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## 前言

Conventions Used in This Book . The following typographical conventions are used in this book:

*Italic* Indicates new terms, URLs, email addresses, filenames, and file extensions. **Constant width** Used for program listings, in text to refer to program elements, such as variable or function names, databases, data types, environment variables, statements, utilities, keywords, utilities, and modules. **Constant width bold** Shows commands or other text that should be typed literally by the user. *Constant width italic* Shows text that should be replaced with user-supplied values or by values determined by context. **Using Code Examples** This book is here to help you get your job done. In general, you may use the code that is included 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 products documentation does require permission. We appreciate, but do not require, attribution. An attribution usually includes the title, author, publisher, and ISBN, for example: "Python for Unix and Linux System Administration by Noah Gift and Jeremy M. Jones. Copyright 2008 Noah Gift and Jeremy M. Jones, 978-0-596-51582-9." If you feel your use of code examples falls outside fair use or the permission given above, feel free to contact us at [permissions@oreilly.com](mailto:permissions@oreilly.com).

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**Acknowledgments** Noah's Acknowledgments As I sit writing an acknowledgment for this book, I have to first mention Dr. Joseph E. Bogen, because he made the single largest impact on me, at a time that it mattered the most. I met Dr. Bogen while I was working at Caltech, and he opened my eyes to another world giving me advice on life, psychology, neuroscience, math, the scientific study of consciousness, and much more. He was the smartest person I ever met, and was someone I loved. I am going to write a book about this experience someday, and I am saddened that he won't be there to read it, his death was a big loss. I want to thank my wife, Leah, who has been one of the best things to happen to me, ever. Without your love and support, I never could have written this book. You have the patience of a saint. I am looking forward to going where this journey takes us, and I love you. I also want to thank my son, Liam, who is one and a half, for being patient with me while I wrote this book. I had to cut many of our guitar, piano, and pushup lessons short, so I owe you payback times two, little goat. To my mom, I love you, and thank you for encouraging me throughout life. Of course, I want to thank Jeremy M. Jones, my coauthor, for agreeing to write this book with me. I think we were a great team with different, but complementary styles, and we wrote a great book. You have taught me a lot about Python, and have been a good partner and friend. Thanks! Titus Brown, whom I suppose I have to call Dr. Brown now, was the person that got me interested in Python to begin with, when I met him at Caltech. He is another example of how one person can make a difference, and I am glad to consider him an "old" friend, the kind money can't buy. He kept asking me, "Why don't you use Python?" And then one day I did. If it wasn't for Titus, I would certainly have continued down the Java and Perl path. You can read his blog here: <http://ivory.idyll.org/blog>. Shannon Behrens has a heart of solid gold, a mind as sharp as a razor, and a knowledge of Python that is truly scary. I first met Shannon through Titus, ironic again, but he and I became quick friends. Shannon is the real deal in every sense of the word, and has taught me a tremendous amount about Python,

in fact, staggering would be a better word. His help with Python, and editing this book has been incredible, and I owe him tremendously. I shudder to think of what it would have looked like without him. I cant ever imagine a company being foolish enough to let him get away, and I look forward to helping him with his first book. Finally, he is just an incredible technical reviewer. You can read his blog here: <http://jjinux.blogspot.com/>. Doug Hellmann was our other star technical reviewer and was exceptionally productive and helpful. Jeremy and I are extremely fortunate to get someone of his caliber to review the book. He went above and beyond his call of duty, and is truly a force of efficiency to reckon with. He was also a great source of motivation while we worked together at Racemi. You can read his blog here: <http://blog.dougellmann.com/>. Thanks to Scott Leersen for reviewing our book and giving us good advice along the way. I also especially enjoyed our code review battles. Just remember, I am always right. Thanks to Alfredo Deza for the work on making an Ubuntu virtual machine for the book, your expertise was greatly appreciated. A very large thanks to Liza Daly, for providing good feedback on some really early, and rough, parts of our book. This was tremendously helpful.. Special thanks to Jeff Rush for his advice and reference material on Buildout, Eggs, and Virtualenv. Thanks to Aaron Hillegass who has given me some great advice and help along the way, and who has a great training company, Big Nerd Ranch. He is a special person, who I am lucky to have met. Thanks to Mark Lutz, who I had the pleasure of taking a Python training course from, and who has written some great books on Python. Thanks to the people in the Python community in Atlanta, and the members of PyAtl: <http://pyatl.org>; you have all taught me a great deal. Rick Copeland, Rick Thomas, Brandon Rhodes, Derek Richardson, Jonathan La Cour, a.k.a Mr. Metaclass, Drew Smathers, Cary Hull, Bernard Matthews, Michael Langford, and many more I have forgotten to mention. Brandon and Rick Copeland in particular have been very helpful and are awesome Python programmers. You can read Brandons blog at <http://rhodesmill.org/gbrandon/>. Thanks to Grig Gheorgbiu for giving us expert sysadmin and testing advice and for giving us a kick in the butt when we needed one. Thanks to my former employer Racemi, and the CTO/Founder, Charles Watt. I learned a lot from you and was glad you knew which competitive buttons to push. Just re-member I will kick your butt at writing code, a 26-mile run, or a 200-mile bike ride any day, just tell me where and when. Thanks to Dr. Nanda Ganesan, who was a great mentor in graduate school at CSULA. You taught me a lot about information technology and life and encouraged me to think big. Thanks to Dr. Cindy Heiss, who was my professor for my undergraduate degree in nutritional science. You got me started on web development, encouraged me to believe in myself, and ultimately made an impact on my life, thanks!

