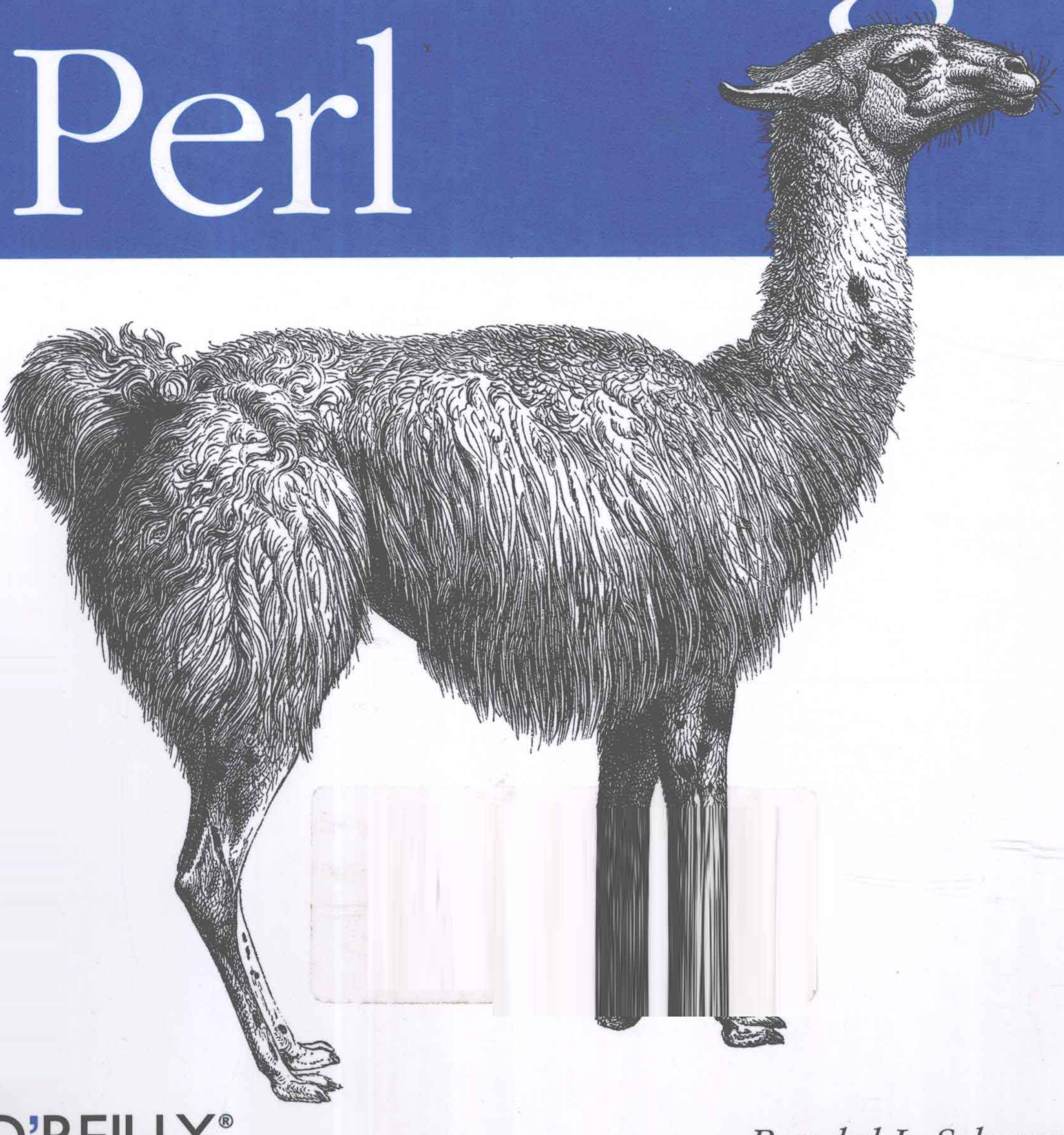
Perl语言入门（影印版）

第[illegible]版
涵盖 Perl 5.14

Learning Perl



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Randal L. Schwartz,
brian d foy & Tom Phoenix 著

（第6版）

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Learning Perl

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Preface

Welcome to the sixth edition of *Learning Perl*, updated for Perl 5.14 and its latest features. This book is still good even if you are still using Perl 5.8 (although, it's been a long time since it was released; have you thought about upgrading?).

If you're looking for the best way to spend your first 30 to 45 hours with the Perl programming language, you've found it. In the pages that follow, you'll find a carefully paced introduction to the language that is the workhorse of the Internet, as well as the language of choice for system administrators, web hackers, and casual programmers around the world.

