
C Concurrency In Action

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Concurrency
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HURLEY KEIRA

Erlang and OTP in

Action Simon and Schuster
Summary A fully revised edition that covers the new features available in Clojure 1.6. Purchase of the print book

includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Clojure is a modern Lisp for the JVM. It has the strengths you expect: first-class functions, macros, and Lisp's clean programming style. It supports functional programming, making

it ideal for concurrent programming and for creating domain-specific languages. Clojure lets you solve harder problems, make faster changes, and end up with a smaller code base. It's no wonder that there are so many Clojure success stories. About the Book Clojure in Action, Second Edition is an expanded and improved version that's been updated to cover the new features of Clojure 1.6. The book gives you a rapid introduction to the Clojure language, moving from abstract theory to practical examples. You'll start by learning how to use Clojure as a general-purpose language. Next, you'll explore Clojure's efficient concurrency model, based on the database

concept of Software Transactional Memory (STM). You'll gain a new level of productivity through Clojure DSLs that can run on the JVM. Along the way, you'll learn countless tips, tricks, and techniques for writing smaller, safer, and faster code.

What's Inside

Functional programming basics
 Metaprogramming with Clojure's macros
 Interoperating with Java
 Covers Clojure 1.6
 About the Reader
 Assumes readers are familiar with a programming language like C, Java, Ruby, or Python.
 Table of Contents
 Introducing Clojure
 Clojure elements: Data structures and functions
 Building blocks of Clojure
 Multimethod

polymorphism
Exploring Clojure and
Java interop State and
the concurrent world
Evolving Clojure
through macros More
on functional
programming
Protocols, records, and
types Test-driven
development and more
More macros and DSL
A Fast-Paced
Introduction Packt
Publishing Ltd
Contains full coverage
of the ANSI/ISO C++
standard. The text
covers classes,
methods, interfaces
and objects that make
up the standard C++
libraries.
Concurrent
Programming in Java
Simon and Schuster
Templates are among
the most powerful
features of C++, but
they remain
misunderstood and
underutilized, even as

the C++ language and
development
community have
advanced. In C++
Templates, Second
Edition, three
pioneering C++
experts show why,
when, and how to use
modern templates to
build software that's
cleaner, faster, more
efficient, and easier to
maintain. Now
extensively updated
for the C++11,
C++14, and C++17
standards, this new
edition presents state-
of-the-art techniques
for a wider spectrum of
applications. The
authors provide
authoritative
explanations of all new
language features that
either improve
templates or interact
with them, including
variadic templates,
generic lambdas, class
template argument

deduction, compile-time if, forwarding references, and user-defined literals. They also deeply delve into fundamental language concepts (like value categories) and fully cover all standard type traits. The book starts with an insightful tutorial on basic concepts and relevant language features. The remainder of the book serves as a comprehensive reference, focusing first on language details and then on coding techniques, advanced applications, and sophisticated idioms. Throughout, examples clearly illustrate abstract concepts and demonstrate best practices for exploiting all that C++ templates can do. Understand exactly how templates

behave, and avoid common pitfalls Use templates to write more efficient, flexible, and maintainable software Master today's most effective idioms and techniques Reuse source code without compromising performance or safety Benefit from utilities for generic programming in the C++ Standard Library Preview the upcoming concepts feature The companion website, tmplbook.com, contains sample code and additional updates. *Functional Programming in C#, Second Edition* Pearson Education All the new language and library features of C++17 (for those who know the previous versions of C++). C++17 is the next evolution in modern

C++ programming, which is already now supported by the latest version of gcc, clang, and Visual C++. Although it is not as big a step as C++11, it contains a large number of small and valuable language and library features, which will change the way we program in C++. As usual, not everything is self-explanatory, combining new features gives even more power, and there are hidden traps. This book presents all the new language and library features of C++17. It covers the motivation and context of each new feature with examples and background information. The focus is on how these features impact day-to-day programming, what it means to

combine them, and how to benefit from this in practice. *C++17 - The Complete Guide* Addison-Wesley Professional
With the new C++ Standard and Technical Report 2 (TR2), multi-threading is coming to C++ in a big way. TR2 will provide higher-level synchronization facilities that allow for a much greater level of abstraction, and make programming multi-threaded applications simpler and safer. Concurrent programming is required if programmers are to take advantage of the multi-core microprocessors increasingly available from Intel and others. The new standard for C++ has extensions to the language that make concurrent

programming more accessible to regular developers. As a guide and reference to the new concurrency features in the upcoming C++ Standard and TR2, this book is invaluable for existing programmers familiar with writing multi-threaded code in C++ using platform-specific APIs, or in other languages, as well as C++ programmers who have never written multithreaded code before.

