

# Essential Linux Device Drivers



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# Essential Linux Device Driver

**Mahesh Sambhaji Jadhav**



## **Essential Linux Device Driver:**

**Essential Linux Device Drivers** Sreekrishnan Venkateswaran,2008-03-27 Probably the most wide ranging and complete Linux device driver book I've read Alan Cox Linux Guru and Key Kernel Developer Very comprehensive and detailed covering almost every single Linux device driver type Theodore Ts'o First Linux Kernel Developer in North America and Chief Platform Strategist of the Linux Foundation The Most Practical Guide to Writing Linux Device Drivers Linux now offers an exceptionally robust environment for driver development with today's kernels what once required years of development time can be accomplished in days In this practical example driven book one of the world's most experienced Linux driver developers systematically demonstrates how to develop reliable Linux drivers for virtually any device Essential Linux Device Drivers is for any programmer with a working knowledge of operating systems and C including programmers who have never written drivers before Sreekrishnan Venkateswaran focuses on the essentials bringing together all the concepts and techniques you need while avoiding topics that only matter in highly specialized situations Venkateswaran begins by reviewing the Linux 2.6 kernel capabilities that are most relevant to driver developers He introduces simple device classes then turns to serial buses such as I2C and SPI external buses such as PCMCIA PCI and USB video audio block network and wireless device drivers user space drivers and drivers for embedded Linux one of today's fastest growing areas of Linux development For each Venkateswaran explains the technology inspects relevant kernel source files and walks through developing a complete example Addresses drivers discussed in no other book including drivers for I2C video sound PCMCIA and different types of flash memory Demystifies essential kernel services and facilities including kernel threads and helper interfaces Teaches polling asynchronous notification and I/O control Introduces the Inter Integrated Circuit Protocol for embedded Linux drivers Covers multimedia device drivers using the Linux Video subsystem and Linux Audio framework Shows how Linux implements support for wireless technologies such as Bluetooth Infrared WiFi and cellular networking Describes the entire driver development lifecycle through debugging and maintenance Includes reference appendixes covering Linux assembly BIOS calls and Seq files [Essential Linux Device Drivers](#) Venkateswaran,1900 This is the eBook version of the printed book If the print book includes a CD ROM this content is not included within the eBook version The Most Practical Guide to Writing Linux Device Drivers Linux now offers an exceptionally robust environment for driver development with today's kernels what once required years of development time can now be accomplished in days In this practical example driven book one of the world's most experienced Linux driver developers systematically demonstrates how to develop reliable Linux drivers for virtually any device Essential Linux Device Drivers

**Essential Linux Device Drivers** Sreekrishnan Venkateswaran,2008 *Easy Linux Device Driver, Second Edition* Mahesh Sambhaji Jadhav,2014-03-13 Easy Linux Device Driver First Step Towards Device Driver Programming Easy Linux Device Driver book is an easy and friendly way of learning device driver programming Book contains all latest programs along with output screen screenshots