We can't give you all of Perl in just a few hours. The books that promise that are probably fibbing a bit. Instead, we've carefully selected a useful subset of Perl for you to learn, good for programs from one to 128 lines long, which end up being about 90% of the programs in use out there. And when you're ready to go on, you can get *Intermediate Perl*, which picks up where this book leaves off. We've also included a number of pointers for further education.

Each chapter is small enough so you can read it in an hour or two. Each chapter ends with a series of exercises to help you practice what you've just learned, with the answers in Appendix A for your reference. Thus, this book is ideally suited for a classroom "Introduction to Perl" course. We know this directly because the material for this book was lifted almost word-for-word from our flagship "Learning Perl" course, delivered to thousands of students around the world. However, we've designed the book for self-study as well.

Perl lives as the "toolbox for Unix," but you don't have to be a Unix guru, or even a Unix user, to read this book. Unless otherwise noted, everything we're saying applies equally well to Windows ActivePerl from ActiveState and pretty much every other modern implementation of Perl.

Although you don't need to know a single thing about Perl to begin reading this book, we recommend that you already have familiarity with basic programming concepts such as variables, loops, subroutines, and arrays, and the all-important "editing a source code file with your favorite text editor." We don't spend any time trying to explain those concepts. Although we're pleased that we've had many reports of people successfully picking up *Learning Perl* and grasping Perl as their first programming language, of course we can't promise the same results for everyone.

Typographical Conventions

The following font conventions are used in this book:

`Constant width`
: is used for method names, function names, variables, and attributes. It is also used for code examples.

`Constant width bold`
: is used to indicate user input.

`Constant width italic`
: is used to indicate a replaceable item in code (e.g., ***`filename`***, where you are supposed to substitute an actual filename).

Italic
: is used for filenames, URLs, hostnames, commands in text, important words on first mention, and emphasis.

Footnotes
: are used to attach parenthetical notes that you *should not* read on your first (or perhaps second or third) reading of this book. Sometimes lies are spoken to simplify the presentation, and the footnotes restore the lie to truth. Often the material in the footnote will be advanced material not even mentioned anywhere else in the book.

[2]
: at the start of an exercise's text represents our (very rough) estimate of how many minutes you can expect to spend on that particular exercise.

Code Examples

This book is here to help you get your job done. You are invited to copy the code in the book and adapt it for your own needs. Rather than copying by hand, however, we encourage you to download the code from *http://www.learning-perl.com*.

In general, you may use the code in this book in your programs and documentation. You do not need to contact us for permission unless you're reproducing a significant portion of the code. For example, writing a program that uses several chunks of code from this book does not require permission. Selling or distributing a CD-ROM of examples from O'Reilly books does require permission. Answering a question by citing this book and quoting example code does not require permission. Incorporating a significant amount of example code from this book into your product's documentation does require permission.

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We have a web page for the book, where we'll list examples, errata, and any additional information. It also offers a downloadable set of text files (and a couple of Perl programs) that are useful, but not required, when doing some of the exercises. You can access this page at:

http://www.learning-perl.com

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History of This Book

For the curious, here's how Randal tells the story of how this book came about:

After I had finished the first *Programming perl* book with Larry Wall (in 1991), I was approached by Taos Mountain Software in Silicon Valley to produce a training course. This included having me deliver the first dozen or so courses and train their staff to continue offering the course. I wrote the course for them[*] and delivered it for them as promised.

On the third or fourth delivery of that course (in late 1991), someone came up to me and said, "You know, I really like *Programming perl*, but the way the material is presented in this course is so much easier to follow—you oughta write a book like this course." It sounded like an opportunity to me, so I started thinking about it.

I wrote to Tim O'Reilly with a proposal based on an outline that was similar to the course I was presenting for Taos—although I had rearranged and modified a few of the chapters based on observations in the classroom. I think that was my fastest proposal acceptance in history—I got a message from Tim within fifteen minutes, saying "We've been waiting for you to pitch a second book—*Programming perl* is selling like gangbusters." That started the effort over the next 18 months to finish the first edition of *Learning Perl*.

During that time, I was starting to see an opportunity to teach Perl classes outside Silicon Valley,[†] so I created a class based on the text I was writing for *Learning Perl*. I gave a dozen classes for various clients (including my primary contractor, Intel Oregon), and used the feedback to fine-tune the book draft even further.

[*] In the contract, I retained the rights to the exercises, hoping someday to reuse them in some other way, like in the magazine columns I was writing at the time. The exercises are the only things that leapt from the Taos course to the book.

[†] My Taos contract had a no-compete clause, so I had to stay out of Silicon Valley with any similar courses, which I respected for many years.