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Generators. Thanks to other writers about Python and systems administration as well. You can find links to their work here: <http://wiki.python.org/rnoin/systemsadministration>. Thanks also to the Repoze crew: Tres Seaver and Chris McDonough (<http://repoze.org/index.html>). Special thanks to the great tools, advice, and tolerance from Phillip J. Eby on the setuptools section. Also, thanks to Jim Fulton who tolerated my questions about ZODB and buildout, with a crazy schedule. Additional thanks to Martijn Fassen, who taught me about ZODB and Grok. If you want to see the future of Python web development, check out Grok: <http://grok.zope.org/>. Thanks to Red Hat Magazine staff, Julie Bryce, Jessica Gerber, Bascha Harris, and Ruth Suehle, for letting me try out ideas we used in this book in the form of articles. Also, thanks to Mike McCrary at IBM Developerworks, for letting me write articles to try out ideas we used in this book. I want to thank the multitudes of people who told me at one point in my life that I couldn't do something. At almost every step, I have met discouraging people who told me everything from I would never get into the college I wanted to to I would never learn to program. Thank you for giving me the extra motivation to succeed at my dreams. Humans can create their own reality if they truly believe in themselves, and I would encourage everyone to give themselves a chance to do what they truly want to do.

Finally, thanks to O'Reilly and Tatiana Apani, for believing in my original pitch for a book on Python and Systems Administration. You took a chance and believed in me and Jeremy, and I thank you for that. Although Tatiana left O'Reilly near the end of our book to pursue her dreams, her impact was still felt. I also want to thank our new editor Julie Steele, who has been supportive and helpful every step of the way. You have really provided a sea of calm that I personally appreciated greatly. I look forward to hearing great things in the future from Julie, and I'm excited to work with her again.

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use it more, real soon now. I thank Bram Moolenaar and everyone who has ever worked on the Vim editor. Almost every word and XML tag that I wrote flowed through capabilities Vim. I picked up a few tricks along the way that Ill incorporate into my daily editing habits. Vim made me more productive. Thank you. I also want to thank Linus Torvalds, the Debian folks, the Ubuntu folks, and anyone else who has ever worked on kinux. Almost every word that I typed was done on Linux.You made it incredibly simple to set up new environments and test different things.Thank you. Finally, but by no means least, I want to thank Guido van Rossum and everyone who has ever done any work on Python. I have been benefitting from your work for a number of years now. I was hired for my last two jobs because of Python. Python, the language,and Python, the community, have been both a great joy for me since I started working with it sometime around 2001-2002. Thank you. Python has been very good to me.

## 内容概要

《Python在Unix和Linux系统管理中的应用》展示了Python语言如何提供一种更加高效的方式来处理Unix和Linux服务器管理工作中的各种任务。

本书的每一章都会提出一个特定的管理问题，例如并发或数据备份，然后通过实际的例子提供基于Python的解决方案。

你将学习使用Python开发一套属于自己的命令行工具，并用来解决一系列范围很广的问题。

本书作者们还构建了一个可以免费下载的Ubuntu虚拟机。

该虚拟机包含了这本书的源代码，还可以用来运行书中的实例，包括SNMP、IPython、SQLAlchemy和许多其他工具。

通过这本书，你将发现Python是怎样帮助你：

- 读入文本文件并提取信息
- 使用线程和派生子进程的选项并发地运行多个任务
- 使用网络工具从一个进程传送信息到另一个进程
- 创建更易互动的可点击图形界面工具
- 通过与SNMP交互来用程序监控大型多个集群机器
- 掌握IPython的命令环境来替代或增强Bash、Korn或Z-Shell的功能
- 将云计算集成到基础架构中并编写一个基于谷歌应用程序引擎的应用
- 利用定制脚本来解决特殊的数据备份的挑战
- 使用Django、SQLAlchemy和Storm对象关系模型来与数据库交互

