the Haskell class; a calculus of time complexity; and new

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coverage of monadic input-output.

Business Communication: Making
Connections in a Digital World, 12/e by
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student and instructor with all the tools
needed to navigate through the complexity
of the modern business communication
environment. At their disposal, teachers
have access to an online Tools &
Techniques Blog that continually keeps
them abreast of the latest research and
developments in the field while providing
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pedagogically effective books in the field.
It has realistic examples that are both
consumer-and business-oriented.

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# 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 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 event stores, and safely

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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.

For weeks, months—nay!—from the very moment you were born, you’ve felt it calling to you. At long last you’ll be united with the programming language you’ve been longing for: Clojure! As a Lisp-style functional programming language, Clojure lets you write robust and elegant code, and because it runs on the Java Virtual Machine, you can take advantage of the vast Java ecosystem. Clojure for the Brave and True offers a "dessert-first" approach: you’ll start

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playing with real programs immediately, as you steadily acclimate to the abstract but powerful features of Lisp and functional programming. Inside you'll find an offbeat, practical guide to Clojure, filled with quirky sample programs that catch cheese thieves and track glittery vampires. Learn how to: **Wield Clojure's** core functions **Use Emacs for Clojure** development **Write macros to modify Clojure itself** **Use Clojure's** tools to simplify concurrency and parallel programming **Clojure for the Brave and True** assumes no prior experience with Clojure, the Java Virtual Machine, or functional programming. Are you ready, brave reader, to meet your true destiny? Grab your best pair of parentheses—you're about to embark on an epic journey into the world of Clojure!

Functional Programming in Scala
Foundations of Program Design

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Practical Haskell

The Haskell School of Expression

Connecting in a Digital World

Functional Programming: A PragPub

Anthology

The Haskell Road to Logic, Maths and

Programming

*Peter Seibel interviews 15
of the most interesting
computer programmers alive
today in Coders at Work,
offering a companion
volume to Apress's highly
acclaimed best-seller
Founders at Work by
Jessica Livingston. As the
words "at work" suggest,
Peter Seibel focuses on
how his interviewees
tackle the day-to-day work
of programming, while*

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revealing much more, like how they became great programmers, how they recognize programming talent in others, and what kinds of problems they find most interesting.

Hundreds of people have suggested names of programmers to interview on the Coders at Work web site:

www.codersatwork.com. The complete list was 284 names. Having digested everyone's feedback, we selected 15 folks who've been kind enough to agree to be interviewed: Frances Allen: Pioneer in

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*optimizing compilers,
first woman to win the
Turing Award (2006) and
first female IBM fellow
Joe Armstrong: Inventor of
Erlang Joshua Bloch:
Author of the Java
collections framework, now
at Google Bernie Cosell:
One of the main software
guys behind the original
ARPANET IMPs and a master
debugger Douglas
Crockford: JSON founder,
JavaScript architect at
Yahoo! L. Peter Deutsch:
Author of Ghostscript,
implementer of
Smalltalk-80 at Xerox PARC
and Lisp 1.5 on PDP-1*

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Brendan Eich: Inventor of JavaScript, CTO of the

Mozilla Corporation

Brad Fitzpatrick: Writer of

LiveJournal, OpenID,

memcached, and Perlbal

Dan Ingalls: Smalltalk

implementor and designer

Simon Peyton Jones:

Coinventor of Haskell and

lead designer of Glasgow

Haskell Compiler

Donald Knuth: Author of The Art

of Computer Programming

and creator of TeX

Peter Norvig: Director of

Research at Google and

author of the standard

text on AI

Guy Steele: Coinventor of Scheme and

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part of the Common Lisp Gang of Five, currently working on Fortress Ken Thompson: Inventor of UNIX Jamie Zawinski: Author of XEmacs and early Netscape/Mozilla hacker Richard Bird takes a radical approach to algorithm design, namely, design by calculation. These 30 short chapters each deal with a particular programming problem drawn from sources as diverse as games and puzzles, intriguing combinatorial tasks, and more familiar areas such as data compression and

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string matching. Each pearl starts with the statement of the problem expressed using the functional programming language Haskell, a powerful yet succinct language for capturing algorithmic ideas clearly and simply. The novel aspect of the book is that each solution is calculated from an initial formulation of the problem in Haskell by appealing to the laws of functional programming. Pearls of Functional Algorithm Design will appeal to the aspiring functional

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programmer, students and teachers interested in the principles of algorithm design, and anyone seeking to master the techniques of reasoning about programs in an equational style.

