Parallel And Concurrent Programming In Haskell Techniques For Multicore And Multithreaded Programming

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Learning Concurrent Programming in Scala Pearson Education
Python is one of the most popular programming languages, with numerous libraries and frameworks that facilitate high-performance computing. Concurrency and parallelism in Python are essential when it comes to multiprocessing and multithreading; they behave differently, but their common aim is to reduce the execution time. This book serves as a ...
Asynchronous, Parallel, and Multithreaded Programming Simon and Schuster
Summary Concurrency in .NET teaches you how to build concurrent and scalable programs in .NET using the functional paradigm. This intermediate-level guide is aimed at developers, architects, and passionate computer programmers who are interested in writing code with improved speed and effectiveness by adopting a declarative and pain-free programming style. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Unlock the incredible performance built into your multi-processor machines. Concurrent applications run faster because they spread work across processor cores, performing several tasks at the same time. Modern tools and techniques on the .NET platform, including parallel LINQ, functional programming, asynchronous programming, and the Task Parallel Library, offer powerful alternatives to traditional thread-based concurrency. About the Book Concurrency in .NET teaches you to write code that delivers the speed you need for performance-sensitive applications. Featuring examples in both C# and F#, this book guides you through concurrent and parallel designs that emphasize functional programming in theory and practice. You'll start with the foundations of concurrency and master essential techniques and design practices to optimize code running on modern multiprocessor systems. What's Inside The most important concurrency abstractions Employing the agent programming model Implementing real-time event-stream processing Executing unbounded asynchronous operations Best concurrent practices and patterns that apply to all platforms About the Reader For readers skilled with C# or F#. About the Book Riccardo Terrell is a seasoned software engineer and Microsoft MVP who is passionate about functional programming. He has over 20 years' experience delivering cost-effective technology solutions in a competitive business environment. Table of Contents PART 1 - Benefits of functional programming applicable to concurrent programs Functional concurrency foundations Functional programming techniques for concurrency Functional data structures and immutability PART 2 - How to approach the different parts of a concurrent program The basics of processing big data: data parallelism, part 1 PLINQ and MapReduce: data parallelism, part 2 Real-time event streams: functional reactive programming Task-based functional parallelism Task asynchronicity for the win Asynchronous functional programming in F# Functional combinators for fluent concurrent programming Applying reactive programming everywhere with agents Parallel workflow and agent programming with TPL Dataflow PART 3 - Modern patterns of concurrent programming applied Recipes and design patterns for successful concurrent programming Building a scalable mobile app with concurrent functional programming
Parallel and Concurrent Programming with Python 2 "O'Reilly Media, Inc."

Learn the art of building intricate, modern, scalable, and concurrent applications using ScalaAbout This Book* Make the most of Scala by understanding its philosophy and harnessing the power of multicores* Get acquainted with cutting-edge technologies in the field of concurrency, through practical, real-world applications* Get this step-by-step guide packed with pragmatic examplesWho This Book Is ForIf you are a Scala programmer with no prior knowledge about concurrent programming, or seeking to broaden your existing knowledge about concurrency, this book is for you. Basic knowledge of the Scala programming language will be helpful. Also if you have a solid knowledge in another programming language, such as Java, you should find this book easily accessible.What You Will Learn* Get to grips with the fundamentals of concurrent programming on modern multiprocessor systems, with a particular focus on the JVM concurrency model* Build high-performance concurrent systems from simple, low-level concurrency primitives* Express asynchrony in concurrent computations with futures and promises* Seamlessly accelerate sequential programs by using data-parallel collections* Design safe, scalable, and easy-to-comprehend in-memory transactional data models* Transparently create distributed applications that scale across multiple machines* Integrate different concurrency frameworks together in large applications* Develop and implement scalable and easy-to-understand concurrent applications in Scala 2.12In DetailScala is a modern, multiparadigm programming language designed to express common programming patterns in a concise, elegant, and type-safe way. Scala smoothly integrates the features of object-oriented and functional languages.In this second edition, you will find an updated coverage of the Scala 2.12 platform. The Scala 2.12 series targets Java 8 and requires it for execution. It starts by introducing you to the foundations of concurrent programming on the JVM, outlining the basics of the Java Memory Model, and then shows some of the classic building blocks of concurrency, such as the atomic variables, thread pools, and concurrent data structures, along with the caveats of traditional concurrency.It then walks you through different high-level concurrency abstractions, each tailored toward a specific class of programming tasks, while touching on the latest advancements of Async programming capabilities of Scala. It also covers some useful patterns and idioms to use the techniques described. Finally, the book presents an overview of when to use which concurrency library and demonstrates how they all work together.