The first edition hit the streets on the first day of November 1993,‡ and became a smashing success, frequently even outpacing *Programming perl* book sales.

The back-cover jacket of the first book said "written by a leading Perl trainer." Well, that became a self-fulfilling prophecy. Within a few months, I was starting to get email from all over the United States asking me to teach at their site. In the following seven years, my company became the leading worldwide on-site Perl training company, and I had personally racked up (literally) a million frequent-flier miles. It didn't hurt that the Web started taking off about then, and the webmasters and webmistresses picked Perl as the language of choice for content management, interaction through CGI, and maintenance.

For two years, I worked closely with Tom Phoenix in his role as lead trainer and content manager for Stonehenge, giving him charter to experiment with the "Llama" course by moving things around and breaking things up. When we had come up with what we thought was the best major revision of the course, I contacted O'Reilly and said, "It's time for a new book!" And that became the third edition.

Two years after writing the third edition of the Llama, Tom and I decided it was time to push our follow-on "advanced" course out into the world as a book, for people writing programs that are "100 to 10,000 lines of code." And together we created the first Alpaca book, released in 2003.

But fellow instructor brian d foy was just getting back from the conflict in the Gulf, and had noticed that we could use some rewriting in both books, because our courseware still needed to track the changing needs of the typical student. So, he pitched the idea to O'Reilly to take on rewriting both the Llama and the Alpaca one final time before Perl 6 (we hope). This edition of the Llama reflects those changes. `brian` has really been the lead writer here, working with my occasional guidance, and has done a brilliant job of the usual "herding cats" that a multiple-writer team generally feels like.

On December 18, 2007, the Perl 5 Porters released Perl 5.10, a significant new version of Perl with several new features. The previous version, 5.8, had focused on the underpinnings of Perl and its Unicode support. The latest version, starting from the stable 5.8 foundation, was able to add completely new features, some of which it borrowed from the development of Perl 6 (not yet released). Some of these features, such as named captures in regular expressions, are much better than the old ways of doing things, thus perfect for Perl beginners. We hadn't thought about a fifth edition of this book, but Perl 5.10 was so much better that we couldn't resist.

Since then, Perl has been under constant improvement and is keeping a regular release cycle. We didn't have a chance to update this book for Perl 5.12 because development proceeded too quickly. We're pleased to offer this update for Perl 5.14, and are amazed that there's now a sixth edition.

‡ I remember that date very well, because it was also the day I was arrested at my home for computer-related-activities around my Intel contract, a series of felony charges for which I was later convicted.

Changes from the Previous Edition

The text is updated for the latest version, Perl 5.14, and some of the code only works with that version. We note in the text when we are talking about a Perl 5.14 feature, and we mark those code sections with a special `use` statement that ensures you're using the right version:

```
    use 5.014; # this script requires Perl 5.14 or greater
```

If you don't see that `use 5.014` in a code example (or a similar statement with a different version), it should work all the way back to Perl 5.8. To see which version of Perl you have, try the `-v` command-line switch:

```
    $ perl -v
```

Here's some of the new features from Perl 5.14 that we cover, and where appropriate, we still show you the old ways of doing the same thing:

- We include Unicode examples and features where appropriate. If you haven't started playing with Unicode, we include a primer in Appendix C. You have to bite the bullet sometime, so it might as well be now. You'll see Unicode throughout the book, most notably in the chapters on Scalars (Chapter 2), Input/Output (Chapter 5), and Sorting (Chapter 14).
- There is more information in the regular expression chapters, covering the new features from Perl 5.14 to deal with Unicode case-folding. The regular expression operators have new `/a`, `/u`, and `/l` switches. We now cover matching by Unicode properties with the `\p{}` and `\P{}` regular expression features.
- Perl 5.14 adds a nondestructive substitution operator (Chapter 9), which turns out to be really handy.
- Smart matching and `given-when` has mutated a bit since their introduction in Perl 5.10, so we update Chapter 15 to cover the new rules.
- We updated and expanded Perl Modules (Chapter 11) to include the latest news, including the zero-conf *cpanm* tool. We add some more module examples as well.
- Some of the items previously in Appendix B, the advanced-but-not-demonstrated features, move into the main text. Notably, that includes the fat arrow `=>` moving into Hashes (Chapter 6) and `splice` moving into Lists and Arrays (Chapter 3).