Type theory is a fast-evolving field at the crossroads of logic, computer science and mathematics. This gentle step-by-step introduction is ideal for graduate students and researchers who need to understand the ins and outs of the mathematical machinery, the role of logical rules

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therein, the essential
contribution of

definitions and the
decisive nature of well-
structured proofs. The
authors begin with untyped
lambda calculus and
proceed to several
fundamental type systems,
including the well-known
and powerful Calculus of
Constructions. The book
also covers the essence of
proof checking and proof
development, and the use
of dependent type theory
to formalise mathematics.
The only prerequisite is a
basic knowledge of
undergraduate mathematics.

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Carefully chosen examples illustrate the theory

throughout. Each chapter ends with a summary of the content, some historical context, suggestions for further reading and a selection of exercises to help readers familiarise themselves with the material.

Haskell is the world's leading lazy functional programming language, widely used for teaching, research, and applications. The language continues to develop rapidly, but in 1998 the community decided to

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capture a stable snapshot of the language: Haskell 98. All Haskell compilers support Haskell 98, so practitioners and educators alike have a stable base for their work. This book constitutes the agreed definition of Haskell 98, both the language itself and its supporting libraries, and should be a standard reference work for anyone involved in research, teaching, or application of Haskell.

Tackle Software Complexity with Domain-Driven Design and F#

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*Type Theory and Functional
Programming*

*Techniques for Multicore
and Multithreaded
Programming*

*Introduction to Functional
Programming Using Haskell
Purely Functional Data
Structures*

*Exploring Clojure, Elixir,
Haskell, Scala, and Swift
Beginning Functional
JavaScript*

This book describes data structures and data structure design techniques for functional languages.

This easy-to-use, fast-moving tutorial introduces you to functional programming with

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Haskell. You'll learn how to use Haskell in a variety of practical ways, from short scripts to large and demanding applications. Real World Haskell takes you through the basics of functional programming at a brisk pace, and then helps you increase your understanding of Haskell in real-world issues like I/O, performance, dealing with data, concurrency, and more as you move through each chapter.

Haskell The Craft of Functional Programming Addison-Wesley
This text and reference book on Category Theory, a branch of abstract algebra, is aimed not only at students of Mathematics, but also researchers and students of

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Computer Science, Logic, Linguistics, Cognitive Science, Philosophy, and any of the other fields that now make use of it. Containing clear definitions of the essential concepts, illuminated with numerous accessible examples, and providing full proofs of all important propositions and theorems, this book aims to make the basic ideas, theorems, and methods of Category Theory understandable to this broad readership. Although it assumes few mathematical pre-requisites, the standard of mathematical rigour is not compromised. The material covered includes the standard core of categories; functors; natural transformations;

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equivalence; limits and colimits;
functor categories; representables;
Yoneda's lemma; adjoints;
monads.

Coders at Work

Learning Functional Programming
Through Multimedia

Pearls of Functional Algorithm
Design

Functional Programming in C++
Reflections on the Craft of
Programming

The Craft of Functional
Programming

Real World Haskell

This book explores the role of
Martin-Lof's constructive type
theory in computer programming.

The main focus of the book is how
the theory can be successfully

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applied in practice. Introductory sections provide the necessary background in logic, lambda calculus and constructive mathematics, and exercises and chapter summaries are included to reinforce understanding. Summary Get Programming with Haskell leads you through short lessons, examples, and exercises designed to make Haskell your own. It has crystal-clear illustrations and guided practice. You will write and test dozens of interesting programs and dive into custom Haskell modules. You will gain a new perspective on programming plus the practical ability to use Haskell in the everyday world. (The 80 IQ points: not guaranteed.) Purchase of the

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print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Programming languages often differ only around the edges—a few keywords, libraries, or platform choices. Haskell gives you an entirely new point of view. To the software pioneer Alan Kay, a change in perspective can be worth 80 IQ points and Haskellers agree on the dramatic benefits of thinking the Haskell way—thinking functionally, with type safety, mathematical certainty, and more. In this hands-on book, that's exactly what you'll learn to do. What's Inside Thinking in Haskell Functional programming basics Programming in types Real-

