Java Concurrency In Practice

Are you looking for a deeper understanding of the Java™ programming language so that you can write code that is clearer, more correct, more robust, and more reusable? Look no further! Effective Java™, Second Edition, brings together seventy-eight indispensable programmer's rules of thumb: working, best-practice solutions for the programming challenges you encounter every day. This highly anticipated new edition of the classic, Jolt Award-winning work has been thoroughly updated to cover Java SE 5 and Java SE 6 features introduced since the first edition. Bloch explores new design patterns and language idioms, showing you how to make the most of features ranging from generics to enums, annotations to autoboxing. Each chapter in the book consists of several "items" presented in the form of a short, standalone essay that provides specific advice, insight into Java platform subtleties, and outstanding code examples. The comprehensive descriptions and explanations for each item illuminate what to do, what not to do, and why. Highlights include: New coverage of generics, enums, annotations, autoboxing, the for-each loop, varargs, concurrency utilities, and much more Updated techniques and best practices on classic topics, including objects, classes, libraries, methods, and serialization How to avoid the traps and pitfalls of commonly misunderstood subtleties of the language Focus on the language and its most fundamental libraries: java.lang, java.util, and, to a lesser extent, java.util.concurrent and java.io Simply put, Effective Java™, Second Edition, presents the most practical, authoritative guidelines available for writing efficient, well-designed programs.

This book constitutes the refereed proceedings of the 10th International Conference on Coordination Models and Languages, COORDINATION 2008, held in Oslo, Norway, in June 2008, as one of the federated conferences on Distributed Computing Techniques, DisCoTec 2008. The 21 revised full papers presented were carefully reviewed and selected from 61 submissions. The subject-matter is to explore the spectrum of languages, middleware, services, and algorithms that separate behavior from interaction, therefore increasing modularity, simplifying reasoning, and ultimately enhancing software development.

Master the art of fast, effective Java development with the power of concurrent and parallel programming About This Book Get detailed coverage of important recipes on multi-threading and parallel programming This book takes a close look at the Java 9 APIs and their impact on concurrency See practical examples on thread safety, high-performance classes, safe sharing, and a whole lot more Who This Book Is For The book is for Java developers and programmers at an intermediate to advanced level. It will be especially useful for developers who want to take advantage of task-based recipes using Java 9's concurrent API to program thread-safe solutions. What You Will Learn Find out to manage the basic components of the Java Concurrency API Use synchronization mechanisms to avoid data race conditions and other problems of concurrent applications Separate the thread management from the rest of the application with the Executor framework Solve problems using a parallelized version of the divide and conquer paradigm with the Fork / Join framework Process massive data sets in an optimized way using streams and reactive streams See which data structures we can use in concurrent applications and how to use them Practice efficient techniques to test

concurrent applications Get to know tips and tricks to design concurrent applications In Detail Writing concurrent and parallel programming applications is an integral skill for any Java programmer. Java 9 comes with a host of fantastic features, including significant performance improvements and new APIs. This book will take you through all the new APIs, showing you how to build parallel and multi-threaded applications. The book covers all the elements of the Java Concurrency API, with essential recipes that will help you take advantage of the exciting new capabilities. You will learn how to use parallel and reactive streams to process massive data sets. Next, you will move on to create streams and use all their intermediate and terminal operations to process big collections of data in a parallel and functional way. Further, you'll discover a whole range of recipes for almost everything, such as thread management, synchronization, executors, parallel and reactive streams, and many more. At the end of the book, you will learn how to obtain information about the status of some of the most useful components of the Java Concurrency API and how to test concurrent applications using different tools. Style and approach This recipe-based book will allow you to explore the exciting capabilities of concurrency in Java. After reading this book, you will be able to comfortably build parallel applications in Java 9.
Software -- Programming Languages.

