

# **The Linux Reading List HOWTO**

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# The Linux Reading List HOWTO

by Eric S. Raymond

1.10, 14 November 1999

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*This document lists the book I think are most valuable to a person trying to learn Unix (especially Linux) top to bottom.*

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# **1. Introduction**

## 1.1 Purpose of this document

This document lists what I consider to be the essential book-length references for learning Unix (especially Linux) and how to program under it.

## 1.2 New versions of this document

New versions of the Linux Reading List HOWTO will be periodically posted to [comp.os.linux.answers](http://comp.os.linux.answers). They will also be uploaded to various Linux WWW and FTP sites, including the LDP home page.

You can also view the latest version of this on the World Wide Web via the URL <http://sunsite.unc.edu/LDP/HOWTO/Reading-List-HOWTO.html>.

## 1.3 Feedback and Corrections

If you have questions or comments about this document (or just want to suggest a book that you think should be on it), please feel free to mail Eric S. Raymond, at [esr@thyrsus.com](mailto:esr@thyrsus.com). I welcome any suggestions or criticisms.

## 1.4 Related Resources

For on-line HOWTOs, magazines, and other non-book material, see the [Linux Documentation Project home page](#).

Some years ago I wrote a less Linux-focused Unix bibliography that may still be of some interest and retains a certain amusement value. You can find the Loginataka at <http://www.tuxedo.org/~esr/faqs/loginataka.html>.

## 1.5 Conventions Used In This Document

Comments not in quotes below are either mine, or I have seen no reason to change them from those of Jim Haynes (previous maintainer of this document). Comments sent in by others are in quotes, and have the name of the commentator before them (JH is Jim Haynes).

"See" URLs attached to publishing information point directly into the publisher's web catalog and typically take you to a page containing a cover shot, blurbs, and ordering information. Books that don't have these lack them because the publisher is using frames and the catalog pages can't be bookmarked.

Topic listings go roughly from the outside in (culture to user-land programming to kernel programming to hardware). Within sections I have tried to list the most useful books first insofar as I am familiar with them. It's just an embarrassing coincidence that this lists one of my books first, honest! (Suggestions for a better organization cheerfully accepted.)

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## 10. Books on Intel processor architecture and programming

### *80386 Programmer's Reference Manual*

Intel Corp.; ISBN 1-55512-022-9; 1986;  
Part I. Applications Programming, data types, memory model, instruction set. Part II. Systems Programming, architecture, memory management, protection, multitasking, I/O, exceptions and interrupts, initialization, coprocessing and multiprocessing. Part III. Compatibility (with earlier x86 machines). Part IV. Instruction Set.

### *80386 System Software Writer's Guide*

Intel Corp.; ISBN 1-55512-023-7; 1987.  
This explains the 386 features for operating system writers. It includes a chapter on Unix implementation. A lot of the 80386 architecture seems to have been designed with Multics in mind; the features are not used by DOS or by Unix.

### *Programming the 80386*

Crawford, John H & Gelsinger, Patrick P.; Sybex; ISBN 0-89588-381-3; 774pp.; \$26.95 (USA).  
This is the book the Jolitizes used when they ported BSD to the 386 architecture.

### *Pentium Processor User's Manual: Volume 3, Architecture and Programming Manual*

Intel Corp.; 1993; ISBN 1-55512-195-0;  
Pretty much the Pentium version of the 80386 Programmer's manual listed above.

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## 11. Books on PC-Class Hardware

Note: these books are four or five years old and possibly out of date. I don't really grok hardware...

### *80386 Hardware Reference Manual*

Intel Corp.; 1986; ISBN 1-55512-024-5;  
Pin connections, timing, waveforms, block diagrams, voltages, all that kind of stuff.

*The Indispensable PC Hardware Book*

Messmer, Hans-Peter; Addison-Wesley; 1993; ISBN 0-201-62424-9; 1000 pp.  
JH: "Covers the more recent stuff like EIDE and PCI."