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world applications for Haskell About the Reader Written for readers who

know one or more programming languages. Table of Contents Lesson 1 Getting started with Haskell Unit 1 - FOUNDATIONS OF

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Lesson 2 Functions and functional programming Lesson 3 Lambda functions and lexical scope Lesson 4 First-class functions Lesson 5

Closures and partial application

Lesson 6 Lists Lesson 7 Rules for recursion and pattern matching

Lesson 8 Writing recursive functions

Lesson 9 Higher-order functions

Lesson 10 Capstone: Functional object-oriented programming with robots! Unit 2 - INTRODUCING

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context Lesson 29 Lists as context: a
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Lesson 39 Making HTTP requests in Haskell
Lesson 40 Working with JSON data by using Aeson
Lesson 41 Using databases in Haskell
Lesson 42 Efficient, stateful arrays in Haskell
Afterword - What's next?
Appendix - Sample answers to exercise

This book introduces Miranda at a level appropriate for professionals with little or no prior experience in programming. The emphasis is on the process of crafting programs,

solving problems, and avoiding common errors. Using a large number of running examples and case studies, the book encourages the design of well structured, reusable software together with proofs of correctness. A tear-out card enables readers to acquire a Miranda compiler from Research Software Ltd. at a substantial discount off the published list price.

Haskell is one of the leading languages for teaching functional programming, enabling students to write simpler and cleaner code, and to learn how to structure and reason about programs. This introduction is ideal for beginners: it requires no previous programming experience

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and all concepts are explained from
first principles via carefully chosen
examples. Each chapter includes
exercises that range from the
straightforward to extended projects,
plus suggestions for further reading
on more advanced topics. The author
is a leading Haskell researcher and
instructor, well-known for his
teaching skills. The presentation is
clear and simple, and benefits from
having been refined and class-tested
over several years. The result is a
text that can be used with courses, or
for self-learning. Features include
freely accessible Powerpoint slides
for each chapter, solutions to
exercises and examination questions
(with solutions) available to

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instructors, and a downloadable code
that's fully compliant with the latest
Haskell release.

Beginning Haskell

Learn You a Haskell for Great
Good!

Functional Programming with
JavaScript Using EcmaScript 6
A Real World Guide to
Programming

Programming with Miranda
An Introduction

Haskell Design Patterns
*Learn functional programming
concepts using JavaScript ES6.
You will learn concepts such
as currying, partial functions,
higher-order functions, and
monads. Programming*

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languages have evolved from focusing on procedures to objects and now on function. JavaScript supports functional programming and allows developers to write well-crafted code. What You Will Learn: Master functional programming concepts Identify how functions are treated in JavaScript Understand real-world functional libraries and create a functional library that mimics underscore.js Perform pure-error handling techniques such as functors and monads Discover ES6 functional features such as spread operators and

*generators Who This Book Is
For: JavaScript developers (or
beginners) who want to
understand functional
programming concepts and
the functional nature of the
language.*

*Introduces fundamental
techniques for reasoning
mathematically about
functional programs. Ideal for
a first- or second-year
undergraduate course.*

*Long ago, when Alexander the
Great asked the
mathematician Menaechmus
for a crash course in geometry,
he got the famous reply
``There is no royal road to
mathematics." Where there*

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*was no shortcut for Alexander,
there is no shortcut for us.*

*Still, the fact that we have
access to computers and
mature programming
languages means that there
are avenues for us that were
denied to the kings and
emperors of yore. The purpose
of this book is to teach logic
and mathematical reasoning in
practice, and to connect
logical reasoning with
computer programming in
Haskell. Haskell emerged in
the 1990s as a standard for
lazy functional programming, a
programming style where
arguments are evaluated only
when the value is actually*

needed. Haskell is a marvelous demonstration tool for logic and maths because its functional character allows implementations to remain very close to the concepts that get implemented, while the laziness permits smooth handling of infinite data structures. This book does not assume the reader to have previous experience with either programming or construction of formal proofs, but acquaintance with mathematical notation, at the level of secondary school mathematics is presumed. Everything one needs to know about mathematical reasoning