This insider guide gives the understanding needed to write more effective code for Java programs and get maximum performance from Java applications. Both a tutorial and reference, the book is easy to follow for Java programmers at all levels. Readers learn what's going on underneath their Java programs as they run, and gain valuable insights into garbage collection techniques, multithreading, compilers, bytecodes, the Java interpreter and more. The accompanying CD-ROM contains numerous code examples, as well as interactive illustrations that provide valuable programming insights.

More than ever, learning to program concurrency is critical to creating faster, responsive applications. Speedy and affordable multicore hardware is driving the demand for high-performing applications, and you can leverage the Java platform to bring these applications to life. Concurrency on the Java platform has evolved, from the synchronization model of JDK to software transactional memory (STM) and actor-based concurrency. This book is the first to show you all these concurrency styles so you can compare and choose what works best for your applications. You'll learn the benefits of each of these models, when and how to use them, and what their limitations are. Through hands-on exercises, you'll learn how to avoid shared mutable state and how to write good, elegant, explicit synchronization-free programs so you can create easy and safe concurrent applications. The techniques you learn in this book will take you from dreading concurrency to mastering and enjoying it. Best of all, you can work with Java or a JVM language of your choice - Clojure, JRuby, Groovy, or Scala - to reap the growing power of multicore hardware. If you are a Java programmer, you'd need JDK 1.5 or later and the Akka 1.0 library. In addition, if you program in Scala, Clojure, Groovy or JRuby you'd need the latest version of your preferred language. Groovy programmers will also need GPars.

Helps readers eliminate performance problems, covering topics including bottlenecks, profiling tools, strings, algorithms, distributed systems, and servlets.

Threads are a fundamental part of the Java platform. As multicore processors become the norm, using concurrency effectively becomes

essential for building high-performance applications. Java SE 5 and 6 are a huge step forward for the development of concurrent applications, with improvements to the Java Virtual Machine to support high-performance, highly scalable concurrent classes and a rich set of new concurrency building blocks. In Java Concurrency in Practice , the creators of these new facilities explain not only how they work and how to use them, but also the motivation and design patterns behind them. However, developing, testing, and debugging multithreaded programs can still be very difficult; it is all too easy to create concurrent programs that appear to work, but fail when it matters most: in production, under heavy load. Java Concurrency in Practice arms readers with both the theoretical underpinnings and concrete techniques for building reliable, scalable, maintainable concurrent applications. Rather than simply offering an inventory of concurrency APIs and mechanisms, it provides design rules, patterns, and mental models that make it easier to build concurrent programs that are both correct and performant. This book covers: Basic concepts of concurrency and thread safety Techniques for building and composing thread-safe classes Using the concurrency building blocks in java.util.concurrent Performance optimization dos and don'ts Testing concurrent programs Advanced topics such as atomic variables, nonblocking algorithms, and the Java Memory Model

Bruce Tate, author of the Jolt Award-winning Better, Faster, Lighter Java has an intriguing notion about the future of Java, and it's causing some agitation among Java developers. Bruce believes Java is abandoning its base, and conditions are ripe for an alternative to emerge. In Beyond Java, Bruce chronicles the rise of the most successful language of all time, and then lays out, in painstaking detail, the compromises the founders had to make to establish success. Then, he describes the characteristics of likely successors to Java. He builds to a rapid and heady climax, presenting alternative languages and frameworks with productivity and innovation unmatched in Java. He closes with an evaluation of the most popular and important programming languages, and their future role in a world beyond Java. If you are agree with the book's premise--that Java's reign is coming to an end--then this book will help you start to build your skills accordingly. You can download some of the frameworks discussed and learn a few new languages. This book will teach you what a new language needs to succeed, so when things do change, you'll be more prepared. And even if you think Java is here to stay, you can use the best techniques from frameworks introduced in this book to improve what you're doing in Java today.