Highlighting important sections and stepwise approach helps for quick understanding of programming Book contains Linux installation Hello world program up to USB 3.0 Display Driver PCI device driver programming concepts in stepwise approach Program gives best understanding of theoretical and practical fundamentals of Linux device driver Beginners should start learning Linux device driver from this book to become device driver expertise Topics covered Introduction of Linux Advantages of Linux History of Linux Architecture of Linux Definitions Ubuntu installation Ubuntu Installation Steps User Interface Difference About KNOPPIX Important links Terminal Soul of Linux Creating Root account Terminal Commands Virtual Editor Commands Linux Kernel Linux Kernel Internals Kernel Space and User space Device Driver Place of Driver in System Device Driver working Characteristics of Device Driver Module Commands Hello World Program pre settings Write Program Printk function Makefile Run program Parameter passing Parameter passing program Parameter Array Process related program Process related program Character Device Driver Major and Minor number API to registers a device Program to show device number Character Driver File Operations File operation program Include h header Functions in module h file Important code snippets Summary of file operations PCI Device Driver Direct Memory Access Module Device Table Code for Basic Device Driver Important code snippets USB Device Driver Fundamentals Architecture of USB device driver USB Device Driver program Structure of USB Device Driver Parts of USB end points Important features USB information Driver USB device Driver File Operations Using URB Simple data transfer Program to read and write Important code snippets Gadget Driver Complete USB Device Driver Program Skeleton Driver Program Special USB 3.0 USB 3.0 Port connection Bulk endpoint streaming Stream ID Device Driver Lock Mutual Exclusion Semaphore Spin Lock Display Device Driver Frame buffer concept Framebuffer Data Structure Check and set Parameter Accelerated Method Display Driver summary Memory Allocation Kmalloc Vmalloc Ioremap Interrupt Handling interrupt registration Proc interface Path of interrupt Programming Tips Softirqs Tasklets Work Queues I/O Control Introducing ioctl Prototype Stepwise execution of ioctl Sample Device Driver Complete memory Driver Complete Parallel Port Driver Device Driver Debugging Data Display Debugger Graphical Display Debugger Kernel Graphical Debugger Appendix I Exported Symbols Kobjects Ksets and Subsystems DMA I/O

**Linux Kernel Programming Part 2 - Char Device Drivers and Kernel Synchronization**

Kaiwan N Billimoria, 2021-03-19 Discover how to write high quality character driver code interface with userspace work with chip memory and gain an in depth understanding of working with hardware interrupts and kernel synchronization Key FeaturesDelve into hardware interrupt handling threaded IRQs tasklets softirqs and understand which to use whenExplore powerful techniques to perform user kernel interfacing peripheral I/O and use kernel mechanismsWork with key kernel synchronization primitives to solve kernel concurrency issuesBook Description Linux Kernel Programming Part 2 Char Device Drivers and Kernel Synchronization is an ideal companion guide to the Linux Kernel Programming book This book provides a comprehensive introduction for those new to Linux device driver development and will have you up and running with writing

misc class character device driver code on the 5.4 LTS Linux kernel in next to no time You'll begin by learning how to write a simple and complete misc class character driver before interfacing your driver with user mode processes via procfs sysfs debugfs netlink sockets and ioctl You'll then find out how to work with hardware I/O memory The book covers working with hardware interrupts in depth and helps you understand interrupt request IRQ allocation threaded IRQ handlers tasklets and softirqs You'll also explore the practical usage of useful kernel mechanisms setting up delays timers kernel threads and workqueues Finally you'll discover how to deal with the complexity of kernel synchronization with locking technologies mutexes spinlocks and atomic refcount operators including more advanced topics such as cache effects a primer on lock free techniques deadlock avoidance with lockdep and kernel lock debugging techniques By the end of this Linux kernel book you'll have learned the fundamentals of writing Linux character device driver code for real world projects and products What you will learn

- Get to grips with the basics of the modern Linux Device Model LDM
- Write a simple yet complete misc class character device driver
- Perform user kernel interfacing using popular methods
- Understand and handle hardware interrupts confidently
- Perform I/O on peripheral hardware chip memory
- Explore kernel APIs to work with delays timers kthreads and workqueues
- Understand kernel concurrency issues
- Work with key kernel synchronization primitives and discover how to detect and avoid deadlock

Who this book is for An understanding of the topics covered in the Linux Kernel Programming book is highly recommended to make the most of this book This book is for Linux programmers beginning to find their way with device driver development Linux device driver developers looking to overcome frequent and common kernel driver development issues as well as perform common driver tasks such as user kernel interfaces performing peripheral I/O handling hardware interrupts and dealing with concurrency will benefit from this book A basic understanding of Linux kernel internals and common APIs kernel module development and C programming is required

*Linux Device Driver Development* John Madieu, 2022-04-21 Get up to speed with the most important concepts in driver development and focus on common embedded system requirements such as memory management interrupt management and locking mechanisms

Key Features

- Write feature rich and customized Linux device drivers for any character SPI and I2C device
- Develop a deep understanding of locking primitives IRQ management memory management DMA and so on
- Gain practical experience in the embedded side of Linux using GPIO IIO and input subsystems