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or programming is explained as we go along. After proper digestion of the material in this book, the reader will be able to write interesting programs, reason about their correctness, and document them in a clear fashion. The reader will also have learned how to set up mathematical proofs in a structured way, and how to read and digest mathematical proofs written by others. This is the updated, expanded, and corrected second edition of a much-acclaimed textbook. Praise for the first edition: 'Doets and van Eijck's ``The Haskell Road to Logic, Maths and

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Programming" is an astonishingly extensive and accessible textbook on logic, maths, and Haskell.' Ralf Laemmel, Professor of Computer Science, University of Koblenz-Landau 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. Haskell 98 Language and

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Get Programming with Haskell

Type Theory and Formal Proof

From Signals to Symphonies

Programming in Haskell

Erlang Programming

A Concurrent Approach to

Software Development

The second edition of

Haskell: The Craft of

Functional Programming is

essential reading for

beginners to functional

programming and newcomers

to the Haskell programming

language. The emphasis is

on the process of crafting

programs and the text

contains many examples and

running case studies, as

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well as advice on program
design, testing, problem
solving and how to avoid
common pitfalls.

This book is an in-depth
introduction to Erlang, a
programming language ideal
for any situation where
concurrency, fault
tolerance, and fast
response is essential.

Erlang is gaining
widespread adoption with
the advent of multi-core
processors and their new
scalable approach to
concurrency. With this
guide you'll learn how to
write complex concurrent
programs in Erlang,

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regardless of your programming background or experience. Written by leaders of the international Erlang community -- and based on their training material -- Erlang Programming focuses on the language's syntax and semantics, and explains pattern matching, proper lists, recursion, debugging, networking, and concurrency. This book helps you: Understand the strengths of Erlang and why its designers included specific features Learn the concepts behind concurrency and Erlang's

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way of handling it Write
efficient Erlang programs
while keeping code neat
and readable Discover how
Erlang fills the
requirements for
distributed systems Add
simple graphical user
interfaces with little
effort Learn Erlang's
tracing mechanisms for
debugging concurrent and
distributed systems Use
the built-in Mnesia
database and other table
storage features Erlang
Programming provides
exercises at the end of
each chapter and simple
examples throughout the

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book.

In Haskell from the Very
Beginning John Whittington
takes a no-prerequisites
approach to teaching the
basics of a modern general-
purpose programming
language. Each small, self-
contained chapter
introduces a new topic,
building until the reader
can write quite
substantial programs.
There are plenty of
questions and, crucially,
worked answers and hints.
Haskell from the Very
Beginning will appeal both
to new programmers, and to
experienced programmers

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eager to explore functional languages such as Haskell. It is suitable both for formal use within an undergraduate or graduate curriculum, and for the interested amateur.

Function literals, Monads, 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

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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 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

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as currying Use first-class functions to

implement pure functions

Understand how to

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

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write flexible and
succinct code. It allows

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
functional programming

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(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 software developers to give you a real

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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 build robust and testable apps.

The Revised Report
Category Theory
Parallel and Concurrent

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Programming in Haskell
*The Haskell School of
Music*

*Category Theory for
Programmers (Scala
Edition, Paperback)*

*Lesikar's Business
Communication*

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

*Explore functional programming
and discover new ways of
thinking about code. You know
you need to master functional
programming, but learning one
functional language is only the
start. In this book, through
articles drawn from PragPub
magazine and articles written*

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specifically for this book, you'll explore functional thinking and functional style and idioms across languages. Led by expert guides, you'll discover the distinct strengths and approaches of Clojure, Elixir, Haskell, Scala, and Swift and learn which best suits your needs. Contributing authors: Rich Hickey, Stuart Halloway, Aaron Bedra, Michael Bevilacqua-Linn, Venkat Subramaniam, Paul Callaghan, Jose Valim, Dave Thomas, Natasha Murashev, Tony Hillerson, Josh Chisholm, and Bruce Tate. Functional programming is on the rise because it lets you write simpler, cleaner code, and its emphasis on immutability makes it ideal for maximizing the benefits of multiple cores and distributed

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*solutions. So far nobody's
invented the perfect functional
language - each has its unique
strengths. In Functional
Programming: A PragPub
Anthology, you'll investigate the
philosophies, tools, and idioms of
five different functional
programming languages. See how
Swift, the development language
for iOS, encourages you to build
highly scalable apps using
functional techniques like map
and reduce. Discover how Scala
allows you to transition gently but
deeply into functional
programming without losing the
benefits of the JVM, while with
Lisp-based Clojure, you can
plunge fully into the functional
style. Learn about advanced
functional concepts in Haskell, a*