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## 12. Administrivia

### 12.1 Terms of Use

This document is copyright 1999 by Eric S. Raymond. You may use, disseminate, and reproduce it freely, provided you:

- Do not omit or alter this copyright notice.
- Do not omit or alter or omit the version number and date.
- Do not omit or alter the document's pointer to the current WWW version.
- Clearly mark any condensed, altered or versions as such.

These restrictions are intended to protect potential readers from stale or mangled versions. If you think you have a good case for an exception, ask me.

### 12.2 History

This was originally a mini-HOWTO maintained by Jim Haynes. I have changed the emphasis somewhat, trying to make it more a standalone document and less reliant on the various USENET bibliographic postings. The unattributed mini-reviews are mine rather than his.

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## 2. Books on Culture, History, and Pragmatics

*The New Hacker's Dictionary (Third Edition)*

Raymond, Eric S.; MIT Press; 1996; ISBN 0-262-68092-0; 547pp.  
See <http://www-mitpress.mit.edu/book-home.tcl?isbn=0262680920>.

Um, er. A guide to Internet culture. Lots of people like it. HTML at the [Jargon File Resource](#)

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*A Quarter Century of Unix*

Salus, Peter H.; Addison–Wesley; 1994; ISBN 0–201–54777–5; 256pp.

See <http://www.awl-he.com/titles/13683.html>

Linux is part of the Unix tradition. This book is an oral history of Unix — how it originated, how it evolved, how it spread — by the people who were there.

*The Mythical Man Month (Anniversary Edition)*

Brooks, Frederick P.; Addison–Wesley 1995 (ISBN 0–201–83595–9).

See <http://www.awl-he.com/titles/14147.html>.

The one book on software engineering that everyone should read.

Alan Cox: "This I'd recommend not for its technical value but for its application of common sense and reality to computing projects." JH: "Ah, yes. What if Linus had been given 200 programmers and had been told to produce Linux in 3 months!"

*Bell System Technical Journal, July–August 1978, Vol. 57, No. 6, part 2*

AT&T; 416 pp.

Many early papers on Unix, including Ritchie & Thompson, "The UNIX Time Sharing System"; Thompson, "UNIX Implementation"; Ritchie, "A Retrospective"; Bourne, "The UNIX Shell"...

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## 3. Books on General Unix/Linux

### 3.1 Linux Installation and Administration

*Linux Installation and Getting Started*

Welsh, Matt; LDP; 1997. Available on the LDP home page, or directly at

<http://linuxdoc.org/LDP/gs/>.

How to bring up Linux. Explains a lot of Linux basics. Covers basic system administration.

*Linux System Administrator's Guide*

Wirzenius, Lars; LDP; 1997. Available on the LDP home page, or directly at

<http://www.linuxdoc.org/LDP/sag/>.

An excellent first book on how to maintain and administer a Linux system.



*Essential System Administration (Second Edition)*

Frisch, Aeleen; O'Reilly; 1995; ISBN 1-56592-127-5; \$34.95.

See <http://www.ora.com/catalog/esa2/noframes.html>.

More in-depth coverage of normal system-administration tasks. Not Linux-specific but contains Linux material.

## 3.2 Using Unix & Linux

*Linux in a Nutshell (2nd edition)*

Hekman, Jessica P. et al.; O'Reilly; ISBN 1-56592-585-8; 1999; 628 pp. \$29.95.

See <http://www.oreilly.com/catalog/linuxnut2/>.

According to O'Reilly, "The Desktop Reference for Linux". For Linux users this obsoletes their "Unix In a Nutshell" which was SVr4/Solaris-oriented.

*Running Linux (3rd Edition)*

Welsh, Matt, & Matthias Kallw Dalheimer & Kaufman, Lar; O'Reilly; ISBN 1-56592-469-X; 1999; 650pp; \$34.95.

See <http://www.oreilly.com/catalog/runux3/>.

Everything you need in order to understand, install, and use the Linux operating system. Excellent beginner's book.

*Hands-on-Linux*

Sobell, Mark G.; Addison-Wesley; ISBN ISBN 0-201-32569-1; 1998; 1015 pp.