Concurrency provides a thoroughly updated approach to the basic concepts and techniques behind concurrent programming. Concurrent programming is complex and demands a much more formal approach than sequential programming. In order to develop a thorough understanding of the topic Magee and Kramer present concepts, techniques and problems through a variety of forms: informal descriptions, illustrative examples, abstract models and concrete Java examples. These combine to provide problem patterns and associated solution techniques which enable students to recognise problems and arrive at solutions. New features include: New chapters covering program verification and logical properties. More student exercises. Supporting website contains an updated version of the LTSA tool for modelling concurrency, model animation, and model checking. Website also includes the full set of state models, java examples, and demonstration programs and a comprehensive set of overhead slides for course presentation.

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

Take advantage of Kotlin's concurrency primitives to write efficient multithreaded applications Key Features Learn Kotlin’s unique approach to multithreading Work through practical examples that will help you write concurrent non-blocking code Improve the overall execution speed in multiprocessor and multicore systems Book Description The primary requirements of modern-day applications are scalability, speed, and

making the most use of hardware. Kotlin meets these requirements with its immense support for concurrency. Many concurrent primitives of Kotlin, such as channels and suspending functions, are designed to be non-blocking and efficient. This allows for new approaches to concurrency and creates unique challenges for the design and implementation of concurrent code. Learning Concurrency in Kotlin addresses those challenges with real-life examples and exercises that take advantage of Kotlin's primitives. Beginning with an introduction to Kotlin's coroutines, you will learn how to write concurrent code and understand the fundamental concepts needed to be able to write multithreaded software in Kotlin. You'll explore how to communicate between and synchronize your threads and coroutines to write asynchronous applications that are collaborative. You'll also learn how to handle errors and exceptions, as well as how to leverage multi-core processing. In addition to this, you'll delve into how coroutines work internally, allowing you to see the bigger picture. Throughout the book you'll build an Android application – an RSS reader – designed and implemented according to the different topics covered in the book What you will learn Understand Kotlin's approach to concurrency Implement sequential and asynchronous suspending functions Create suspending data sources that are resumed on demand Explore the best practices for error handling Use channels to communicate between coroutines Uncover how coroutines work under the hood Who this book is for If you're a Kotlin or Android developer interested in learning how to program concurrently to enhance the performance of your applications, this is the book for you.

Offers information on how to exploit the parallel architectures in a computer's GPU to improve code performance, scalability, and resilience.

Summary Manning's bestselling Java 8 book has been revised for Java 9! In Modern Java in Action, you'll build on your existing Java language skills with the newest features and techniques. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Modern applications take advantage of innovative designs, including microservices, reactive architectures, and streaming data. Modern Java features like lambdas, streams, and the long-awaited Java Module System make implementing these designs significantly easier. It's time to upgrade your skills and meet these challenges head on! About the Book Modern Java in Action connects new features of the Java language with their practical applications. Using crystal-clear examples and careful attention to detail, this book respects your time. It will help you expand your existing knowledge of core Java as you master modern additions like the Streams API and the Java Module System, explore new approaches to concurrency, and learn how functional concepts can help you write code that's easier to read and maintain. What's inside Thoroughly revised edition of Manning's bestselling Java 8 in Action New features in Java 8, Java 9, and beyond Streaming data and reactive programming The Java Module System About the Reader Written for developers familiar with core Java features. About the Author Raoul-Gabriel Urma is CEO of Cambridge Spark. Mario Fusco is a senior software engineer at Red Hat. Alan Mycroft is a University of Cambridge computer science professor; he cofounded the Raspberry Pi Foundation. Table of Contents PART 1 - FUNDAMENTALS Java 8, 9, 10, and 11: what's happening? Passing code with behavior parameterization Lambda expressions PART 2 - FUNCTIONAL-STYLE DATA PROCESSING WITH STREAMS Introducing streams Working with streams Collecting data with streams Parallel data processing and performance PART 3 - EFFECTIVE PROGRAMMING WITH STREAMS AND LAMBDAS Collection API enhancements Refactoring, testing, and debugging Domain-specific languages using lambdas PART 4 - EVERYDAY JAVA Using Optional as a better alternative to null New Date and Time API Default methods The Java Module System PART 5 - ENHANCED JAVA CONCURRENCY Concepts behind CompletableFuture and reactive programming CompletableFuture: composable asynchronous programming Reactive programming PART 6 - FUNCTIONAL PROGRAMMING AND FUTURE JAVA EVOLUTION Thinking functionally Functional programming techniques Blending OOP and FP: Comparing Java and Scala Conclusions and where next for Java