Confidently build memory-safe, parallel, and efficient software in

Rust Nicojosuttis
 Geared to experienced C++ developers who may not be familiar with the more advanced features of the language, and therefore are not using

it to its full capabilities
 Teaches programmers how to think in C++—that is, how to design effective solutions that maximize the power of the language
 The authors drill down into this notoriously complex language, explaining poorly understood elements of the C++ feature set as well as common pitfalls to avoid
 Contains several in-depth case studies with working code that's been tested on Windows, Linux, and Solaris platforms
With Examples in C# and F# "O'Reilly Media, Inc."

Get to grips with modern software demands by learning the effective uses of Rust's powerful memory safety. Key Features Learn and improve the sequential

performance characteristics of your software. Understand the use of operating system processes in a high-scale concurrent system. Learn of the various coordination methods available in the Standard library. Book Description Most programming languages can really complicate things, especially with regard to unsafe memory access. The burden on you, the programmer, lies across two domains: understanding the modern machine and your language's pain-points. This book will teach you to how to manage program performance on modern machines and build fast, memory-safe, and concurrent software in Rust. It starts with the

fundamentals of Rust and discusses machine architecture concepts. You will be taken through ways to measure and improve the performance of Rust code systematically and how to write collections with confidence. You will learn about the Sync and Send traits applied to threads, and coordinate thread execution with locks, atomic primitives, data-parallelism, and more. The book will show you how to efficiently embed Rust in C++ code and explore the functionalities of various crates for multithreaded applications. It explores implementations in depth. You will know how a mutex works and build several

yourself. You will master radically different approaches that exist in the ecosystem for structuring and managing high-scale systems. By the end of the book, you will feel comfortable with designing safe, consistent, parallel, and high-performance applications in Rust. What you will learn

- Probe your programs for performance and accuracy issues
- Create your own threading and multi-processing environment in Rust
- Use coarse locks from Rust's Standard library
- Solve common synchronization problems or avoid synchronization using atomic programming
- Build lock-free/wait-free structures in Rust and understand their implementations in the

crates ecosystem

- Leverage Rust's memory model and type system to build safety properties into your parallel programs
- Understand the new features of the Rust programming language to ease the writing of parallel programs
- Who this book is for This book is aimed at software engineers with a basic understanding of Rust who want to exploit the parallel and concurrent nature of modern computing environments, safely.

C++ High Performance
 Packt Publishing Ltd
 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, 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 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 book.

C++ Crash Course
"O'Reilly Media, Inc."
Push the limits of what C - and you - can do, with this high-intensity guide to the most

advanced capabilities of C Key Features Make the most of C's low-level control, flexibility, and high performance A comprehensive guide to C's most powerful and challenging features A thought-provoking guide packed with hands-on exercises and examples Book Description There's a lot more to C than knowing the language syntax. The industry looks for developers with a rigorous, scientific understanding of the principles and practices. Extreme C will teach you to use C's advanced low-level power to write effective, efficient systems. This intensive, practical guide will help you become an expert C programmer. Building

on your existing C knowledge, you will master preprocessor directives, macros, conditional compilation, pointers, and much more. You will gain new insight into algorithm design, functions, and structures. You will discover how C helps you squeeze maximum performance out of critical, resource-constrained applications. C still plays a critical role in 21st-century programming, remaining the core language for precision engineering, aviations, space research, and more. This book shows how C works with Unix, how to implement OO principles in C, and fully covers multi-processing. In Extreme C, Amini encourages you to think, question,

apply, and experiment for yourself. The book is essential for anybody who wants to take their C to the next level. What you will learn Build advanced C knowledge on strong foundations, rooted in first principles Understand memory structures and compilation pipeline and how they work, and how to make most out of them Apply object-oriented design principles to your procedural C code Write low-level code that's close to the hardware and squeezes maximum performance out of a computer system Master concurrency, multithreading, multiprocessing, and integration with other languages Unit Testing and debugging, build systems, and inter-

process communication for C programming Who this book is for Extreme C is for C programmers who want to dig deep into the language and its capabilities. It will help you make the most of the low-level control C gives you.