Just what the title says -- practical tutorials in basic Unix, shells, editors, mail programs, networking, Web tools, and utilities. Covers some system administration fundamentals. (This appears to be a repackaging of 1997's "A Practical Guide to Linux" from the same author, without Caldera OpenLinux Lite included.)

## 3.3 System Security

*Practical Unix and Internet Security (2nd Edition)*

Garfinkel, Simpson, and Spafford, Gene; O'Reilly Associates; ISBN 0-56592-148-8; 1004pp; 1996; \$39.95.

See <http://www.ora.com/catalog/puis/noframes.html>.

Ronald P. Miller: "Some overlap with Essential System Admin., but all in all a solid book on security, especially for those aspiring to allow multiple-user, dial-up/net access to their Linux boxes."

*Firewalls & Internet Security*

Cheswick, William R. & Bellovin, Steven M.; Addison–Wesley; 1994; ISBN 0–201–63357–4; 320pp.

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## 4. Books on Shell, Script, and Web Programming

### *Programming Perl (Second Edition)*

Wall, Larry & Christiansen, Tom & Schwartz, Randal; O'Reilly; 1997; ISBN 0–56592–149–6; 644pp.

See <http://www.ora.com/catalog/ppperl2/noframes.html>.

Shell (as a programming language for more than trivial scripting) is dead. Perl rules in its place. This is the second edition of the definitive Perl book — vastly better organized than the first, and it covers Perl 5.

Emmanuel Pierre keeps a [short list of Perl books](#).

### *Programming Python*

Lutz, Mark; O'Reilly; 1997; ISBN 0–56592–197–6; 880pp.

See <http://www.ora.com/catalog/python/noframes.html>.

The next step beyond Perl. Python is beautifully designed, has better integration with C, and scales up better to large projects.

### *HTML: The Definitive Guide (3rd Edition)*

Musciano, Chuck & Kennedy, Bill; O'Reilly; 1998; ISBN 1–56592–492–4; 576pp.

See <http://www.oreilly.com/catalog/html3/>.

The best HTML tutorial/reference I have ever seen, and the only HTML book you need unless you also want to do CGI.

### *The Unix Programming Environment*

Kernighan, Brian, and Pike, Rob; Prentice–Hall; 1984; ISBN 0–13–937681–X; 1984.

A true classic — possibly the best single–book exposition of the Unix philosophy.

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## 5. Books on Text Formatting

### 5.1 Tex and LaTeX

#### *The LaTeX Companion*

Goossens, Michael & Mittlebach, Frank, & Samarin, Alexander; Addison-Wesley; 1994; ISBN 0-201-54199-8; 530pp.

See <http://www.awl-he.com/titles/13661.html>.

'If you are one of those users who would like to know how LaTeX can be extended to create the nicest documents possible without becoming a (La)TeX guru, then this book is for you' — from the Preface. Bruce Thompson adds: "A very nice book providing a lot of information about the new extensions to LaTeX, provides a large number of examples showing precisely how your document's layout can be manipulated"

#### *LaTeX: A Document Preparation System (Second Edition)*

Lamport, Leslie; Addison-Wesley; 1994; ISBN 0-201-52983-1; 256pp.

See <http://www.awl-he.com/titles/13632.html>.

Bruce Thompson: "The ultimate reference on LaTeX 2.09 by its author. A new edition covering LaTeX2e (the version included in the current TeX/LaTeX distribution) is in preparation. LaTeX 2.09 is fully supported by LaTeX2e. A must for anyone wanting to use LaTeX. Provides a gentle introduction to document preparation and the various tools that LaTeX provides for producing professional quality documents. Lots of examples."

#### *The TeXbook, Volume A of Computers and Typesetting; Knuth, Donald A.*

Addison-Wesley; 1986, ISBN 0-201-13448; 496pp. See <http://www.awl.com/cp/TeXbook.html>

Bruce Thompson: "The definitive user's guide and complete reference manual for TeX. Probably not needed for casual LaTeX use, but a fascinating book nonetheless." I'll strengthen that by adding that this book is not for the faint of heart.

#### *The METAFONT book, Volume C of Computers and Typesetting*

Knuth, Donald A.; Addison-Wesley; 1986; 0-201-13444-6, 1986; 384pp.