Drowning in unnecessary complexity, unmanaged state, and tangles of spaghetti code? In the best tradition of Lisp, Clojure gets out of your way so you can focus on expressing simple solutions to hard problems. Clojure cuts through complexity by providing a set of composable tools--immutable data, functions, macros, and the interactive REPL. Written by members of the Clojure core team, this book is the essential, definitive guide to Clojure. This new edition includes information on all the newest features of Clojure, such as transducers and specs. Clojure joins the flexibility and agility of Lisp with the reach, stability, and performance of Java. Combine Clojure's tools for maximum effectiveness as you work with immutable data, functional programming, and safe concurrency to write programs that solve real-world problems. Start by reading and understanding Clojure syntax and see how Clojure is evaluated. From there, find out about the sequence abstraction, which combines immutable collections with functional programming to create truly reusable data transformation code. Clojure is a functional language; learn how to write programs in a functional style, and when and how to use recursion to your advantage. Discover Clojure's unique approach to state and identity, techniques for polymorphism and open systems using multimethods and protocols, and how to leverage Clojure's metaprogramming capabilities via macros. Finally, put all the pieces together in a real program. New to this edition is coverage of Clojure's spec library, one of the most interesting new features of Clojure for describing both data and functions. You can use Clojure spec to validate data, destructure data, explain invalid data, and generate large numbers of tests to verify the correctness of your code. With this book, you'll learn how to think in Clojure, and how to take advantage of its combined strengths to build powerful programs quickly. What You Need: Java 6 or higher Clojure 1.9

Coding and testing are often considered separate areas of expertise. In this comprehensive guide, author and Java expert Scott Oaks takes the approach that anyone who works with Java should be equally adept at understanding how code behaves in the JVM, as well as the tunings likely to help its performance. You'll gain in-depth knowledge of Java application performance, using the Java Virtual Machine (JVM) and the Java platform, including the language and API. Developers and performance engineers alike will learn a variety of features, tools, and processes for improving the way Java 7 and 8 applications perform. Apply four principles for obtaining the best results from performance testing Use JDK tools to collect data on how a Java application is performing Understand the advantages and disadvantages of using a JIT compiler Tune JVM garbage collectors to affect programs as little as possible Use techniques to manage heap memory and JVM native memory Maximize Java threading and synchronization performance features Tackle performance issues in Java EE and Java SE APIs Improve Java-driven database application performance

Master the principles to make applications robust, scalable and responsive About This Book Implement concurrent applications using the Java 9 Concurrency API and its new components Improve the performance of your applications

