



Community Experience Distilled

# Test-Driven iOS Development with Swift

Create fully-featured and highly functional iOS apps by writing tests first

Dr. Dominik Hauser

[PACKT] open source\*  
PUBLISHING community experience distilled



---

# Test-Driven iOS Development with Swift

---

---

# Table of Contents

[Test-Driven iOS Development with Swift](#)

[Credits](#)

[About the Author](#)

[About the Reviewer](#)

[www.PacktPub.com](#)

[Support files, eBooks, discount offers, and more](#)

[Why subscribe?](#)

[Free access for Packt account holders](#)

[Preface](#)

[What this book covers](#)

[What you need for this book](#)

[Who this book is for](#)

[Conventions](#)

[Reader feedback](#)

[Customer support](#)

[Downloading the example code](#)

[Downloading the color images of this book](#)

[Errata](#)

[Piracy](#)

[Questions](#)

[1. Your First Unit Tests](#)

[Building your first automatic unit test](#)

[What are unit tests?](#)

[Implementing a unit test example](#)

[Important built-in assert functions](#)

[Understanding TDD](#)

[The TDD workflow – red, green, and refactor](#)

[Red](#)

[Green](#)

---

[Refactor](#)

[TDD in Xcode](#)

[An example of TDD](#)

[Red – example 1](#)

[Green – example 1](#)

[Refactor – example 1](#)

[Red – example 2](#)

[Green – example 2](#)

[Refactor – example 2](#)

[A recap](#)

[Finding information about tests in Xcode](#)

[Test Navigator](#)

[Tests overview](#)

[Running tests](#)

[Running one specific test](#)

[Running all tests in a test case](#)

[Running a group of tests](#)

[The setUp\(\) and tearDown\(\) methods](#)

[Debugging tests](#)

[Breakpoint that breaks on test failure](#)

[Test again feature](#)

[Advantages of TDD](#)

[Disadvantages of TDD](#)

[What to test](#)

[Summary](#)

[2. Planning and Structuring Your Test-Driven iOS App](#)

[Task list view](#)

[Task detail view](#)

[Task input view](#)

[Structure of the app](#)

[The Table View Controller, the delegate and the data source](#)

---

[Table view cells](#)

[A model](#)

[Other view controllers](#)

[Development strategy](#)

[Getting started with Xcode](#)

[Setting useful Xcode behaviors for testing](#)

[Useful build behaviors](#)

[Testing behaviors](#)

[Summary](#)

### [3. A Test-Driven Data Model](#)

[Implementing the `ToDoItem` struct](#)

[Adding a title property](#)

[Adding an `itemDescription` property](#)

[Removing a hidden source of bugs](#)

[Adding a timestamp property](#)

[Adding a location property](#)

[Implementing the `Location` struct](#)

[Adding a coordinate property](#)

[Implementing the `ItemManager` class](#)

[Count](#)

[Adding and checking items](#)

[Equatable](#)

[Removing all items](#)

[Ensuring uniqueness](#)

[Summary](#)

### [4. A Test-Driven View Controller](#)

[Implementing `ItemListViewController`](#)

[Implementing `ItemListDataProvider`](#)

[Conducting the first tests](#)

[Fake objects](#)

[Using mocks](#)

---

[Checking and unchecking items](#)

[Implementing ItemCell](#)

[Implementing DetailViewController](#)

[Implementing InputViewController](#)

[Summary](#)

## [5. Testing Network Code](#)

[Implementing asynchronous tests](#)

[Implementing a login request to a web service](#)

[Handling errors](#)

[Summary](#)

## [6. Putting It All Together](#)

[Connecting parts](#)

[The initial View Controller](#)

[Showing the input view](#)

[Showing the detail view](#)

[Serialization and deserialization](#)

[Functional tests](#)

[Adding a UI test target](#)

[Recording and testing](#)

[Summary](#)

## [7. Code Coverage and Continuous Integration](#)

[Enabling code coverage](#)

[Code coverage in Xcode](#)

[What code coverage is enough?](#)

[Continuous integration](#)

[Installing and setting up Xcode Server](#)

[Adding bots](#)

[Automatic deployment with fastlane](#)

[Installing fastlane](#)

[Setting up](#)

[Summary](#)

---

## [8. Where to Go from Here](#)

[What we have learned so far](#)

[Integration tests](#)

[UI tests](#)

[Behavior-Driven Development](#)

[TDD in existing projects](#)

[More information about TDD](#)

[Summary](#)

[Index](#)





---

# Test-Driven iOS Development with Swift

---



---

# Test-Driven iOS Development with Swift

Copyright © 2016 Packt Publishing

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without the prior written permission of the publisher, except in the case of brief quotations embedded in critical articles or reviews.