Book Description Linux is by far the most used kernel on embedded systems Thanks to its subsystems the Linux kernel supports almost all of the application fields in the industrial world This updated second edition of Linux Device Driver Development is a comprehensive introduction to the Linux kernel world and the different subsystems that it is made of and will be useful for embedded developers from any discipline You'll learn how to configure tailor and build the Linux kernel Filled with real world examples the book covers each of the most used subsystems in the embedded domains such as GPIO direct memory access interrupt management and I2C SPI device drivers This book will show you how Linux abstracts each device from a hardware point of view and how a device is bound to

its driver s You ll also see how interrupts are propagated in the system as the book covers the interrupt processing mechanisms in depth and describes every kernel structure and API involved This new edition also addresses how not to write device drivers using user space libraries for GPIO clients I2C and SPI drivers By the end of this Linux book you ll be able to write device drivers for most of the embedded devices out there What you will learn Download configure build and tailor the Linux kernel Describe the hardware using a device tree Write feature rich platform drivers and leverage I2C and SPI buses Get the most out of the new concurrency managed workqueue infrastructure Understand the Linux kernel timekeeping mechanism and use time related APIs Use the regmap framework to factor the code and make it generic Offload CPU for memory copies using DMA Interact with the real world using GPIO IIO and input subsystems Who this book is for This Linux OS book is for embedded system and embedded Linux enthusiasts developers who want to get started with Linux kernel development and leverage its subsystems Electronic hackers and hobbyists interested in Linux kernel development as well as anyone looking to interact with the platform using GPIO IIO and input subsystems will also find this book useful

*Mastering Embedded Linux Development* Frank Vasquez, Chris Simmonds, 2025-05-27 Written by Frank Vasquez an embedded Linux expert this new edition enables you to harness the full potential of Linux to create versatile and robust embedded solutions All formats include a free PDF and an invitation to the Embedded System Professionals community Key Features Learn how to develop and configure reliable embedded Linux devices Discover the latest enhancements in Linux 6.6 and the Yocto Project 5.0 codename Scarthgap Explore different ways to debug and profile your code in both user space and the Linux kernel Purchase of the print or Kindle book includes a free PDF eBook Book Description Mastering Embedded Linux Development is designed to be both a learning resource and a reference for your embedded Linux projects In this fourth edition you ll learn the fundamental elements that underpin all embedded Linux projects the toolchain the bootloader the kernel and the root filesystem First you will download and install a pre built toolchain After that you will cross compile each of the remaining three elements from scratch and learn to automate the process using Buildroot and the Yocto Project The book progresses with coverage of over the air software updates and rapid prototyping with add on boards Two new chapters tackle modern development practices including Python packaging and deploying containerized applications These are followed by a chapter on writing multithreaded code and another on techniques to manage memory efficiently The final chapters demonstrate how to debug your code whether it resides in user space or in the Linux kernel itself In addition to GNU debugger GDB the book also covers the different tracers and profilers that are available for Linux so that you can quickly pinpoint any performance bottlenecks in your system By the end of this book you will be able to create efficient and secure embedded devices with Linux that will delight your users What you will learn Cross compile embedded Linux images with Buildroot and Yocto Enable Wi-Fi and Bluetooth connectivity with a Yocto board support package Update IoT devices securely in the field with Mender or balena Prototype peripheral additions by connecting add on boards reading schematics

and coding test programs Deploy containerized software applications on edge devices with Docker Debug devices remotely using GDB and measure the performance of systems using tools like perf and ply Who this book is for If you are a systems software engineer or system administrator who wants to learn how to apply Linux to embedded devices then this book is for you The book is also for embedded software engineers accustomed to programming low power microcontrollers and will help them make the leap to a high speed system on chips that can run Linux Anyone who develops hardware for Linux will find something useful in this book But before you get started you will need a solid grasp of the POSIX standard C programming and shell scripting