and process more data at the same time, taking advantage of all of your resources Construct real-world examples related to machine learning, data mining, natural language processing, and more Who This Book Is For This book is for competent Java developers who have basic understanding of concurrency, but knowledge of effective implementation of concurrent programs or usage of streams for making processes more efficient is not required What You Will Learn Master the principles that every concurrent application must follow See how to parallelize a sequential algorithm to obtain better performance without data inconsistencies and deadlocks Get the most from the Java Concurrency API components Separate the thread management from the rest of the application with the Executor component Execute phased-based tasks in an efficient way with the Phaser components Solve problems using a parallelized version of the divide and conquer paradigm with the Fork / Join framework Find out how to use parallel Streams and Reactive Streams Implement the “map and reduce” and “map and collect” programming models Control the concurrent data structures and synchronization mechanisms provided by the Java Concurrency API Implement efficient solutions for some actual problems such as data mining, machine learning, and more In Detail Concurrency programming allows several large tasks to be divided into smaller sub-tasks, which are further processed as individual tasks that run in parallel. Java 9 includes a comprehensive API with lots of ready-to-use components for easily implementing powerful concurrency applications, but with high flexibility so you can adapt these components to your needs. The book starts with a full description of the design principles of concurrent applications and explains how to parallelize a sequential algorithm. You will then be introduced to Threads and Runnables, which are an integral part of Java 9's concurrency API. You will see how to use all the components of the Java concurrency API, from the basics to the most advanced techniques, and will implement them in powerful real-world concurrency applications. The book ends with a detailed description of the tools and techniques you can use to test a concurrent Java application, along with a brief insight into other concurrency mechanisms in JVM. Style and approach This is a complete guide that implements real-world examples of algorithms related to machine learning, data mining, and natural language processing in client/server environments. All the examples are explained using a step-by-step approach.

In today’s app-driven era, when programs are asynchronous and responsiveness is so vital, reactive programming can help you write code that’s more reliable, easier to scale, and better-performing. With this practical book, Java developers will first learn how to view problems in the reactive way, and then build programs that leverage the best features of this exciting new programming paradigm. Authors Tomasz Nurkiewicz and Ben Christensen include concrete examples that use the RxJava library to solve real-world performance issues on Android devices as well as the server. You’ll learn how RxJava leverages parallelism and concurrency to help you solve today’s problems. This book also provides a preview of

the upcoming 2.0 release. Write programs that react to multiple asynchronous sources of input without descending into "callback hell" Get to that aha! moment when you understand how to solve problems in the reactive way Cope with Observables that produce data too quickly to be consumed Explore strategies to debug and to test programs written in the reactive style Efficiently exploit parallelism and concurrency in your programs Learn about the transition to RxJava version 2

A guide to developing network programs covers networking fundamentals as well as TCP and UDP sockets, multicasting protocol, content handlers, servlets, I/O, parsing, Java Mail API, and Java Secure Sockets Extension.

Explains how to use Java's portable platforms to program and use threads effectively and efficiently while avoiding common mistakes

The ONLY complete, up-to-date guide to all aspects of Java performance • •The first one-stop guide to identifying, isolating, and fixing Java performance issues on multicore and multiprocessor processor platforms - from two of Sun's leading Java performance experts. •Includes crucial new insights into microbenchmarking found nowhere else. •Contains up-to-the-minute coverage of Java optimization, including migration of older applications. Given Java's ubiquity and indispensability, Java software performance is of crucial importance to millions of developers worldwide. The emergence of multi-core systems and the evolution of the Java platform give developers many new opportunities to optimize performance. Now, three of Sun's leading Java performance experts have written the first start-to-finish guide to optimizing Java performance in today's multi-core systems. Java Performance gives developers, designers, and architects all the information they need to leverage Java's performance and scalability abilities on any modern multicore or multiprocessor system. This book's end-to-end coverage addresses all these topics: monitoring and profiling; the effective use of garbage collection and other language features; adaptive and platform-specific tuning; techniques for maximizing scalability; and much more. The authors' extensive benchmarking coverage includes an indispensable introduction to effective microbenchmarks - including guidance on avoiding the common microbenchmarking mistakes that mislead developers into writing badlyperforming software. The book also contains a complete section on Java performance enhancement, including opportunities and challenges associated with migrating software from Java 1.4.2 and Java 5 - issues that more and more Java developers are now facing.