Principles and Practice Using C++

Simon and Schuster Rust in Action is a hands-on guide to systems programming with Rust. Written for inquisitive programmers, it presents real-world use cases that go far beyond syntax and structure. Summary Rust in Action introduces the Rust programming language by exploring numerous systems programming concepts and techniques. You'll be learning Rust by

delving into how computers work under the hood. You'll find yourself playing with persistent storage, memory, networking and even tinkering with CPU instructions. The book takes you through using Rust to extend other applications and teaches you tricks to write blindingly fast code. You'll also discover parallel and concurrent programming. Filled to the brim with real-life use cases and scenarios, you'll go beyond the Rust syntax and see what Rust has to offer in real-world use cases. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Rust is the perfect

language for systems programming. It delivers the low-level power of C along with rock-solid safety features that let you code fearlessly. Ideal for applications requiring concurrency, Rust programs are compact, readable, and blazingly fast. Best of all, Rust's famously smart compiler helps you avoid even subtle coding errors. About the book *Rust in Action* is a hands-on guide to systems programming with Rust. Written for inquisitive programmers, it presents real-world use cases that go far beyond syntax and structure. You'll explore Rust implementations for file manipulation, networking, and kernel-level programming and

discover awesome techniques for parallelism and concurrency. Along the way, you'll master Rust's unique borrow checker model for memory management without a garbage collector. What's inside

Elementary to advanced Rust programming Practical examples from systems programming Command-line, graphical and networked applications About the reader For intermediate programmers. No previous experience with Rust required. About the author Tim McNamara uses Rust to build data processing pipelines and generative art. He is an expert in natural language processing and data engineering.

Table of Contents 1

Introducing Rust PART 1 RUST LANGUAGE DISTINCTIVES 2 Language foundations 3 Compound data types 4 Lifetimes, ownership, and borrowing PART 2 DEMYSTIFYING SYSTEMS PROGRAMMING 5 Data in depth 6 Memory 7 Files and storage 8 Networking 9 Time and timekeeping 10 Processes, threads, and containers 11 Kernel 12 Signals, interrupts, and exceptions

Programming "O'Reilly Media, Inc."

Master multithreading and concurrent processing with C++ About This Book Delve into the fundamentals of multithreading and concurrency and find out how to implement them Explore atomic operations to optimize

code performance
 Apply concurrency to both distributed computing and GPGPU processing
 Who This Book Is For This book is for intermediate C++ developers who wish to extend their knowledge of multithreading and concurrent processing. You should have basic experience with multithreading and be comfortable using C++ development toolchains on the command line.
 What You Will Learn Deep dive into the details of the how various operating systems currently implement multithreading Choose the best multithreading APIs when designing a new application Explore the use of mutexes, spin-locks, and other synchronization concepts and see how to safely pass data between threads Understand the level of API support provided by various C++ toolchains Resolve common issues in multithreaded code and recognize common pitfalls using tools such as Memcheck, CacheGrind, DRD, Helgrind, and more Discover the nature of atomic operations and understand how they can be useful in optimizing code Implement a multithreaded application in a distributed computing environment Design a C++-based GPGPU application that employs multithreading In Detail Multithreaded applications execute multiple threads in a single processor environment, allowing

developers achieve concurrency. This book will teach you the finer points of multithreading and concurrency concepts and how to apply them efficiently in C++. Divided into three modules, we start with a brief introduction to the fundamentals of multithreading and concurrency concepts. We then take an in-depth look at how these concepts work at the hardware-level as well as how both operating systems and frameworks use these low-level functions. In the next module, you will learn about the native multithreading and concurrency support available in C++ since the 2011 revision, synchronization and communication between threads,

debugging concurrent C++ applications, and the best programming practices in C++. In the final module, you will learn about atomic operations before moving on to apply concurrency to distributed and GPGPU-based processing. The comprehensive coverage of essential multithreading concepts means you will be able to efficiently apply multithreading concepts while coding in C++. Style and approach This book is filled with examples that will help you become a master at writing robust concurrent and parallel applications in C++.

C++ High Performance Packt Publishing Ltd
Presents a collection of reusable design

artifacts, called generic components, together with the techniques that make them possible. The author describes techniques for policy-based design, partial template specialization, typelists, and local classes, then goes on to implement generic components for smart pointers, object factories, functor objects, the Visitor design pattern, and multimethod engines.

c. Book News Inc.

