Groovy and Grails Recipes

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To my son, Ameen Bashar Abdul-Jawad. I will always love you.

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About the Author

BASHAR ABDUL-JAWAD is a senior software engineer with Video Monitoring Services (VMS, `http://vmsinfo.com`), a company that provides news and advertising monitoring solutions. In his current position, Bashar shifted all of the company's new projects from Java and the Tapestry framework to Groovy and Grails. Bashar trained the developers at VMS across three locations—New York, Arizona, and Chennai, India—in using Groovy and Grails and thinking in Groovy instead of Java. To date, Bashar still gives weekly training sessions in all three places on subjects related to Groovy, Grails, and dynamic languages.

After obtaining his master's degree in computer science from the University of Maine, Bashar moved down to sunny Tucson to work for the University of Arizona as a senior developer of the Arizona Hydrologic Information System (AHIS). AHIS was built in Struts, and growing frustrated with the unnecessary complexity of Struts and the shortcomings of Java, Bashar began looking for a simpler, more dynamic language and framework that ran on the Java Virtual Machine. It was then that he discovered Groovy and Grails and got hooked on them.

Bashar carried this passion for Groovy and Grails with him when he moved to VMS. VMS was also using a complex web framework—Tapestry. Bashar made it a goal that his company should switch to Groovy and Grails and assured its management that after years of Tapestry's overwhelming complexity, their developers would be delighted to work with Groovy and Grails and would be at least twice as productive. It turned out that he couldn't have been more right.

In addition to holding a master's degree, Bashar holds a bachelor's degree in computer science from the University of Jordan. Bashar is also a Sun-certified Java 1.4 Programmer and Java 1.4 Web Components Developer.

About the Technical Reviewer

DAVE KLEIN is a developer with Contegix, a company specializing in delivering managed Internet infrastructure based on Linux, Mac OS X, Java EE, and Grails. Dave has been involved in enterprise software development for the past 15 years. He has worked as a developer, architect, project manager (don't worry, he's recovered), mentor, and trainer. Dave has presented at user groups and national conferences. He is also the founder of the Capital Java User Group in Madison, Wisconsin.

Dave considers himself a migrant programmer and has worked in California, Minnesota, Texas, and Wisconsin and is headed for Missouri. He is currently living in Portage, Wisconsin, with his wife and 13 future consultants. Dave's Groovy- and Grails-related thoughts can be found at `http://dave-klein.blogspot.com`.

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Introduction

Java, the platform, is going to stay around for quite a while. Java the language, however, is beginning to show its age, and it's time now for Java developers to start thinking in terms of dynamic languages. Groovy is one of the best dynamic languages available for the Java platform. After years of working with Groovy, I am firmly convinced that all Java developers should at least give Groovy a try. The amount of coding you can save with a dynamic language like Groovy is really amazing—especially when working with collections or files. It is for this reason that I decided to write this book. I want to share this great increase in productivity that I gained with Groovy with the large number of Java developers out there.

Dynamic languages such as Groovy made web frameworks like Grails a reality. Grails is a breath of fresh air for Java developers and it is one of the main reasons why I became so interested in dynamic languages. I remember that my first days of Java web development were with Struts and Tapestry. And boy, I don't miss those days. To me, those frameworks always seemed unnecessarily complex, and I just couldn't stand the amount of configuration and boilerplate code you had to write to get anything done. That's not what frameworks are supposed to do. Frameworks are supposed to make your tasks easier and let you focus on the logic of the problem at hand, which is exactly what Grails does. Grails makes sense, which is to me the number one feature I look for in any new technology. Grails is such a simple, and yet powerful, framework that you can't help but wonder why no one thought of it earlier.

One of the strongest points about Groovy and Grails is that they are native to the Java Virtual Machine. Given how ubiquitous Java is nowadays, it would be crazy to ask Java developers to throw away all their Java-based infrastructures, APIs, libraries, and frameworks and start all over again from the beginning. For this reason, Groovy and Grails are bound to be very successful in the enterprise world, where Java is heavily entrenched. Their seamless integration with Java is a huge selling point. I remember at my company we were debating whether we should use Ruby and Ruby on Rails, or Groovy and Grails. At the end of the day Groovy and Grails won. Their perfect interoperability with Java and flat learning curve for Java developers were crucial factors in influencing the decision.