"Every programming language has its quirks. This lively book reveals oddities of the Java programming language through entertaining and thought-provoking programming puzzles." --Guy Steele, Sun Fellow and coauthor of The Java™ Language Specification "I laughed, I cried, I threw up (my hands in admiration)." --Tim Peierls, president, Prior Artisans LLC, and member of the JSR 166 Expert Group How well do you really know Java? Are you a code sleuth? Have you ever spent days chasing a bug caused by a trap or pitfall in Java or its libraries? Do you

like brainteasers? Then this is the book for you! In the tradition of Effective Java™, Bloch and Gafter dive deep into the subtleties of the Java programming language and its core libraries. Illustrated with visually stunning optical illusions, Java™ Puzzlers features 95 diabolical puzzles that educate and entertain. Anyone with a working knowledge of Java will understand the puzzles, but even the most seasoned veteran will find them challenging. Most of the puzzles take the form of a short program whose behavior isn't what it seems. Can you figure out what it does? Puzzles are grouped loosely according to the features they use, and detailed solutions follow each puzzle. The solutions go well beyond a simple explanation of the program's behavior--they show you how to avoid the underlying traps and pitfalls for good. A handy catalog of traps and pitfalls at the back of the book provides a concise taxonomy for future reference. Solve these puzzles and you'll never again fall prey to the counterintuitive or obscure behaviors that can fool even the most experienced programmers.

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.

Mathematics of Computing -- Parallelism.

Provides information on building concurrent applications using Java.

"One of the great things about the book is the way the authors explain concepts very simply using analogies rather than programming examples–this has been very inspiring for a product I'm working on: an audio-only introduction to OOP and software development." –Bruce Eckel "...I would expect that readers with a basic understanding of object-oriented programming and design would find this book useful, before approaching design patterns completely. Design Patterns Explained complements the existing design patterns texts and may perform a very useful role, fitting between introductory texts such as UML Distilled and the more advanced patterns books." –James Noble Leverage the quality and productivity benefits of patterns–without the complexity! Design Patterns Explained, Second Edition is the field's simplest, clearest, most practical introduction to patterns. Using dozens of updated Java examples, it shows programmers and architects exactly how to use patterns to design, develop, and deliver software far more effectively. You'll start with a complete overview of the fundamental principles of patterns, and the role of object-oriented analysis and design in contemporary software development. Then, using easy-to-understand sample code, Alan Shalloway and James Trott illuminate dozens of today's most useful patterns: their underlying concepts, advantages, tradeoffs, implementation techniques, and pitfalls to avoid. Many patterns are accompanied by UML diagrams. Building on their best-selling First Edition, Shalloway and Trott have thoroughly updated this book to reflect new software design trends, patterns, and implementation techniques. Reflecting extensive reader feedback, they have deepened and clarified coverage throughout, and reorganized content for even greater ease of understanding. New and revamped coverage in this edition includes Better ways to start "thinking in patterns" How design patterns can facilitate agile development using eXtreme Programming and other methods How to use commonality and variability analysis to design application architectures The key role of testing into a patterns-driven development process How to use factories to instantiate and manage objects more effectively The Object-Pool Pattern–a new pattern not identified by the "Gang of Four" New study/practice questions at the end of every chapter Gentle yet thorough, this book assumes no patterns experience whatsoever. It's the ideal "first book" on patterns, and a perfect complement to Gamma's classic Design Patterns. If you're a programmer or architect who wants the clearest possible understanding of design patterns–or if you've struggled to make them work for you–read this book.