Programming with POSIX Threads Simon and Schuster
C++ Concurrency in Action, Second Edition is the definitive guide to writing elegant multithreaded applications in C++. Updated for C++ 17, it carefully addresses every aspect of

concurrent development, from starting new threads to designing fully functional multithreaded algorithms and data structures.

Concurrency master Anthony Williams presents examples and practical tasks in every chapter, including insights that will delight even the most experienced developer.
-- Provided by publisher.

Tools and Techniques for Developers Elsevier

Summary This bestseller has been updated and revised to cover all the latest changes to C++ 14 and 17! C++ Concurrency in Action, Second Edition teaches you everything you need to write robust and elegant

multithreaded applications in C++17. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology You choose C++ when your applications need to run fast. Well-designed concurrency makes them go even faster. C++ 17 delivers strong support for the multithreaded, multiprocessor programming required for fast graphic processing, machine learning, and other performance-sensitive tasks. This exceptional book unpacks the features, patterns, and best practices of production-grade C++ concurrency. About the Book C++ Concurrency in Action, Second Edition is the definitive guide to writing

elegant multithreaded applications in C++. Updated for C++ 17, it carefully addresses every aspect of concurrent development, from starting new threads to designing fully functional multithreaded algorithms and data structures. Concurrency master Anthony Williams presents examples and practical tasks in every chapter, including insights that will delight even the most experienced developer. What's inside Full coverage of new C++ 17 features Starting and managing threads Synchronizing concurrent operations Designing concurrent code Debugging multithreaded applications About the Reader Written for

intermediate C and C++ developers. No prior experience with concurrency required. About the Author Anthony Williams has been an active member of the BSI C++ Panel since 2001 and is the developer of the `just::thread` Pro extensions to the C++ 11 thread library. Table of Contents Hello, world of concurrency in C++! Managing threads Sharing data between threads Synchronizing concurrent operations The C++ memory model and operations on atomic types Designing lock-based concurrent data structures Designing lock-free concurrent data structures Designing concurrent code Advanced thread management Parallel algorithms Testing and

debugging multithreaded applications *Extreme C* Simon and Schuster Summary Functional Programming in C++ teaches developers the practical side of functional programming and the tools that C++ provides to develop software in the functional style. This in-depth guide is full of useful diagrams that help you understand FP concepts and begin to think functionally. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Well-written code is easier to test and reuse, simpler to parallelize, and less error prone. Mastering the functional style of

programming can help you tackle the demands of modern apps and will lead to simpler expression of complex program logic, graceful error handling, and elegant concurrency. C++ supports FP with templates, lambdas, and other core language features, along with many parts of the STL. About the Book Functional Programming in C++ helps you unleash the functional side of your brain, as you gain a powerful new perspective on C++ coding. You'll discover dozens of examples, diagrams, and illustrations that break down the functional concepts you can apply in C++, including lazy evaluation, function objects and invocables, algebraic data types,

and more. As you read, you'll match FP techniques with practical scenarios where they offer the most benefit. What's inside Writing safer code with no performance penalties Explicitly handling errors through the type system Extending C++ with new control structures Composing tasks with DSLs About the Reader Written for developers with two or more years of experience coding in C++. About the Author Ivan 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 Algebraic data types and pattern matching Monads Template metaprogramming Functional design for concurrent systems Testing and debugging

The Complete Guide
Addison-Wesley Professional
Since the introduction of Hoares' Communicating Sequential Processes notation, powerful new tools have transformed CSP into a practical way of describing industrial-sized problems. This book gives you the fundamental grasp of

CSP concepts you'll need to take advantage of those tools. Part I provides a detailed foundation for working with CSP, using as little mathematics as possible. It introduces the ideas behind operational, denotational and algebraic models of CSP. Parts II and III go into greater detail about theory and practice. Topics include: parallel operators, hiding and renaming, piping and enslavement, buffers and communication, termination and sequencing, and semantic theory. Three detailed practical case studies are also presented. For anyone interested in modeling sequential processes.