My aim in this book is twofold. First, to teach you Groovy and Grails from scratch in a pragmatic way and, second, to present practical solutions to common Groovy and Grails problems. I want you to be able to pick up this book, look up a question you are wondering about, and find a satisfying answer quickly. You won't find detailed theoretical explanations of how things work under the hood, but rather direct, generally short, code snippets that solve the problem at hand.

I hope you will enjoy reading this book as much as I enjoyed writing it. Groovy and Grails are really fun to work with. I don't remember the last time I enjoyed working with a technology as much I enjoy working with Groovy and Grails.

Who This Book Is For

This book is primarily targeted at Java developers. It assumes no prior knowledge of Groovy or Grails and will teach you both by using a question-and-answer approach. Non-Java developers who are familiar with dynamic languages (such as Ruby, PHP, or Python) should also have no problem reading this book—although Java developers will most likely benefit from it the most.

Grails is more than just a web framework; it's an application stack that bundles a bunch of other technologies: Hibernate, Spring, and SiteMesh to name a few. Although no prior knowledge of these topics is required, readers with some experience of them will find the related recipes easier to understand than those who have never used them.

How This Book Is Structured

This book is divided into 16 chapters using a question-and-answer approach. I've always been a fan of recipe-style books; they cut to the chase without wasting the reader's time, and this is exactly what this book does. This book is divided into two major parts: a Groovy part and a Grails part. The Groovy part accounts for the first nine chapters.

Chapter 1 provides a brief introduction to Groovy, presents the case for it, and walks you through the steps of downloading and installing a copy of it on your machine.

Chapter 2 is mainly intended for Java developers, to ease the transition from Java syntax to Groovy syntax. It highlights the major similarities and differences between the two.

Chapter 3 discusses data types and control structures. Data types in Groovy include simple data types and collective data types. Control structures are divided into looping structures and conditional structures.

Chapter 4 presents Groovy from an object-oriented perspective. Groovy is a complete object-oriented language, so Java developers should feel at home in that respect.

Chapter 5 tackles a topic that is arguably the hardest for Java developers to grasp: closures. Through examples, this chapter tries to clarify the mystery of closures and presents the case for them.

Chapter 6 presents another new structure for Java developers: builders. Builders are where Groovy's dynamic capabilities become very clear and where productivity really soars.

Chapter 7 is all about databases and how Groovy greatly simplifies the JDBC API.

Of course, no book on a programming language is complete without some mention of testing. Chapter 8 is dedicated to testing and shows how you can leverage Groovy's dynamic capabilities to test those hard-to-test classes with many external dependencies.

Chapter 9 concludes the Groovy part with miscellaneous recipes from various topics. Working with XML, files, the command line, and regular expressions are some of the topics discussed there.

Chapter 10 starts the Grails part. It presents the case for Grails, shows you how to download and install it, and walks you through creating your first `Hello World` application.

Chapter 11 is about the web layer. The web layer in Grails is composed of two major parts: controllers and views. This chapter shows you recipes for performing common tasks with this layer.

Chapter 12 is about the data layer, where your domain classes are persisted to a database. Grails uses Hibernate for persistence, but builds on top of it a new domain-specific language called GORM that greatly simplifies working with Hibernate.

Chapter 13 presents a topic that may be new to Java developers: scaffolding. As you will see, scaffolding is more than just generating code.

Chapter 14 presents an important topic in any real-life application: security. It shows you how to protect your application from common attacks and how to add authentication and authorization to it.

Given the importance of testing, I decided to add another chapter on testing; this one shows you how to test Grails artifacts. As you will see in Chapter 15, unlike testing most web applications, testing a Grails application is fairly easy.

The final chapter, Chapter 16, presents miscellaneous topics from the Grails world. The service layer, web services, and logging are some of the topics I discuss.

Prerequisites

This book covers version 1.5.6 of Groovy and 1.0.3 of Grails; each is the the latest stable release version at the time of this writing. This book walks you through the installation of Groovy and Grails. The only prerequisite you will need in order to install Groovy and Grails is a copy of the JDK 5.0 or higher installed on your machine.

Downloading the Code

The code for the examples in this book is available for you to download from the Download section on the book's page on the Apress website, `http://www.apress.com`. The code is also available for download from the book's website at `http://groovygrailsrecipes.com`.

Contacting the Author

I maintain a website for this book at `http://groovygrailsrecipes.com`, where I sometimes blog. You are welcome to leave your comments there or, if you prefer, drop an e-mail at `bjawad@vmsinfo.com`.