

Learning Concurrent Programming in Scala - Second Edition

Aleksandar Prokopec

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Key Features

- 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 examples

Book Description

Scala 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, and then presents new exciting approaches to building concurrent and distributed systems.

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 2.12

Aleksandar Prokopec, who also authored the first edition of this book, is a concurrent and distributed programming researcher. He holds a PhD in Computer Science from the École Polytechnique Fédérale de Lausanne, in Switzerland. He has worked at Google, and is currently a principle researcher at Oracle Labs.

As a doctoral assistant and member of the Scala team at EPFL, he actively contributed to the Scala programming language, and has worked on programming abstractions for concurrency, data-parallel programming support, and concurrent data structures for Scala. He created the Scala Parallel Collections

framework, which is a library for high-level data-parallel programming in Scala, and participated in working groups for Scala concurrency libraries, such as Futures, Promises, and ScalaSTM. Aleksandar is the main author of the reactor model for distributed computing.



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