Addison-Wesley Professional

If you're one of the many developers uncertain about concurrent and multithreaded development, this practical cookbook will change your mind. With more than 75 code-rich recipes, author Stephen Cleary demonstrates parallel processing and asynchronous programming techniques, using libraries and language features in .NET 4.5 and C# 5.0. Concurrency is becoming more common in responsive and scalable application development, but it's been extremely difficult to code. The detailed solutions in this cookbook show you how modern tools raise the level of abstraction, making

concurrency much easier than before. Complete with ready-to-use code and discussions about how and why the solution works, you get recipes for using: `async` and `await` for asynchronous operations Parallel programming with the Task Parallel Library The TPL Dataflow library for creating dataflow pipelines Capabilities that Reactive Extensions build on top of LINQ Unit testing with concurrent code Interop scenarios for combining concurrent approaches Immutable, threadsafe, and producer/consumer collections Cancellation support in your concurrent code Asynchronous-friendly Object-Oriented Programming Thread synchronization for

accessing data
A Concurrent Approach to Software Development John Wiley & Sons
 Summary Android in Practice is a treasure trove of Android goodness, with over 90 tested, ready-to-use techniques including complete end-to-end example applications and practical tips for real world mobile application developers. Written by real world Android developers, this book addresses the trickiest questions raised in forums and mailing lists. Using an easy-to-follow problem/solution/discussion format, it dives into important topics not covered in other Android books, like advanced drawing and graphics, testing and instrumentation, building and deploying

applications, and using alternative languages. About the Book It's not hard to find the information you need to build your first Android app. Then what? If you want to build real apps, you will need some how-to advice, and that's what this book is about. Android in Practice is a rich source of Android tips, tricks, and best practices, covering over 90 clever and useful techniques that will make you a more effective Android developer. Techniques are presented in an easy-to-read problem/solution/discussion format. The book dives into important topics like multitasking and services, testing and instrumentation, building and deploying applications, and using alternative languages.

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 Techniques covering Android 1.x to 3.x Android for tablets Working with threads and concurrency Testing and building Using location awareness and GPS Styles and themes And much more! This book requires a working knowledge of Java, but no prior experience with Android is assumed. Source Code can be found at <https://code.google.com/p/android-in-practice/> Table of Contents PART 1 BACKGROUND AND FUNDAMENTALS Introducing Android Android application fundamentals

Managing lifecycle and state PART 2 REAL WORLD RECIPES Getting the pixels perfect Managing background tasks with Services Threads and concurrency Storing data locally Sharing data between apps HTTP networking and web services Location is everything Appeal to the senses using multimedia 2D and 3D drawing PART 3 BEYOND STANDARD DEVELOPMENT Testing and instrumentation Build management Developing for Android tablets *Concurrency in Go* Pearson Education Here is a programmer's guide to using and programming POSIX threads, commonly known as Pthreads. A "coder's book", this title tells how to use Pthreads in the real

world, making efficient and portable applications. Pthreads are an important set of current tools programmers need to have in today's network-intensive climate.

Professional C++ Packt Publishing Ltd
Summary Scala in Action is a comprehensive tutorial that introduces Scala through clear explanations and numerous hands-on examples. Because Scala is a rich and deep language, it can be daunting to absorb all the new concepts at once. This book takes a "how-to" approach, explaining language concepts as you explore familiar programming challenges that you face in your day-to-day work. About the

Technology Scala runs on the JVM and combines object-orientation with functional programming. It's designed to produce succinct, type-safe code, which is crucial for enterprise applications. Scala implements Actor-based concurrency through the amazing Akka framework, so you can avoid Java's messy threading while interacting seamlessly with Java. About this Book Scala in Action is a comprehensive tutorial that introduces the language through clear explanations and numerous hands-on examples. It takes a "how to" approach, explaining language concepts as you explore familiar programming tasks. You'll tackle concurrent

programming in Akka, learn to work with Scala and Spring, and learn how to build DSLs and other productivity tools. You'll learn both the language and how to use it. Experience with Java is helpful but not required. Ruby and Python programmers will also find this book accessible. What's Inside A Scala tutorial How to use Java and Scala open source libraries How to use SBT Test-driven development Debugging Updated for Scala 2.10 Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Author Nilanjan Raychaudhuri is a skilled developer,

speaker, and an avid polyglot programmer who works with Scala on production systems. Table of Contents PART 1 SCALA: THE BASICS Why Scala? Getting started OOP in Scala Having fun with functional data structures Functional programming PART 2 WORKING WITH SCALA Building web applications in functional style Connecting to a database Building scalable and extensible components Concurrency programming in Scala Building confidence with testing PART 3 ADVANCED STEPS Interoperability between Scala and Java Scalable and distributed applications using Akka