通过本书及其辅助虚拟机，你将学习如何打包并部署Python应用程序和库文件，以及如何编写在多个Unix和Linux平台下都运行良好的代码。

## 作者简介

Noah Gift在加州理工学院、迪斯尼、Feature Animation和Turner Studios具有十年以上的Unix和Linux开发经验。

他是Giftcs和Cloud Seed软件公司的合伙人。

Jeremy M.Jones是Predictix公司的软件工程师，同时也是开源项目Munkware、ediplex和podgrabber的作者。

## 书籍目录

ForewordPreface1.Introduction Why Python? Motivation The Basics Executing Statements in Python  
Using Functions in Python Reusing Code with the Import Statement2.IPython Installing IPython Basic  
Concepts Help with Magic Functions Unix Shell Information Gathering Automation and Shortcuts  
Summary 3.Text Python Built-ins and Modules Log Parsing ElementTree Summary 4.Documentation  
and Reporting Automated Information Gathering Manual Information Gathering Information Formatting  
Information Distribution Summary5.Networking Network Clients Remote Procedure Call Facilities  
SSH Twisted Scapy Creating Scripts with Scapy6.Data Introduction Using the OS Module to Interact  
with Data Copying, Moving, Renaming, and Deleting Data Working with Paths, Directories, and Files  
Comparing Data Merging Data Pattern Matching Files and Directories Wrapping Up rsync Metadata:  
Data About Data Archiving, Compressing, Imaging, and Restoring Using tarfile Module to Create TAR  
Archives Using a tarfile Module to Examine the Contents of TAR Files7.SNMP Introduction Brief  
Introduction to SNMP IPython and Net-SNMP Discovering a Data Center Retrieving Multiple-Values with  
Net-SNMP Creating Hybrid SNMP Tools Extending Net-SNMP SNMP Device Control Enterprise  
SNMP Integration with Zenoss8.OS Soup Introduction Cross-Platform Unix Programming in Python  
PyInotify OSX Red Hat Linux Systems Administration Ubuntu AdministrationSolaris Systems  
AdministrationVirtualizationCloud ComputingUsing Zenoss to Manage Windows Servers from Linux9.Package  
Management10.Processes and Concurrency11. BuildingGUIs.12. Data Persistence13.Command Line14.Pragmatic  
ExamplesAppendix: CallbacksIndex



## 章节摘录

As I sit writing an acknowledgment for this book, I have to first mention Dr. Joseph E. Bogen, because he made the single largest impact on me, at a time that it mattered the most. I met Dr. Bogen while I was working at Caltech, and he opened my eyes to another world giving me advice on life, psychology, neuroscience, math, the scientific study of consciousness, and much more. He was the smartest person I ever met, and was someone I loved. I am going to write a book about this experience someday, and I am saddened that he won't be there to read it, his death was a big loss. I want to thank my wife, Leah, who has been one of the best things to happen to me, ever. Without your love and support, I never could have written this book. You have the patience of a saint. I am looking forward to going where this journey takes us, and I love you. I also want to thank my son, Liam, who is one and a half, for being patient with me while I wrote this book. I had to cut many of our guitar, piano, and pushup lessons short, so I owe you payback times two, little goat. To my mom, I love you, and thank you for encouraging me throughout life. Of course, I want to thank Jeremy M. Jones, my coauthor, for agreeing to write this book with me. I think we were a great team with different, but complementary styles, and we wrote a great book. You have taught me a lot about Python, and have been a good partner and friend. Thanks !

Titus Brown, whom I suppose I have to call Dr. Brown now, was the person that got me interested in Python to begin with, when I met him at Caltech. He is another example of how one person can make a difference, and I am glad to consider him an "old" friend, the kind money can't buy. He kept asking me, "Why don't you use Python ?" And then one day I did. If it wasn't for Titus, I would certainly have continued down the Java and Perl path. You can read his blog here: <http://ivory.idyll.org/blog>. Shannon Behrens has a heart of solid gold, a mind as sharp as a razor, and a knowledge of Python that is truly scary. I first met Shannon through Titus, ironic again, but he and I became quick friends. Shannon is the real deal in every sense of the word, and has taught me a tremendous amount about Python, in fact, staggering would be a better word. His help with Python, and editing this book has been incredible, and I owe him tremendously. I shudder to think of what it would have looked like without him. I can't ever imagine a company being foolish enough to let him get away, and I look forward to helping him with his first book. Finally, he is just an incredible technical reviewer.

## 媒体关注与评论

“这本书适用于Python新手，不管他们是否具有命令环境脚本编写的经验或者总体上相对而言就是编程初学者。

Jeremy和Noah都很注意为自己的理由给出支持材料，并且解释这些代码实例在实际中的运用。

与许多轻易就让新手不堪重负的编程书籍不同，本书尽一切努力来让这些新手们获得自信和成功。

” ——Ruth Suehle和Bascha Harris，Red Hat杂志

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