**Professional Linux Kernel Architecture** Wolfgang Mauerer,2010-03-11 Find an introduction to the architecture concepts and algorithms of the Linux kernel in Professional Linux Kernel Architecture a guide to the kernel sources and large number of connections among subsystems Find an introduction to the relevant structures and functions exported by the kernel to userland understand the theoretical and conceptual aspects of the Linux kernel and Unix derivatives and gain a deeper understanding of the kernel Learn how to reduce the vast amount of information contained in the kernel sources and obtain the skills necessary to understand the kernel sources

**Mastering Embedded Linux Programming** Chris Simmonds,2017-06-30 Learn to confidently develop debug and deploy robust embedded Linux systems with hands on examples using BeagleBone and QEMU Key Features Step by step guide from toolchain setup to real time programming with hands on implementation Practical insights on kernel configuration device drivers and memory management Covers hardware integration using BeagleBone Black and virtual environments via QEMU Book Description Embedded Linux runs many of the devices we use every day from smart TVs to WiFi routers test equipment to industrial controllers all of them have Linux at their heart Linux is a core technology in the implementation of the interconnected world of the Internet of Things You will begin by learning about the fundamental elements that underpin all embedded Linux projects the toolchain the bootloader the kernel and the root filesystem You ll see how to create each of these elements from scratch and how to automate the process using Buildroot and the Yocto Project Moving on you ll find out how to implement an effective storage strategy for flash memory chips and how to install updates to the device remotely once it is deployed You ll also get to know the key aspects of writing code for embedded Linux such as how to access hardware from applications the implications of writing multi threaded code and techniques to manage memory in an efficient way The final chapters show you how to debug your code both in applications and in the Linux kernel and how to profile the system so that you can look out for performance bottlenecks By the end of the book you will have a complete overview of the steps required to create a successful embedded Linux system What you will learn Evaluate the Board Support Packages offered by most manufacturers of a system on chip or embedded module Use Buildroot and the Yocto Project to create embedded Linux systems quickly and efficiently Update IoT devices in the field without compromising security Reduce the power budget of devices to make batteries last longer Interact with the hardware without having to write kernel device drivers Debug devices

remotely using GDB and see how to measure the performance of the systems using powerful tools such as perf, strace and valgrind Who this book is for This book is for embedded engineers Linux developers and computer science students looking to build real world embedded systems It suits readers who are familiar with basic Linux use and want to deepen their skills in kernel configuration debugging and device integration

**Android System Programming** Roger Ye, 2017-05-31 Build customize and debug your own Android system Key Features Master Android system level programming by integrating customizing and extending popular open source projects Use Android emulators to explore the true potential of your hardware Master key debugging techniques to create a hassle free development environment Book Description Android system programming involves both hardware and software knowledge to work on system level programming The developers need to use various techniques to debug the different components in the target devices With all the challenges you usually have a deep learning curve to master relevant knowledge in this area This book will not only give you the key knowledge you need to understand Android system programming but will also prepare you as you get hands on with projects and gain debugging skills that you can use in your future projects You will start by exploring the basic setup of AOSP and building and testing an emulator image In the first project you will learn how to customize and extend the Android emulator Then you ll move on to the real challenge building your own Android system on VirtualBox You ll see how to debug the init process resolve the bootloader issue and enable various hardware interfaces When you have a complete system you will learn how to patch and upgrade it through recovery Throughout the book you will get to know useful tips on how to integrate and reuse existing open source projects such as LineageOS CyanogenMod Android x86 Xposed and GApps in your own system What you will learn Set up the Android development environment and organize source code repositories Get acquainted with the Android system architecture Build the Android emulator from the AOSP source tree Find out how to enable WiFi in the Android emulator Debug the boot up process using a customized Ramdisk Port your Android system to a new platform using VirtualBox Find out what recovery is and see how to enable it in the AOSP build Prepare and test OTA packages Who this book is for This book is for Android system programmers and developers who want to use Android and create indigenous projects with it You should know the important points about the operating system and the C C programming language