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

Master the principles and techniques of multithreaded programming with the Java 8 Concurrency API About This Book Implement concurrent applications using the Java 8 Concurrency API and its new components Improve the performance of your applications or process more data at the same time, taking advantage of all of your resources. Construct real-world examples related to machine learning, data mining, image processing, and client/server environments Who This Book Is For If you are a competent Java developer with a good understanding of concurrency but have no knowledge of how to effectively implement concurrent programs or use streams to make processes more efficient, then this book is for you. What You Will Learn Design concurrent applications by converting a sequential algorithm into a concurrent one Discover how to avoid all the possible problems you can get in concurrent algorithms Use the Executor framework to manage concurrent tasks without creating threads Extend and modify Executors to adapt their behavior to your needs Solve problems using the divide and conquer technique and the Fork/Join framework Process massive data sets with parallel streams and Map/Reduce implementation Control data-race conditions using concurrent data structures and synchronization mechanisms Test and monitor concurrent applications In Detail Concurrency programming allows several large tasks to be divided into smaller sub-tasks, which are further processed as individual tasks that run in parallel. All the sub-tasks are combined together once the required results are achieved; they are then merged to get the final output. The whole process is very complex. This process goes from the design of concurrent algorithms to the testing phase where concurrent applications need extra attention. Java includes a comprehensive API with a lot of ready-to-use components to implement powerful concurrency applications in an easy way, but with a high flexibility to adapt these components to your needs. The book starts with a full description of design principles of concurrent applications and how to parallelize a sequential algorithm. We'll show you how to use all the components of the Java Concurrency API from basics to the most advanced techniques to implement them in powerful concurrency applications in Java. You will be using real-world examples of complex algorithms related to machine learning, data mining, natural language processing, image processing in client / server environments. Next, you will learn how to use the most important components of the Java 8 Concurrency API: the Executor framework to execute multiple tasks in your applications, the phaser class to implement concurrent tasks divided into phases, and the Fork/Join framework to implement concurrent tasks that can be split into smaller problems (using the divide and conquer technique). Toward the end, we will cover the new inclusions in Java 8 API, the Map and Reduce model, and the Map and Collect model. The book will also teach you about the data structures and synchronization utilities to avoid data-race conditions and other critical problems. Finally, the book ends with a detailed description of the tools and techniques that you can use to test a Java concurrent application.

Style and approach A complete guide implementing real-world examples with algorithms related to machine learning, data mining, and natural language processing in client/server environments. All the examples are explained in a step-by-step approach.

"With this book, Ted Neward helps you make the leap from being a good Java enterprise developer to a great developer!" --John Crupi, Sun Distinguished Engineer coauthor, Core J2EE Patterns If you want to build better Java enterprise applications and work more efficiently, look no further. Inside, you will find an accessible guide to the nuances of Java 2 Platform, Enterprise Edition (J2EE) development. Learn how to: Use in-process or local storage to avoid the network, see item 44 Set lower isolation levels for better transactional throughput, see item 35 Use Web services for open integration, see item 22 Consider your lookup carefully, see item 16 Pre-generate content to minimize processing, see item 55 Utilize role-based authorization, see item 63 Be robust in the face of failure, see item 7 Employ independent JREs for side-by-side versioning, see item 69 Ted Neward provides you with 75 easily digestible tips that will help you master J2EE development on a systemic and architectural level. His panoramic look at the good, the bad, and the ugly aspects of J2EE development will address your most pressing concerns. Learn how to design your enterprise systems so they adapt to future demands. Improve the efficiency of your code without compromising its correctness. Discover how to implement sophisticated functionality that is not directly supported by the language or platform. After reading Effective Enterprise Java , you will know how to design and implement better, more scalable enterprise-scope Java software systems.

"Java 7 Concurrency Cookbook" is a practical Cookbook packed with real-world solutions. Intermediate–advanced level Java developers will learn from task-based recipes to use Java's concurrent API to program thread safe solutions,If you are a Java developer who wants to take your knowledge of concurrent programming and multithreading further, as well as discover the new concurrency features of Java 7, then "Java 7 Concurrency Cookbook" is for you.You should already be comfortable with general Java development practices and a basic grasp of threads would be an advantage.