Every effort has been made in the preparation of this book to ensure the accuracy of the information presented. However, the information contained in this book is sold without warranty, either express or implied. Neither the author, nor Packt Publishing, and its dealers and distributors will be held liable for any damages caused or alleged to be caused directly or indirectly by this book.

Packt Publishing has endeavored to provide trademark information about all of the companies and products mentioned in this book by the appropriate use of capitals. However, Packt Publishing cannot guarantee the accuracy of this information.

First published: February 2016

Production reference: 1170216

Published by Packt Publishing Ltd.

Livery Place

35 Livery Street

Birmingham B3 2PB, UK.

ISBN 978-1-78588-073-5

[www.packtpub.com](http://www.packtpub.com)



---

# Credits

## **Author**

Dr. Dominik Hauser

## **Reviewer**

Ravi Shankar

## **Commissioning Editor**

Kunal Parikh

## **Acquisition Editor**

Reshma Raman

## **Content Development Editor**

Parshva Sheth

## **Technical Editor**

Rahul C. Shah

## **Copy Editor**

Sonia Cheema

## **Project Coordinator**

Nikhil Nair

## **Proofreader**

Safis Editing

## **Indexer**

Mariammal Chettiyar

## **Production Coordinator**

Nilesh Mohite

## **Cover Work**

Nilesh Mohite



---

# About the Author

**Dr. Dominik Hauser** completed his PhD in physics at Heidelberg University, Germany. While working as a university professor, he started iOS development in his spare time. His first app on physics has been an astounding success worldwide. Since then, he's turned himself into a full-time iOS developer, crediting a number of successful apps to his name. He has been a Swift developer since day one and runs a blog on iOS development at <http://swiftandpainless.com/>.

I would like to thank my wife, Isa. Thank you for all your support over the years and, especially, in the last few months of writing this book. I also want to thank all the great people in our community. I learned so much by reading your excellent blog posts. I'm proud to be part of this community.





---

# About the Reviewer

**Ravi Shankar** is a multiskilled software consultant with over 15 years of experience in the IT industry. He has the ability to work with different technologies and has extensive experience in product development, system maintenance, and support. Ravi is a polyglot and self-taught programmer, with hands-on experience in Swift, Objective-C, and Java. He believes in gaining knowledge through sharing and helping others learn about technology.

It was a pleasure to work with Nikhil, and thanks to Packt Publishing for giving me this opportunity.





---

# Support files, eBooks, discount offers, and more

For support files and downloads related to your book, please visit [www.PacktPub.com](http://www.PacktPub.com).

Did you know that Packt offers eBook versions of every book published, with PDF and ePub files available? You can upgrade to the eBook version at [www.PacktPub.com](http://www.PacktPub.com) and as a print book customer, you are entitled to a discount on the eBook copy. Get in touch with us at <[service@packtpub.com](mailto:service@packtpub.com)> for more details.

At [www.PacktPub.com](http://www.PacktPub.com), you can also read a collection of free technical articles, sign up for a range of free newsletters and receive exclusive discounts and offers on Packt books and eBooks.



<https://www2.packtpub.com/books/subscription/packtlib>

Do you need instant solutions to your IT questions? PacktLib is Packt's online digital book library. Here, you can search, access, and read Packt's entire library of books.

---

## Why subscribe?

- Fully searchable across every book published by Packt
- Copy and paste, print, and bookmark content
- On demand and accessible via a web browser

---

## Free access for Packt account holders

If you have an account with Packt at [www.PacktPub.com](http://www.PacktPub.com), you can use this to access PacktLib today and view 9 entirely free books. Simply use your login credentials for immediate access.





- [\*Fool's Fate \(The Tawny Man, Book 3\) pdf\*](#)
- [click Keon and Me: My Search for the Lost Soul of the Leafs](#)
- **[download online The Alchemical Body: Siddha Traditions in Medieval India pdf](#)**
- [\*Easy Go \(The Med School Years, Book 3\) pdf, azw \(kindle\), epub\*](#)
- **[download Indecent Dreams pdf](#)**
  
- <http://reseauplatoparis.com/library/Now-You-See-It--How-the-Brain-Science-of-Attention-Will-Transform-the-Way-We-Live--Work--and-Learn.pdf>
- <http://serazard.com/lib/The-Jewish-State.pdf>
- <http://www.khoi.dk/?books/The-Little-Book-of-Yoga.pdf>
- <http://tuscalaural.com/library/Easy-Go--The-Med-School-Years--Book-3-.pdf>
- <http://yachtwebsitedemo.com/books/Indecent-Dreams.pdf>