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pure functional language making powerful use of the type system with type inference and type classes. And see how functional programming is becoming more elegant and friendly with Elixir, a new functional language built on the powerful Erlang base. The industry has been embracing functional programming more and more, driven by the need for concurrency and parallelism. This collection of articles will lead you to mastering the functional approach to problem solving. So put on your explorer's hat and prepare to be surprised. The goal of exploration is always discovery. What You Need: Familiarity with one or more programming languages.
Summary Functional

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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

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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

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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 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 evaluation Ranges Functional data structures

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Algebraic data types and pattern
matching Monads Template

metaprogramming Functional
design for concurrent systems

Testing and debugging

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 state-of-the-art
type system. This book teaches

you with Idris, a language
designed to support type-driven
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is an approach to coding that

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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-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

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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 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

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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 data
Writing programs with state
State machines: verifying protocols in types
Dependent state machines: handling feedback and errors
Type-safe concurrent programming

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Beginning Haskell provides a broad-based introduction to the Haskell language, its libraries and environment, and to the functional programming paradigm that is fast growing in importance in the software industry. The book takes a project-based approach to learning the language that is unified around the building of a web-based storefront. Excellent coverage is given to the Haskell ecosystem and supporting tools. These include the Cabal build tool for managing projects and modules, the HUnit and QuickCheck tools for software testing, the Scotty framework for developing web applications, Persistent and Esqueleto for database access, and also parallel and distributed programming

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libraries. Functional programming is gathering momentum, allowing programmers to express themselves in a more concise way, reducing boilerplate and increasing the safety of code. Indeed, mainstream languages such as C# and Java are adopting features from functional programming, and from languages implementing that paradigm. Haskell is an elegant and noise-free pure functional language with a long history, having a huge number of library contributors and an active community. This makes Haskell the best tool for both learning and applying functional programming, and *Beginning Haskell* the perfect book to show off the language and what it can do. Takes you

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through a series of projects showing the different parts of the language. Provides an overview of the most important libraries and tools in the Haskell ecosystem. Teaches you how to apply functional patterns in real-world scenarios.

A Project-Based Approach

Java Software Solutions

Code You Can Believe In

Thinking Functionally with Haskell

Elm in Action

Miranda

Computation is a process of calculation involving arithmetic and logical steps, following a given set of rules (an algorithm). This uniquely accessible textbook

introduces students to computation using a very distinctive approach, quite rapidly leading them into essential topics with sufficient depth, yet in a highly intuitive manner. The work is anchored in coverage of functional programming (in Haskell), symbolic logic, and finite automata-- each a critical component of the foundations of Informatics, and together offering students a clear glimpse into an intellectual journey beyond mere mastery of technical skills. From core

elements like types, Venn diagrams and logic, to patterns of reasoning, sequent calculus, recursion and algebraic data types, the book spans the breadth of key concepts and methods that will enable students to readily progress with their studies in Computer Science. Topics and features: Spans the key concepts and methods that underpin computation Develops symbolic logic, with a view toward honing clarity of thought; and automata, as a foundation for future study of both their applications

***and related theoretical
topics Introduces powerful
functional programming
ideas that will be useful
regardless which
programming languages are
used later Provides
numerous exercises to
support a clear and open,
accessible approach Offers a
dedicated website with
resources for instructors and
students, including code and
links to online information
Includes a wide array of
marginal notes, empowering
readers to "go beyond" the
content presented
Approaches logic and***

*programming (International
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**automata through Haskell
code, to bring key concepts
alive and foster
understanding through
experimentation Assuming
no formal background in
programming, this highly
practical and accessible
textbook provides the
grounding fundamentals of
computation for
undergraduate students. Its
flexible, yet clear expository
style also makes the book
eminently suitable as a self-
study instructional guide for
professionals or
nonspecialists interested in
these topics. Prof. Donald**

*Sannella, Prof. Michael
Fourman, and Prof. Philip*

*Wadler are each at the
University of Edinburgh's
School of Informatics,
Edinburgh, UK. Mr. Haoran
Peng will soon pursue
research interests in
machine learning and
machine intelligence at
Cambridge University,
Cambridge, UK.*