**Mastering Embedded Linux Programming** Frank Vasquez, Chris Simmonds, 2021-05-14 Build customize and deploy Linux based embedded systems with confidence using Yocto bootloaders and build tools Key Features Master build systems toolchains and kernel integration for embedded Linux Set up custom Linux distros with Yocto and manage board specific configurations Learn real world debugging memory handling and system performance tuning Book Description If you re looking for a book that will demystify embedded Linux then you ve come to the right place Mastering Embedded Linux Programming is a fully comprehensive guide that can serve both as means to learn new things or as a handy reference The first few chapters of this book will break down the fundamental elements that underpin all embedded Linux projects the



toolchain the bootloader the kernel and the root filesystem After that you will learn how to create each of these elements from scratch and automate the process using Buildroot and the Yocto Project As you progress the book will show you how to implement an effective storage strategy for flash memory chips and install updates to a device remotely once it's deployed You'll also learn about the key aspects of writing code for embedded Linux such as how to access hardware from apps the implications of writing multi-threaded code and techniques to manage memory in an efficient way The final chapters demonstrate how to debug your code whether it resides in apps or in the Linux kernel itself You'll also cover the different tracers and profilers that are available for Linux so that you can quickly pinpoint any performance bottlenecks in your system By the end of this Linux book you'll be able to create efficient and secure embedded devices using Linux What you will learn Use Buildroot and the Yocto Project to create embedded Linux systems Troubleshoot BitBake build failures and streamline your Yocto development workflow Update IoT devices securely in the field using Mender or balena Prototype peripheral additions by reading schematics modifying device trees soldering breakout boards and probing pins with a logic analyzer Interact with hardware without having to write kernel device drivers Divide your system up into services supervised by BusyBox runit Debug devices remotely using GDB and measure the performance of systems using tools such as perf ftrace eBPF and Callgrind Who this book is for If you're a systems software engineer or system administrator who wants to learn how to implement Linux on embedded devices then this book is for you It's also aimed at embedded systems engineers accustomed to programming for low power microcontrollers who can use this book to help make the leap to high speed systems on chips that can run Linux Anyone who develops hardware that needs to run Linux will find something useful in this book but before you get started you'll need a solid grasp on POSIX standard C programming and shell scripting

**Linux Device Drivers** Jonathan Corbet, Alessandro Rubini, Greg Kroah-Hartman, 2005-02-07 A guide to help programmers learn how to support computer peripherals under the Linux operating system and how to develop new hardware under Linux This third edition covers all the significant changes to Version 2.6 of the Linux kernel Includes full featured examples that programmers can compile and run without special hardware [Mastering Linux Device Driver Development](#) John Madieu, 2021-01-08 Develop advanced Linux device drivers for embedded systems mastering real world frameworks like PCI ALSA SoC and V4L2 with practical code examples and debugging techniques Key Features Gain hands on expertise with real Linux subsystems PCI ALSA SoC V4L2 and power management Apply advanced techniques for kernel debugging regmap API and custom hardware integration Build robust drivers through step by step examples and practical engineering insights Book Description Linux is one of the fastest growing operating systems around the world and in the last few years the Linux kernel has evolved significantly to support a wide variety of embedded devices with its improved subsystems and a range of new features With this book you'll find out how you can enhance your skills to write custom device drivers for your Linux operating system Mastering Linux Device Driver Development provides complete coverage of kernel topics including video

and audio frameworks that usually go unaddressed You ll work with some of the most complex and impactful Linux kernel frameworks such as PCI ALSA for SoC and Video4Linux2 and discover expert tips and best practices along the way In addition to this you ll understand how to make the most of frameworks such as NVMEM and Watchdog Once you ve got to grips with Linux kernel helpers you ll advance to working with special device types such as Multi Function Devices MFD followed by video and audio device drivers By the end of this book you ll be able to write feature rich device drivers and integrate them with some of the most complex Linux kernel frameworks including V4L2 and ALSA for SoC What you will learn Explore and adopt Linux kernel helpers for locking work deferral and interrupt management Understand the Regmap subsystem to manage memory accesses and work with the IRQ subsystem Get to grips with the PCI subsystem and write reliable drivers for PCI devices Write full multimedia device drivers using ALSA SoC and the V4L2 framework Build power aware device drivers using the kernel power management framework Find out how to get the most out of miscellaneous kernel subsystems such as NVMEM and Watchdog Who this book is for This book is for embedded developers Linux system engineers and advanced programmers seeking to master Linux device driver development for custom hardware and peripherals Readers should have C programming experience and a basic grasp of kernel concepts Ideal for those wanting practical project based guidance on leveraging frameworks such as PCI ALSA SoC V4L2 and power management to build production grade drivers