Parallel and Concurrent Programming with Python 1 "O'Reilly Media, Inc."

If you're looking to take full advantage of multi-core processors with concurrent programming, this practical book provides the knowledge and hands-on experience you need. The Art of Concurrency is one of the few resources to focus on implementing algorithms in the shared-memory model of multi-core processors, rather than just theoretical models or distributed-memory architectures. The book provides detailed explanations and usable samples to help you transform algorithms from serial to parallel code, along with advice and analysis for avoiding mistakes that programmers typically make when first attempting these computations. Written by an Intel engineer with over two decades of parallel and concurrent programming experience, this book will help you: Understand parallelism and concurrency Explore differences between programming for shared-memory and distributed-memory Learn guidelines for designing multithreaded applications, including testing and tuning Discover how to make best use of different threading libraries, including Windows threads, POSIX threads, OpenMP, and Intel Threading Building Blocks Explore how to implement concurrent algorithms that involve sorting, searching, graphs, and other practical computations The Art of Concurrency shows you how to keep algorithms scalable to take advantage of new processors with even more cores. For developing parallel code algorithms for concurrent programming, this book is a must.

A Thread Monkey's Guide to Writing Parallel Applications No Starch Press

Concurrent Programming ML (CML), included as part of the SML of New Jersey (SML/NJ) distribution, combines the best features of concurrent programming and functional programming. This practical, "how-to" book focuses on the use of concurrency to implement naturally concurrent applications. In addition to a tutorial introduction to programming in CML, the book presents three extended examples using CML for practical systems programming: a parallel software build system, a simple concurrent window manager, and an implementation of distributed tuple spaces. This book also illustrates advanced SML programming techniques, and includes a chapter on the implementation of concurrency using features provided by the SML/NJ system. It will be of interest to programmers, students, and professional researchers working in computer language development.

Parallel Programming Patterns Springer Science & Business Media

Write more effective programs that execute multiple instructions simultaneously. Learn the fundamentals of parallel and concurrent programming in Python.

Parallel and Concurrent Programming in Haskell John Wiley & Sons Incorporated

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

Hands-On Concurrency with Rust Packt Publishing Ltd

Parallel programming unlocks a program's ability to execute multiple instructions simultaneously, increases the overall processing throughput, and is key to writing faster and more efficient applications. Curious about how parallel programming works in the real world? In this course, join instructors Barron and Olivia Stone as they introduce the basics of parallel programming in Python, providing the foundational knowledge you need to write more efficient, performant code. Barron and Olivia explain concepts like threading and mutual exclusion in a fun and informative way, relating them to everyday activities you perform in the kitchen. To cement the ideas, they demo them in action using Python. Each lesson is short and practical, driving home the theory with hands-on techniques.

Object-oriented Concurrent Programming "O'Reilly Media, Inc."

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

Parallel and Concurrent Programming with Java 2 "O'Reilly Media, Inc."

Learn how to write scalable and concurrent programs in Scala, a language that grows with you. Key Features Get a grip on the functional features of the Scala programming language Understand and develop optimal applications using object-oriented and functional Scala constructs Learn reactive principles with Scala and work with the Akka framework Book Description Scala is a general-purpose programming language that supports both functional and object-oriented programming paradigms. Due to its concise design and versatility, Scala's applications have been extended to a wide variety of fields such as data science and cluster computing. You will learn to write highly scalable, concurrent, and testable programs to meet everyday software requirements. We will begin by understanding the language basics, syntax, core data types, literals, variables, and more. From here you will be introduced to data structures with Scala and you will learn to work with higher-order functions. Scala's powerful collections framework will help you get the best out of immutable data structures and utilize them effectively. You will then be introduced to concepts such as pattern matching, case classes, and functional programming features. From here, you will learn to work with Scala's object-oriented features. Going forward, you will learn about asynchronous and reactive programming with Scala, where you will be introduced to the Akka framework. Finally, you will learn the interoperability of Scala and Java. After reading this book, you'll be well versed with this language and its features, and you will be able to write scalable, concurrent, and reactive programs in Scala. What you will learn Get to know the reasons for choosing Scala: its use and the advantages it provides over other languages Bring together functional and object-oriented programming constructs to make a manageable application Master basic to advanced Scala constructs Test your applications using advanced testing methodologies such as TDD Select preferred language constructs from the wide variety of constructs provided by Scala Make the transition from the object-oriented paradigm to the functional programming paradigm Write clean, concise, and powerful code with a functional mindset Create concurrent, scalable, and reactive applications utilizing the advantages of Scala Who this book is for This book is for programmers who choose to get a grip over Scala to write concurrent, scalable, and reactive programs. No prior experience with any programming language is required to learn the concepts explained in this book. Knowledge of any programming language would help the reader understanding concepts faster though.