Acknowledgments

From Randal

I want to thank the Stonehenge trainers past and present (Joseph Hall, Tom Phoenix, Chip Salzenberg, brian d foy, and Tad McClellan) for their willingness to go out and teach in front of classrooms week after week and to come back with their notes about what's working (and what's not), so we could fine-tune the material for this book. I especially want to single out my co-author and business associate, Tom Phoenix, for having spent many, many hours working to improve Stonehenge's Llama course and to provide the wonderful core text for most of this book. And brian d foy for being the lead writer beginning with the fourth edition, and taking that eternal to-do item out of my inbox so that it would finally happen.

I also want to thank everyone at O'Reilly, especially our very patient editor and overseer for previous editions, Allison Randal (no relation, but she has a nicely spelled last name), current editor Simon St.Laurent, and Tim O'Reilly himself for taking a chance on me in the first place with the Camel and Llama books.

I am also absolutely indebted to the thousands of people who have purchased the past editions of the Llama so that I could use the money to stay "off the streets and out of jail," and to those students in my classrooms who have trained me to be a better trainer, and to the stunning array of Fortune 1000 clients who have purchased our classes in the past and will continue to do so into the future.

As always, a special thanks to Lyle and Jack, for teaching me nearly everything I know about writing. I won't ever forget you guys.

From Tom

I've got to echo Randal's thanks to everyone at O'Reilly. For the third edition of this book, Linda Mui was our editor, and I still thank her, for her patience in pointing out which jokes and footnotes were most excessive, while pointing out that she is in no way to blame for the ones that remain. Both she and Randal have guided me through the process of writing, and I am grateful. In a previous edition, Allison Randal took charge; now Simon St.Laurent has become the editor. My thanks go to each of them in recognition of their unique contributions.

And another echo with regard to Randal and the other Stonehenge trainers, who hardly ever complained when I unexpectedly updated the course materials to try out a new teaching technique. You folks have contributed many different viewpoints on teaching methods that I would never have seen.

For many years, I worked at the Oregon Museum of Science and Industry (OMSI), and I'd like to thank the folks there for letting me hone my teaching skills as I learned to build a joke or two into every activity, explosion, or dissection.

To the many folks on Usenet who have given me your appreciation and encouragement for my contributions there, thanks. As always, I hope this helps.

Also to my many students, who have shown me with their questions (and befuddled looks) when I needed to try a new way of expressing a concept. I hope that the present edition helps to relieve any remaining puzzlement.

Of course, deep thanks are due especially to my co-author, Randal, for giving me the freedom to try various ways of presenting the material both in the classroom and here in the book, as well as for the push to make this material into a book in the first place. And without fail, I must say that I am indeed inspired by your ongoing work to ensure that no one else becomes ensnared by the legal troubles that have stolen so much of your time and energy; you're a fine example.

To my wife, Jenna, thanks for being a cat person, and everything thereafter.

From brian

I have to thank Randal first, since I learned Perl from the first edition of this book, and then had to learn it again when he asked me to start teaching for Stonehenge in 1998. Teaching is often the best way to learn. Since then, Randal has mentored me not only in Perl but several other things he thought I needed to learn—like the time he decided that we could use Smalltalk instead of Perl for a demonstration at a web conference. I'm always amazed at the breadth of his knowledge. He's the one who told me to start writing about Perl. Now I'm helping out on the book where I started. I'm honored, Randal.

I probably only actually saw Tom Phoenix for less than two weeks in the entire time I worked for Stonehenge, but I had been teaching his version of Stonehenge's *Learning Perl* course for years. That version turned into the third edition of this book. By teaching Tom's new version, I found new ways to explain almost everything, and learned even more corners of Perl.

When I convinced Randal that I should help out on the Llama update, I was anointed as the maker of the proposal to the publisher, the keeper of the outline, and the version control wrangler. Our editor, Allison Randal, helped me get all of those set up and endured my frequent emails without complaining. After Allison went on to other things, Simon St. Laurent has been extremely helpful in the role of editor and inside guy at O'Reilly, patiently waiting for the right phase of the moon to suggest another update.

From All of Us

Thanks to our reviewers, David H. Adler, Alan Haggai Alavi, Andy Armstrong, Dave Cross, Chris Devers, Paul Fenwick, Stephen B. Jenkins, Matthew Musgrove, Jacinta Richardson, Steve Peters, Peter Scott, Wil Wheaton, and Karl Williamson, for providing comments on the draft of this book.

Thanks also to our many students who have let us know what parts of the course material have needed improvement over the years. It's because of you that we're all so proud of it today.

Thanks to the many Perl Mongers who have made us feel at home as we've visited your cities. Let's do it again sometime.

And finally, our sincerest thanks to our friend Larry Wall, for having the wisdom to share his really cool and powerful toys with the rest of the world so that we can all get our work done just a little bit faster, easier, and with more fun.

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