Essential Linux Steve Heath,1997 Essential Linux addresses and provides the essential information for getting a Linux system up and running looking after it and using it It includes many screen shots and examples of essential commands and utilities This book focuses on practical installations such as converting IBM PCs transferring data from Windows and MS DOS and running Linux in conjunction with Windows Provides detailed instructions and advice on installation for many different systems and environments By author of UNIX Pocket Book which was chosen by PC Magazine as a recommended UNIX book CD ROM contains Versions 1 3 and 2 0 of Linux with installation details

Embedded Linux Systems: A Comprehensive Guide Pasquale De Marco,2025-07-24 Embedded Linux Systems A Comprehensive Guide provides a comprehensive overview of embedded Linux system design and development It covers all aspects of the embedded Linux development lifecycle from selecting the right hardware and software to optimizing performance and security The book is packed with practical examples and case studies that illustrate the concepts discussed in the text This book is ideal for embedded Linux developers of all levels from beginners to experienced professionals It is also a valuable resource for anyone interested in learning more about embedded Linux systems Key Features Comprehensive coverage of all aspects of embedded Linux development Step by step roadmap for taking a project from initial concept to final deployment Practical examples and case studies Coverage of the latest trends and advances in embedded Linux development What You Will Learn How to select the right hardware and software for your embedded Linux system How to optimize performance and security How to debug and troubleshoot embedded Linux systems How to stay up to date on the

latest trends and advances in embedded Linux development Table of Contents Chapter 1 Introduction to Embedded Linux Systems Chapter 2 Embedded Linux Hardware and Software Chapter 3 Embedded Linux Development Tools and Techniques Chapter 4 Embedded Linux System Design Chapter 5 Embedded Linux System Optimization Chapter 6 Embedded Linux System Security Chapter 7 Embedded Linux System Debugging Chapter 8 Embedded Linux System Deployment Chapter 9 The Future of Embedded Linux Systems About the Author Pasquale De Marco is a leading expert in embedded Linux systems He has over 20 years of experience in the field and he has written several books and articles on the topic Pasquale De Marco is also a popular speaker at industry events If you like this book write a review      Essential Manjaro Linux Richard Johnson,2025-06-01 Essential Manjaro Linux Essential Manjaro Linux is a comprehensive guide for system administrators power users and enthusiasts seeking to master Manjaro Linux a distribution renowned for blending Arch s cutting edge foundation with user friendly stability Drawing on the project s rich history the book begins by situating Manjaro within the broader GNU Linux ecosystem exploring its philosophy governance and unique approach to accessibility Readers are guided through Manjaro s robust branching model release strategies and the evolving landscape of supported hardware platforms from desktops and laptops to ARM devices and enterprise deployments Delving into practical application Essential Manjaro Linux offers expert instruction on installation deployment and automated provisioning across diverse environments It provides detailed walkthroughs on advanced bootloader configurations encrypted storage multi boot systems and at scale automation techniques The book covers core system management including filesystem architecture systemd operations and intricate permission models while also addressing package management through pacman integration with the Arch User Repository AUR and modern universal packaging formats such as Flatpak and Snap all within a security conscious framework Beyond system fundamentals this guide explores advanced topics essential for professionals kernel management hardware enablement enterprise grade networking firewalling and privacy Chapters on desktop environments and window managers provide both technical insights and practical tips for optimizing user experience and accessibility Readers will also find in depth coverage on system security scripting maintenance automation troubleshooting performance tuning and virtualization With its blend of conceptual clarity and actionable detail Essential Manjaro Linux is an indispensable reference for leveraging the full power of Manjaro in any computing context      **Linux Device Drivers** Alessandro Rubini,Jonathan Corbet,2001 Provides hands on information on writing device drivers for the Linux system with particular focus on the features of the 2.4 kernel and its implementation      **Computer Engineering and Networking** W. Eric Wong,Tingshao Zhu,2014-02-03 This book aims to examine innovation in the fields of computer engineering and networking The book covers important emerging topics in computer engineering and networking and it will help researchers and engineers improve their knowledge of state of art in related areas The book presents papers from The Proceedings of the 2013 International Conference on Computer Engineering and Network CENet2013 which was held on 20-21 July in Shanghai China      Linux Device Drivers