*It's all in the name: Learn
You a Haskell for Great
Good! is a hilarious,
illustrated guide to this
complex functional
language. Packed with the
author's original artwork,*

Programming (International
Computer Science Series)
**pop culture references, and
most importantly, useful**

**example code, this book
teaches functional
fundamentals in a way you
never thought possible.**

**You'll start with the kid
stuff: basic syntax,
recursion, types and type
classes. Then once you've
got the basics down, the real
black belt master-class
begins: you'll learn to use
applicative functors,
monads, zippers, and all the
other mythical Haskell
constructs you've only read
about in storybooks. As you
work your way through the**

*author's imaginative (and
occasionally insane)*

examples, you'll learn to:

*-Laugh in the face of side
effects as you wield purely
functional programming
techniques*

*-Use the magic
of Haskell's "laziness" to
play with infinite sets of data*

*-Organize your programs by
creating your own types,
type classes, and modules*

*-Use Haskell's elegant
input/output system to share
the genius of your programs
with the outside world Short
of eating the author's brain,
you will not find a better way
to learn this powerful*

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**language than reading Learn
You a Haskell for Great
Good!**

**Get a practical, hands-on
introduction to the Haskell
language, its libraries and
environment, and to the
functional programming
paradigm that is fast
growing in importance in the
software industry. This book
contains excellent coverage
of the Haskell ecosystem and
supporting tools, include
Cabal and Stack for
managing projects, HUnit
and QuickCheck for software
testing, the Spock
framework for developing**

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**web applications, Persistent
and Esqueleto for database
access, and parallel and
distributed programming
libraries. You'll see how
functional programming is
gathering momentum,
allowing you to express
yourself in a more concise
way, reducing boilerplate,
and increasing the safety of
your code. Haskell is an
elegant and noise-free pure
functional language with a
long history, having a huge
number of library
contributors and an active
community. This makes
Haskell the best tool for**

*Programming (International
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**both learning and applying
functional programming,
and Practical Haskell takes
advantage of this to show off
the language and what it can
do. What You Will Learn Get
started programming with
Haskell Examine the
different parts of the
language Gain an overview
of the most important
libraries and tools in the
Haskell ecosystem Apply
functional patterns in real-
world scenarios Understand
monads and monad
transformers Proficiently
use laziness and resource
management Who This Book**

***Is For Experienced
programmers who may be
new to the Haskell
programming language.
However, some prior
exposure to Haskell is
recommended.***

***This is the Scala edition of
Category Theory for
Programmers by Bartosz
Milewski. This book contains
code snippets in both
Haskell and Scala.***

***Haskell from the Very
Beginning***

Haskell

***Introduction to Computation
Clojure for the Brave and
True***

Programming (International
Computer Science Series)
***Domain Modeling Made
Functional***

***A Beginner's Guide
Haskell Programming from
First Principles***

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

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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

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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

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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

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Authors Paul Chiusano and Rúnar Bjarnason are

recognized experts in

functional programming

with Scala and are core

contributors to the

Scalaz library. Table of

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External effects and I/O

Local effects and

mutable state Stream

processing and

incremental I/O

This book teaches

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functional programming
using Haskell and
examples drawn from
multimedia applications.
If you have a working
knowledge of Haskell,
this hands-on book shows
you how to use the
language's many APIs and
frameworks for writing
both parallel and
concurrent programs.
You'll learn how
parallelism exploits
multicore processors to
speed up computation-
heavy programs, and how
concurrency enables you
to write programs with

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threads for multiple interactions. Author Simon Marlow walks you through the process with lots of code examples that you can run, experiment with, and extend. Divided into separate sections on Parallel and Concurrent Haskell, this book also includes exercises to help you become familiar with the concepts presented: Express parallelism in Haskell with the Eval monad and Evaluation Strategies Parallelize ordinary

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Haskell code with the Par monad Build parallel array-based computations, using the Repa library Use the Accelerate library to run computations directly on the GPU Work with basic interfaces for writing concurrent code Build trees of threads for larger and more complex programs Learn how to build high-speed concurrent network servers Write distributed programs that run on multiple machines in a network