See <http://www.awl.com/cp/METAFONTbook.html>

Bruce Thompson: "The definitive user's guide and reference manual for METAFONT, the companion program to TeX for designing fonts. An excellent work if you're planning to design your own fonts for use in TeX and LaTeX. METAFONT is included with the normal TeX/LaTeX

distribution." This book is *definitely* not for the faint of heart.

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## 6. Good Programming Style

The following are classics on how to develop efficient programs:

### *The Practice of Programming*

Kernighan, Brian W. & Pike. Rob; 1999; Addison–Wesley; ISBN 0–201–61586–X. See <http://cm.bell-labs.com/cm/cs/tpop/>

An excellent treatise on writing high–quality programs, surely destined to become a classic of the field.

### *Programming Pearls (2nd Edition)*

Bentley, Jon; 2000; Addison–Wesley; ISBN ISBN 0–201–65788–0. See <http://www.programmingpearls.com/>

These are selected essays from Bentley's column in the Communications of the ACM. He discusses a wide variety of issues in program improvement, include a large number on efficiency.

### *Writing Efficient Programs.*

Bentley, Jon Louis; 1982; Prentice–Hall, Inc.; ISBN 0–13–970251–2 or 0–13–970244–X. This book presents Bentley's methodology and set of rules for improving program efficiency, and includes a large number of examples.

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## 7. Books on C and C++ Programming

### 7.1 C and C++

#### *The C Programming Language (Second Edition)*

Kernighan, Brian W.; Ritchie, Dennis M; Prentice–Hall; 1988; ISBN 0–13–110362–8,

272pp.

The improved second edition, covering ANSI C, of the original classic C book coauthored by C's designer, "K&R". Still the best!

*Who's Afraid of C++?*

Heller, Steve; Academic Press; 1996; ISBN 0-12-339097; 508pp.

The best introductory book on C++ I have seen.

## 7.2 C System Call Interface

*POSIX Programmer's Guide: Writing Portable Unix Programs*

Lewine, Donald; O'Reilly; 1992; ISBN 0-937175-73-0; 607pp.

See <http://www.ora.com/catalog/posix/noframes.html>.

An excellent programmer's reference on the POSIX.1 standard. I like this one better than JH's choice.

*The Posix.1 Standard: A Programmer's Guide*

Zlotnick, Fred; Benjamin, Cummings; 1991; ISBN 0-8053-9605-5; 379pp.; \$35.95 (USA).

JH: "When I complained about the lack of Section 2 man pages in Linux, somebody told me just to get a POSIX book, because that's what Linux does. I like this book because I'm not a professional programmer and the author gives copious explanations and examples."

*Advanced Programming in The Unix Environment*

Stevens, Richard; 1992; ISBN 0-201-56317; Addison-Wesley

A book on general Unix programming that is every bit as good as Stevens's classic on network programming.

*Linux Application Development*

Michael K. Johnson, Erik W. Troan; 1998; ISBN 0201308215; Addison-Wesley.

The best reference to the C API of Linux.

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## 8. Books on Networking

### *Unix Network Programming*

Volume 1, Networking APIs: Sockets and XTI W. Richard Stevens, PTR Prentice–Hall, 1998 ISBN 0–13–490012–X

UNIX Network Programming 2nd Edition, Volume 2, Interprocess Communications W. Richard Stevens PTR Prentice–Hall, 1998 ISBN 0–13–081081–9

Everything you might want to know about the subject. Generally regarded as definitive on the basics.

### *Linux Network Administrator's Guide*

Kirch, Olaf; O'Reilly; 1995; ISBN 1–56592–087–2; 335pp.

See <http://www.ora.com/catalog/linag/noframes.html>.

A practical guide to Linux's TCP/IP and related services. Accessible on the Web at the [Linux Documentation Project](#) page, or directly at <http://sunsite.unc.edu/LDP/LDP/nag/nag.html>.

### *TCP/IP Network Administration*

Hunt, Craig; O'Reilly Associates, ISBN 0–937175–82–X; 1992; 472pp.