Development John Madieu, 2017-10-20 Develop Linux device drivers from scratch with hands on guidance focused on embedded systems covering key subsystems like I2C SPI GPIO IRQ and DMA for real world hardware integration using kernel 4.13 Key Features Develop custom drivers for I2C SPI GPIO RTC and input devices using modern Linux kernel APIs Learn memory management IRQ handling DMA and the device tree through hands on examples Explore embedded driver development with platform drivers regmap and IIO frameworks Book Description Linux kernel is a complex portable modular and widely used piece of software running on around 80% of servers and embedded systems in more than half of devices throughout the World Device drivers play a critical role in how well a Linux system performs As Linux has turned out to be one of the most popular operating systems used the interest in developing proprietary device drivers is also increasing steadily This book will initially help you understand the basics of drivers as well as prepare for the long journey through the Linux Kernel This book then covers drivers development based on various Linux subsystems such as memory management PWM RTC IIO IRQ management and so on The book also offers a practical approach on direct memory access and network device drivers By the end of this book you will be comfortable with the concept of device driver development and will be in a position to write any device driver from scratch using the latest kernel version v4.13 at the time of writing this book What you will learn Use kernel facilities to develop powerful drivers Develop drivers for widely used I2C and SPI devices and use the regmap API Write and support devicetree from within your drivers Program advanced drivers for network and frame buffer devices Delve into the Linux irqdomain API and write interrupt controller drivers Enhance your skills with regulator and PWM frameworks Develop measurement system drivers with IIO framework Get the best from memory management and the DMA subsystem Access and manage GPIO subsystems and develop GPIO controller drivers Who this book is for This book is ideal for embedded systems developers engineers and Linux enthusiasts who want to learn how to write device drivers from scratch Whether you are new to kernel development or looking to deepen your understanding of subsystems like I2C SPI and IRQs this book provides practical real world instructions tailored for working with embedded Linux platforms Foundational knowledge of C and basic Linux concepts is recommended *Essential System Administration* Æleen Frisch, 2002-08-23 Essential System Administration 3rd Edition is the definitive guide for Unix system administration covering all the fundamental and essential tasks required to run such divergent Unix systems as AIX FreeBSD HP UX Linux Solaris Tru64 and more Essential System Administration provides a clear concise practical guide to the real world issues that anyone responsible for a Unix system faces daily The new edition of this indispensable reference has been fully updated for all the latest operating systems Even more importantly it has been extensively revised and expanded to consider the current system administrative topics that administrators need most Essential System Administration 3rd Edition covers DHCP USB devices the latest automation tools SNMP and network management LDAP PAM and recent security tools and techniques Essential System Administration is comprehensive But what has made this book the guide system administrators turn to over

and over again is not just the sheer volume of valuable information it provides but the clear useful way the information is presented. It discusses the underlying higher level concepts but it also provides the details of the procedures needed to carry them out. It is not organized around the features of the Unix operating system but around the various facets of a system administrator's job. It describes all the usual administrative tools that Unix provides but it also shows how to use them intelligently and efficiently. Whether you use a standalone Unix system routinely provide administrative support for a larger shared system or just want an understanding of basic administrative functions, *Essential System Administration* is for you. This comprehensive and invaluable book combines the author's years of practical experience with technical expertise to help you manage Unix systems as productively and painlessly as possible.

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