Parallel and Concurrent Programming with Python 2 "O'Reilly Media, Inc."

From cloud computing to smartphones, today's highest-growth software environments depend on parallel programming. That's why parallel programming is increasingly viewed as a foundational job skill expected of every professional developer. However, parallel computing requires traditional application developers to think and work differently; that's why it's so often viewed as difficult. In Parallel Programming Patterns, three leading experts cut through the complexity, showing how to "think parallel," and offering practical solutions to many of the challenges you'll encounter. Drawing on immense experience programming parallel systems and teaching others to do so, the authors cover all this, and more: What you need to know about concurrency in parallel programs, parallel architecture, and the jargon of parallel computing How to find concurrency and decompose tasks and data How to select and work with algorithm and supporting structures How to work with implementation mechanisms for UE management, synchronization, and communication Getting started with OpenMP, MPI, and concurrent programming in Java

Concurrency in C# Cookbook "O'Reilly Media, Inc."

Parallel programming unlocks a program's ability to execute multiple instructions simultaneously. It increases the overall processing throughput and is key to writing faster and more efficient applications. This training course introduces the basics of concurrent and parallel programming in C++, providing the foundational knowledge you need to write more efficient, performant code. Instructors Barron and Olivia Stone explain concepts like threading and mutual exclusion in a fun and informative way, relating them to everyday activities you perform in the kitchen. To cement the ideas, they demo them in action using C++. Each lesson is short and practical, driving home the theory with hands-on techniques.

Real World Haskell "O'Reilly Media, Inc."

Teaches how to use Haskell's APIs and frameworks for writing both parallel and concurrent programs, and includes code examples and exercises covering the concepts presented.

Learning Concurrent Programming in Scala Simon and Schuster

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

Fundamental Techniques for Real-Time and Parallel Software Design Addison-Wesley Professional

Take a deeper dive into the key mechanisms for writing concurrent and parallel programs. Discover how to parallelize a sequential program.

Mastering Concurrency in Python Parallel and Concurrent Programming in HaskellTechniques for Multicore and Multithreaded Programming
Several carefully revised lectures from the 6th International School on Functional Programming, AFP 2008, are presented in this valuable review. Topics include computation with Delta ML, spider spinning, reduction-based normalization and Haskell programming.
Code You Can Believe In Springer
In recent years (1985) a number of parallel programming languages have been described and implemented on parallel processor machines. These concurrent programming languages are intended for use by the application programmer to allow him to take maximum advantage of the new parallel architectures becoming available. This dissertation examines the parallel processor environment and then surveys the approaches used by a number of concurrent languages.
Parallel and Concurrent Programming with Java 1 Springer Science & Business Media
Multicore microprocessors are now at the heart of nearly all desktop and laptop computers. While these chips offer exciting opportunities for the creation of newer and faster applications, they also challenge students and educators. How can the new generation of computer scientists growing up with multicore chips learn to program applications that exploit this latent processing power? This unique book is an attempt to introduce concurrent programming to first-year computer science students, much earlier than most competing products. This book assumes no programming background but offers a broad coverage of Java. It includes over 150 numbered and numerous inline examples as well as more than 300 exercises categorized as "conceptual," "programming," and "experiments." The problem-oriented approach presents a problem, explains supporting concepts, outlines necessary syntax, and finally provides its solution. All programs in the book are available for download and experimentation. A substantial index of at least 5000 entries makes it easy for readers to locate relevant information. In a fast-changing field, this book is continually updated and refined. The 2014 version is the seventh "draft edition" of this volume, and features numerous revisions based on student feedback. A list of errata for this version can be found on the Purdue University Department of Computer Science website.
Learning Concurrent Programming in Scala - Second Edition Addison-Wesley Professional
Concurrent Programming ML (CML), included as part of the SML of New Jersey (SML/NJ) distribution, combines the best features of concurrent programming and functional programming. This practical, "how-to" book focuses on the use of concurrency to implement naturally concurrent applications. In addition to a tutorial introduction to programming in CML, the book presents three extended examples using CML for practical systems programming: a parallel software build system, a simple concurrent window manager, and an implementation of distributed tuple spaces. This book also illustrates advanced SML programming techniques, and includes a chapter on the implementation of concurrency using features provided by the SML/NJ system. It will be of interest to programmers, students, and professional researchers working in computer language development.
The Art of Concurrency O'Reilly Media
Parallel and Concurrent Programming in HaskellTechniques for Multicore and Multithreaded Programming"O'Reilly Media, Inc."