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Summary Elm is more than
just a cutting-edge

programming language,
it's a chance to upgrade
the way you think about
building web

applications. Once you
get comfortable with
Elm's refreshingly
different approach to
application development,
you'll be working with a
clean syntax, dependable
libraries, and a
delightful compiler that
essentially eliminates
runtime exceptions. Elm
compiles to JavaScript,
so your code runs in any

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browser, and Elm's best-in-class rendering speed will knock your socks off. Let's get started! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Simply put, the Elm programming language transforms the way you think about frontend web development. Elm's legendary compiler is an incredible assistant, giving you the precise and user-friendly

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support you need to work
efficiently. Elm

applications have small
bundle sizes that run
faster than JavaScript
frameworks and are
famously easy to
maintain as they grow.

The catch? Elm isn't
JavaScript, so you'll
have some new skills to
learn. About the book
Elm in Action teaches
you the Elm language
along with a new
approach to coding
frontend applications.
Chapter by chapter,
you'll create a full-

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featured photo-browsing app, learning as you go about Elm's modular architecture, Elm testing, and how to work seamlessly with your favorite JavaScript libraries. You'll especially appreciate author and Elm core team member Richard Feldman's unique insights, based on his thousands of hours writing production code in Elm. When you're done, you'll have a toolbox of new development skills and a stunning web app for

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your portfolio. What's
inside Scalable design
for production web
applications Single-page
applications in Elm Data
modeling in Elm
Accessing JavaScript
from Elm About the
reader For web
developers with no prior
experience in Elm or
functional programming.
About the author Richard
Feldman is a software
engineer at NoRedInk and
a well-known member of
the Elm community. Table
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7. Data modeling 8.

Single-page applications

Type-Driven Development
with Idris

Haskell, Logic and

Automata

Introduction to

Functional Programming

Learning Functional

Programming in Go

Learn the Ultimate

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Learn functional programming and the Haskell programming language through algorithmic music composition and virtual instrument design. Take your Haskell and functional programming skills to the next level by exploring new idioms and design patterns About This Book Explore Haskell on a higher level through idioms and patterns Get an in-depth look into the three strongholds of Haskell: higher-order functions, the Type system, and Lazy evaluation Expand your understanding of Haskell and

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functional programming, one line of executable code at a time Who This Book Is For If you're a Haskell programmer with a firm grasp of the basics and ready to move more deeply into modern idiomatic Haskell programming, then this book is for you. What You Will Learn Understand the relationship between the "Gang of Four" OOP Design Patterns and Haskell Try out three ways of Streaming I/O: imperative, Lazy, and Iteratee based Explore the pervasive pattern of Composition: from function composition through to high-level composition with Lenses Synthesize Functor,

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Applicative, Arrow and Monad
in a single conceptual

framework Follow the grand
arc of Fold and Map on lists
all the way to their
culmination in Lenses and
Generic Programming Get a
taste of Type-level
programming in Haskell and
how this relates to
dependently-typed
programming Retrace the
evolution, one key language
extension at a time, of the
Haskell Type and Kind
systems Place the elements
of modern Haskell in a
historical framework In
Detail Design patterns and
idioms can widen our
perspective by showing us
where to look, what to look

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at, and ultimately how to
see what we are looking at.
At their best, patterns are
a shorthand method of
communicating better ways to
code (writing less, more
maintainable, and more
efficient code). This book
starts with Haskell 98 and
through the lens of patterns
and idioms investigates the
key advances and programming
styles that together make
"modern Haskell". Your
journey begins with the
three pillars of Haskell.
Then you'll experience the
problem with Lazy I/O,
together with a solution.
You'll also trace the
hierarchy formed by Functor,
Applicative, Arrow, and

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Monad. Next you'll explore
how Fold and Map are
generalized by Foldable and
Traversable, which in turn
is unified in a broader
context by functional
Lenses. You'll delve more
deeply into the Type system,
which will prepare you for
an overview of Generic
programming. In conclusion
you go to the edge of
Haskell by investigating the
Kind system and how this
relates to Dependently-typed
programming. Style and
approach Using short pieces
of executable code, this
guide gradually explores the
broad pattern landscape of
modern Haskell. Ideas are
presented in their

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historical context and arrived at through intuitive derivations, always with a focus on the problems they solve.