As networks, devices, and systems continue to evolve, software engineers face the unique challenge of creating reliable distributed applications within frequently changing environments. C++ Network Programming, Volume 1, provides practical solutions for developing and optimizing complex distributed systems using the ADAPTIVE Communication Environment (ACE), a revolutionary open-source framework that runs on dozens of hardware platforms and operating systems. This book guides software professionals through the traps and pitfalls of developing efficient, portable, and flexible networked applications. It explores the inherent design complexities of concurrent networked applications and the tradeoffs that must be considered when working to master them. C++ Network Programming begins with an overview of the issues and tools involved in writing distributed concurrent applications. The book then provides the essential design

dimensions, patterns, and principles needed to develop flexible and efficient concurrent networked applications. The book's expert author team shows you how to enhance design skills while applying C++ and patterns effectively to develop object-oriented networked applications. Readers will find coverage of: C++ network programming, including an overview and strategies for addressing common development challenges The ACE Toolkit Connection protocols, message exchange, and message-passing versus shared memory Implementation methods for reusable networked application services Concurrency in object-oriented network programming Design principles and patterns for ACE wrapper facades With this book, C++ developers have at their disposal the most complete toolkit available for developing successful, multiplatform, concurrent networked applications with ease and efficiency.

Java Concurrency in PracticePearson Education

Summary The Well-Grounded Java Developer offers a fresh and practical look at new Java 7 features, new JVM languages, and the array of supporting technologies you need for the next generation of Java-based software. About the Book The Well-Grounded Java Developer starts with thorough coverage of Java 7 features like try-with-resources and NIO.2. You'll then explore a cross-section of emerging JVM-based languages, including Groovy, Scala, and Clojure. You will find clear examples that are practical and that help you dig into dozens of valuable development techniques showcasing modern approaches to the dev process, concurrency, performance, and much more. Written for readers familiar with Java. No experience with Java 7 or new JVM languages required. 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 New Java 7 features Tutorials on Groovy, Scala, and Clojure Discovering multicore processing and concurrency Functional programming with new JVM languages Modern approaches to testing, build, and CI Table of Contents PART 1 DEVELOPING WITH JAVA 7 Introducing Java 7 New I/O PART 2 VITAL TECHNIQUES Dependency Injection Modern concurrency Class files and bytecode Understanding performance tuning PART 3 POLYGLOT PROGRAMMING ON THE JVM Alternative JVM languages Groovy: Java's dynamic friend Scala: powerful and concise Clojure: safer programming PART 4 CRAFTING THE POLYGLOT PROJECT Test-driven development Build and continuous integration Rapid web development Staying well-grounded

Coding and testing are generally considered separate areas of expertise. In this practical book, Java expert Scott Oaks takes the approach that anyone who works with Java should be adept at understanding how code behaves in the Java Virtual Machine—including the tunings likely to help performance. This updated second edition helps you gain in-depth knowledge of Java application performance using both the JVM and the Java platform. Developers and performance engineers alike will learn a variety of features, tools, and processes for improving the way the Java 8 and 11 LTS

releases perform. While the emphasis is on production-supported releases and features, this book also features previews of exciting new technologies such as ahead-of-time compilation and experimental garbage collections. Understand how various Java platforms and compilers affect performance Learn how Java garbage collection works Apply four principles to obtain best results from performance testing Use the JDK and other tools to learn how a Java application is performing Minimize the garbage collector’s impact through tuning and programming practices Tackle performance issues in Java APIs Improve Java-driven database application performance

The Art of Multiprocessor Programming, Second Edition, provides users with an authoritative guide to multicore programming. This updated edition introduces higher level software development skills relative to those needed for efficient single-core programming, and includes comprehensive coverage of the new principles, algorithms, and tools necessary for effective multiprocessor programming. The book is an ideal resource for students and professionals alike who will benefit from its thorough coverage of key multiprocessor programming issues. Features new exercises developed for instructors using the text, with more algorithms, new examples, and other updates throughout the book Presents the fundamentals of programming multiple threads for accessing shared memory Explores mainstream concurrent data structures and the key elements of their design, as well as synchronization techniques, from simple locks to transactional memory systems