See <http://www.ora.com/catalog/tcp2/noframes.html>.

Less Linux–specific than the Kirch book. Features deeper coverage of the TCP/IP core, including routing and BGP.

### *DNS and BIND (Second Edition)*

Albitz, Paul, and Liu, Cricket; O'Reilly; 1998; ISBN 1–56592–512–2; 502pp; \$32.95.

See <http://www.ora.com/catalog/dns2/noframes.html>.

In–depth coverage of DNS, useful for people running complicated multiple–subnet installations. Covers BIND library programming.

### *Sendmail (Second Edition)*

Costales, Bryan & Allman, Eric; O'Reilly; ISBN 1–56592–222–0; 1997; 1050 pp; \$32.95

See <http://www.ora.com/catalog/sendmail2/noframes.html>.

An exhaustive (and exhausting) guide to Linux's and Unix's default mail–transfer agent.

## 9. Books on Unix Kernel Implementation

### 9.1 Ancestors of Linux

#### *The Design of the Unix Operating System*

Bach, Maurice J.; Prentice–Hall; ISBN 0–13–201799–7; 470pp.; \$60 (USA).

The book that got Linus started. See [http://www.prenhall.com/books/ptr\\_0132017997.html](http://www.prenhall.com/books/ptr_0132017997.html)

#### *Operating Systems, Design and Implementation;*

Tanenbaum, Andrew S.; Prentice–Hall; 1987.

See [http://www.prenhall.com/books/esm\\_0136386776.html](http://www.prenhall.com/books/esm_0136386776.html). Alan Cox (one of the core kernel people) likes this book. Tanenbaum designed Minix, which is the system Linus bootstrapped Linux up from.

### 9.2 Linux

#### *The Linux Kernel book*

Rémy Card, Èric Dumas, Franck Mével; John Wiley and Sons; 1998; ISBN 0–471–98141–9. \$100 (AUS).

(Translated from the French language edition of "Programmation Linux 2.0"; same authors; 1997; Éditions Eyrolles; Paris, France.)

A very interesting and informative description of the operation of the kernel that fills in the gap between the POSIX interface and "The Design of the Unix Operating System" and the Linux source code. A good understanding of the design and operation of a Unix OS is a pre–requisite, but this book is an excellent help to going beyond that general understanding into actual work.

The primary author is one of the core developers for the ext2 filesystem, and the Linux Kernel book shows a firm grasp of the matter and clear explanations and structure. It's surprisingly readable for something working at such a low level. The book does seem to have suffered a little in the translation to English — there are a few typos and grammatical mistakes, but it's quite readable. (The code example files are charmingly still named in French.)

Network protocol implementations are not covered.

The book's current to Linux 2.0.35 and foreshadows 2.1 and 2.2.

***Linux Kernel Hackers' Guide***

Johnson, Michael K.

Accessible on the Web at the [Linux Documentation Project](#) page, or directly at <http://www.redhat.com/mirrors/LDP/LDP/khg/HyperNews/get/khg.html>.

***LINUX Kernel Internals (Second Edition)***

Beck, Michael & Bohme, Harold & Mirko, Dziadzka & Kunitz, Ulrich & Magnus, Robert & Verworner, Dick; Addison Wesley; 1998; ISBN:0-201-33143-8; 480.

See <http://www.awl-he.com/titles/11653.html>.

A guide to Linux kernel programming; covers 2.0.

## 9.3 Relatives of Linux

***The Design and Implementation of the 4.4BSD Unix Operating System***

McKusick, Marshall Kirk, Bostic, Keith, Karels, Michael J., and Quarterman, John S.; Addison-Wesley; 1996; ISBN 0-201-54979-4; 608pp.

See <http://www.awl-he.com/titles/13693.html>.

The successor to a classic book on the implementation of the 4.3 BSD kernel, which influenced Linux's design (especially near sockets and networking). This book covers the 4.4BSD base of BSD/OS, FreeBSD, and NetBSD.

***Porting Unix to the 386; Jolitz, William F., and Jolitz, Lynne G.***

Dr. Dobb's Journal; Jan 1991-July 1992.

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