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Getting Started With Julia Programming Language
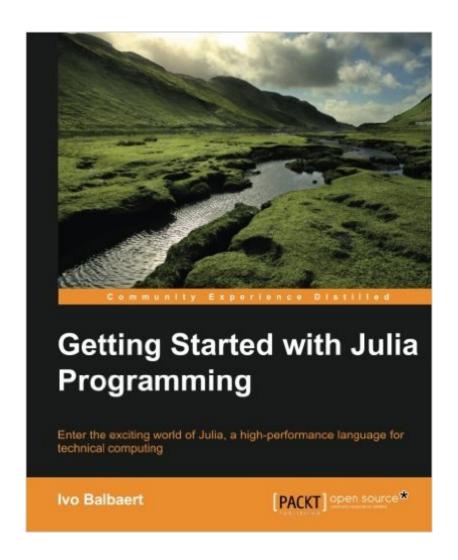

Getting Started with Julia Programming

Enter the exciting world of Julia, a high-performance language for technical computing

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Synopsis

Enter the exciting world of Julia, a high-performance language for technical computing About This BookWork with Julia in a multi-core, distributed, and networked environmentLearn the techniques to create blazingly fast programs with JuliaThe book walks you through various practical examples to get to grips with JuliaWho This Book Is ForThis book is for you if you are a data scientist or working on any technical or scientific computation projects. The book assumes you have a basic working knowledge of high-level dynamic languages such as MATLAB, R, Python, or Ruby.What You Will Learn Set up your Julia environment to achieve the highest productivity Solve your tasks in a high-level dynamic language and use types for your data only when needed Create your own types to extend the built-in type system Visualize your data in IJulia with plotting packages Explore the use of built-in macros for testing, debugging, benchmarking, and more Apply Julia to tackle problems concurrently and in a distributed environment Integrate with other languages such as C, Python, and MATLAB In DetailJulia is a new open source programming language that is used in the field of data science computing. It was created to solve the dilemma between high-level slow code and fast but low-level code, and the necessity to use both to achieve high performance. This book will give you a head start to tackle your numerical and data problems with Julia. Your journey will begin by learning how to set up a running Julia platform before exploring its various built-in types. You will then move on to cover the different functions and constructs in Julia. The book will then walk you through the two important collection typesâ •arrays and matrices. Over the course of the book, you will also be introduced to homoiconicity, the meta-programming concept in Julia.Towards the concluding part of the book, you will also learn how to run external programs. This book will cover all you need to know about Julia to leverage its high speed and efficiency.

Book Information

Paperback: 159 pages

Publisher: Packt Publishing - ebooks Account (February 27, 2015)

Language: English

ISBN-10: 178328479X

ISBN-13: 978-1783284795

Product Dimensions: 7.5 x 0.5 x 9.2 inches

Shipping Weight: 1.1 pounds (View shipping rates and policies)

Average Customer Review: 4.5 out of 5 starsÂ Â See all reviewsÂ (12 customer reviews)

Best Sellers Rank: #469,908 in Books (See Top 100 in Books)   #17 inÂ Books > Computers &

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What is Julia? Julia is a fairly new programming language (borne in 2012) that aims at reaching two objectives: 1) quick solution prototyping like in MATLAB, R or Python and 2) fast computational time and efficient memory management like in FORTRAN, C or C++. Thus, one could say that Julia tries to bridge the gap between programming languages of two types - high-level but slow and fast but low-level.As such, Julia is a primal competitor to MATLAB, R, and Python. However, competition does not completely exclude collaboration; this is the case for Julia that has packages for calling code written in these and some other languages like Java. Needless to say, Julia is open source and free with a liberal MIT license, which is important for wide adoption. To date, there are 549 external packages that can be found at http://pkg.julialang.org/ .Chapter 1 explains how to install Julia for Windows, Ubuntu and OS X, shows example of work in Julia shell, and lists IDEs like Juno that can be used. Chapter 2 describes Julia's types of variables (numbers, characters, strings, ranges, arrays) that are the key for its performance, while Chapter 3 discusses functions (their definition and types). Control flow operators (if, for, while, break, continue) and exception handling are introduced in Chapter 3. As the extensions of Chapter 2, Chapter 5 talks about matrices (multidimensional arrays), tuples, sets and dictionaries, while Chapter 6 goes into detail of type annotation and conversion, type hierarchy, abstract, parametric, and user-defined types. The concept of metaprogramming (which can even generate code) is explained in Chapter 7.

Here's 4 things I liked about the book followed by 2 things I didn't1. The authorâ ™s name looks foreign so I was concerned the book may suffer from a poor translation and/or bad grammar. That was not the case. The grammar was on par for a technical book and there werenâ ™t many typos.2. The topics were presented in a logical order. When the author was forced to mention a topic that had yet to be covered, he referenced the upcoming chapter where it would be covered. This ensures the reader isnâ ™t just left scratching their head.3. The author used Julia-v0.3 but would mention where he thought something would change in Julia-v0.4. When explaining slices be states that v0.3 provided a copy (by default) instead of a view of the original matrix but v0.4 would return views instead of copies. I tested this with versions v0.3.9 and v0.4.5 and I saw no difference in the default behavior. The author's comment spurred me to read the documentation and eventually I found the explanation (on their wiki). Spoiler, it didn't change in v0.4. The note in the book may have

been incorrect but notes like that are very helpful when the language is still under development. Some comments about future releases are going to be wrong because development can change course over night.4. Each time I referenced the index, I found what I was looking for. ------- 2 Things I didn't like -----------1. So what's one reason not to buy this book or any other Julia book? The language is still under development. This book was published in 2015. I'm reading it in April 2016 and as I work through the examples I'm getting a LOT of deprecated syntax warnings (v0.4.6-pre) and as I pointed out above, some things the author said would be implemented in v.

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