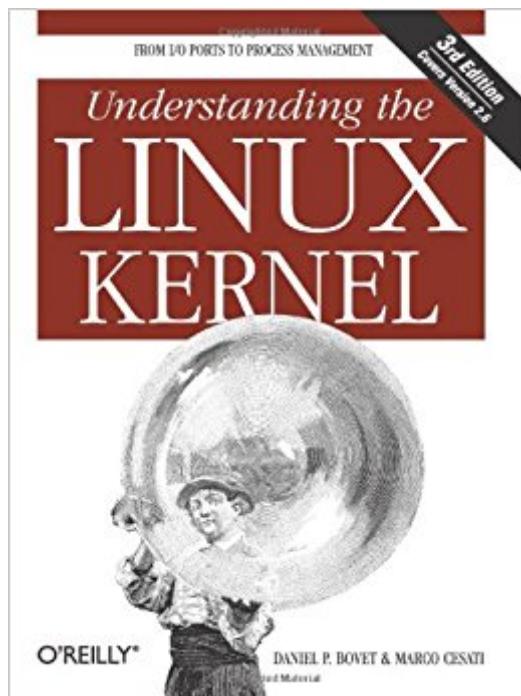The book was found

Understanding The Linux Kernel, Third Edition

Synopsis

In order to thoroughly understand what makes Linux tick and why it works so well on a wide variety of systems, you need to delve deep into the heart of the kernel. The kernel handles all interactions between the CPU and the external world, and determines which programs will share processor time, in what order. It manages limited memory so well that hundreds of processes can share the system efficiently, and expertly organizes data transfers so that the CPU isn't kept waiting any longer than necessary for the relatively slow disks.The third edition of Understanding the Linux Kernel takes you on a guided tour of the most significant data structures, algorithms, and programming tricks used in the kernel. Probing beyond superficial features, the authors offer valuable insights to people who want to know how things really work inside their machine. Important Intel-specific features are discussed. Relevant segments of code are dissected line by line. But the book covers more than just the functioning of the code; it explains the theoretical underpinnings of why Linux does things the way it does.This edition of the book covers Version 2.6, which has seen significant changes to nearly every kernel subsystem, particularly in the areas of memory management and block devices. The book focuses on the following topics:Memory management, including file buffering, process swapping, and Direct memory Access (DMA) The Virtual Filesystem layer and the Second and Third Extended FilesystemsProcess creation and schedulingSignals, interrupts, and the essential interfaces to device driversTimingSynchronization within the kernelInterprocess Communication (IPC) Program executionUnderstanding the Linux Kernel will acquaint you with all the inner workings of Linux, but it's more than just an academic exercise. You'll learn what conditions bring out Linux's best performance, and you'll see how it meets the challenge of providing good system response during process scheduling, file access, and memory management in a wide variety of environments. This book will help you make the most of your Linux system.

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Customer Reviews

Daniel P. Bovet got a Ph.D. in computer science at UCLA in 1968 and is now full Professor at the University of Rome, "Tor Vergata," Italy. He had to wait over 25 years before being able to teach an operating system course in a proper manner because of the lack of source code for modern, well-designed systems. Now, thanks to cheap PCs and to Linux, Marco and Dan are able to cover all the facets of an operating system from booting to tuning and are able to hand out tough, satisfying homework to their students. (These young guys working at home on their PCs are really spoiled; they never had to fight with punched cards.) In fact, Dan was so fascinated by the accomplishments of Linus Torvalds and his followers that he spent the last few years trying to unravel some of Linux's mysteries. It seemed natural, after all that work, to write a book about what he found.Marco Cesati received a degree in mathematics in 1992 and a Ph.D. in computer science (University of Rome, "La Sapienza") in 1995. He is now a research assistant in the computer science department of the School of Engineering (University of Rome, "Tor Vergata"). In the past, he served as system administrator and Unix programmer for the university (as a Ph.D. student) and for several institutions (as a consultant).

It's not a reference book. Its a well written book about how the Linux kernel works.Doesn't have example coding, it's not a reference book for kernel hacking, but it's a good starting point.

Nothing is tied together to provide some kind of conceptual understanding. Exhibits and detailed steps are referenced that do not exist. Like O'Reilly books they are never edited properly.

Many awesome introduction and illustrations referred by a lot of book, slide...However, the content is a little old. You cannot even find important topic such as CFS inside.

The Understanding the Linux Kernel (3rd edition) covers essentially all the kernel's major systems and methodologies in depth. It also conveys a deep understanding in terms that an average computer programmer can grasp with effort. Those of you who have designed and built your own

operating systems will also gain insight with this book into the reasoning used to do things like memory allocation, device I/O copy operations, and deep memory management techniques. It covers in depth the 32 bit paging systems, but is a little shy on the new SLUB allocator and x86_64 bit paging. IA64 is covered in adequate detail, but more focus is on the 32 bit side of the house. Overall it does give you the locations to look for more information and provides a well organized and intuitive guide to the Linux kernel in general. Highly recommended reading if you are looking to truly understand the Linux kernel, or do things around it (i.e. circumvention of security mechanisms, etc.).

It covers enough to start hacking the kernel pretty easily. Pretty wonderful.The only reason it's not 5 stars is b/c I bought the kindle edition, where all the tables (which hold important data!) are completely mangled. Other kindle books use scans of the tables, and other ebook systems spend engineering time on making tables display well.

My need was specific, i.e., to add a new system call interface to Linux without ever having worked with the Linux kernel before. This book has been a fine guide for accomplishing this. The Linux kernel moves fast enough that no published text could be completely consistent with the current source. However, this was close enough to give me a lay of the land and the treatment of memory management and process/thread control had enough routine names and labels that I could search through the source with relative ease. I would recommend it for anyone else jumping into the kernel for the first time.

Well written, but not overly wordy, this one is at my fingertips at all times. I actually have a copy at home, and one at work, as I constantly need to look up a smaller tidbit, only to completely forget it moments later :) Such is life.What I love about it most, is how long it takes me to find, understand, and incorporate what I need to get working- The layout is fantastic that way, and info presented in a clear way, which is easy to understand :)Totally Recommended. (pick up the programming interface from no starch press as well)

This is a great book for learning the Linux kernel. I've only read the first few chapters, but I've already learned so much. Be careful though - if you don't already have some background in Linux and OS concepts much of this will probably go over your head. The book is best for people who have a good amount of exposure to a variety of operating systems, specifically Unix, and want to get a deeper understanding of the Linux kernel.

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