

# Read Book Developing Embedded Linux Devices Using The Yocto Project Pdf For Free

**Writing Linux Device Drivers** Mar 02 2021 This book is designed to show experienced programmers how to develop device drivers for Linux systems, and give them a basic understanding and familiarity with the Linux kernel.

**Mastering Linux Device Driver Development** Dec 23 2022 Master the art of developing customized device drivers for your embedded Linux systems Key FeaturesStay up to date with the Linux PCI, ASoC, and V4L2 subsystems and write device drivers for themGet to grips with the Linux kernel power management infrastructureAdopt a practical approach to customizing your Linux environment using best practicesBook 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 learnExplore and adopt Linux kernel helpers for locking, work deferral, and interrupt managementUnderstand the Regmap subsystem to manage memory accesses and work with the IRQ subsystemGet to grips with the PCI subsystem and write reliable drivers for PCI devicesWrite full multimedia device drivers using ALSA SoC and the V4L2 frameworkBuild power-aware device drivers using the kernel power management frameworkFind out how to get the most out of miscellaneous kernel subsystems such as NVMEM and WatchdogWho this book is for This book is for embedded developers, Linux system engineers, and system programmers who want to explore Linux kernel frameworks and subsystems. C programming skills and a basic understanding of driver development are necessary to get started with this book.

**Linux Device Drivers** Apr 22 2020 This practical guide is for anyone who wants to support computer peripherals under the Linux operating system or who wants to develop new hardware and run it under Linux. It shows step-by-step how to write a driver for character devices, m block devices, and network interfaces, illustrated with examples you can compile and run. *Problem Determination for Linux on System z* May 04 2021 This IBM Redbooks publication addresses some of the common problems that customers have experienced on the Linux® on System z™ platform. This book provides a problem determination methodology and tools to help the reader diagnose the problem in an easy-to-read self-help manual. We start with a discussion on how to approach problem solving in the Linux on System z environment and continue on to describe some of the problem determination tools commonly used for z/VM and Linux on system z. We continue with discussions on network problem determination, performance problem determination, and storage problems. Additionally, we discuss the formation of eligible (or eligibility) lists.

**LPIC-2 Linux Professional Institute Certification Study Guide** Oct 09 2021 The first book to cover the LPIC-2 certification Linux allows developers to update source code freely, making it an excellent, low-cost, secure alternative to alternate, more expensive operating systems. It is for this reason that the demand for IT professionals to have an LPI certification is so strong. This study guide provides unparalleled coverage of the LPIC-2 objectives for exams 201 and 202. Clear and concise coverage examines all Linux administration topics while practical, real-world examples enhance your learning process. On the CD, you'll find the Sybex Test Engine, electronic flashcards, and a glossary containing the most important terms you need to understand.. Prepares you for exams 201 and 202 of the Linux Professional Institute Certification Offers clear, concise coverage on exam topics such as the Linux kernel, system startup, networking configuration, system maintenance, domain name server, file sharing, and more Addresses additional key topics for the exams including network client management, e-mail services, system security, and troubleshooting This must-have study guide serves as an invaluable roadmap to attaining LPI certification.

**Linux Device Driver Development** Apr 15 2022 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 FeaturesWrite feature-rich and customized Linux device drivers for any character, SPI, and I2C deviceDevelop a deep understanding of locking primitives, IRQ management, memory management, DMA, and so onGain practical experience in the embedded side of Linux using GPIO, IIO, and input subsystemsBook 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 learnDownload, configure, build, and tailor the Linux kernelDescribe the hardware using a device treeWrite feature-rich platform drivers and leverage I2C and SPI busesGet the most out of the new concurrency managed workqueue infrastructureUnderstand the Linux kernel timekeeping mechanism and use time-related APIsUse the regmap framework to factor the code and make it genericOffload CPU for memory copies using DMAInteract with the real world using GPIO, IIO, and input subsystemsWho 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.

*Building Embedded Linux Systems* Sep 20 2022 There's a great deal of excitement surrounding the use of Linux in embedded systems -- for everything from cell phones to car ABS systems and water-filtration plants -- but not a lot of practical information. Building Embedded Linux Systems offers an in-depth, hard-core guide to putting together embedded systems based on Linux. Updated for the latest version of the Linux kernel, this new edition gives you the basics of building embedded Linux systems, along with the configuration, setup, and use of more than 40 different open source and free software packages in common use. The book also looks at the strengths and weaknesses of using Linux in an embedded system, plus a discussion of licensing issues, and an introduction to real-time, with a discussion of real-time options for Linux. This indispensable book features arcane and previously undocumented procedures for: Building your own GNU development toolchain Using an efficient embedded development framework Selecting, configuring, building, and installing a target-specific kernel Creating a complete target root filesystem Setting up, manipulating, and using solid-state storage devices Installing and configuring a bootloader for the target Cross-compiling a slew of utilities and packages Debugging your embedded system using a plethora of tools and techniques Using the uClibc, BusyBox, U-Boot, OpenSSH, thttpd, tftp, strace, and gdb packages By presenting how to build the operating system components from pristine sources and how to find more documentation or help, Building Embedded Linux Systems greatly simplifies the task of keeping complete control over your embedded operating system.

*Linux Fundamentals* Nov 10 2021 The Linux world is constantly changing, requiring new knowledge and skills to work as a Linux system administrator. Linux Fundamentals, Second Edition not only updates the first edition with new material, but also changes the book's focus a bit, from a basic approach to Linux to a more advanced server-oriented look at using Linux. While the first edition tracked the skills needed to meet the LPI Linux Fundamentals exam requirements, this edition tracks the more advanced CompTIA Linux+ exam requirements. The Second Edition provides a soft, accessible, and practical introduction to Linux environments and command line basics. The addition of new virtual labs will also empower students to apply theory in hands-on exercises in real time. This edition dives deeper into the Linux server environment, covering the commands you are expected to know for the Linux+ exam.

**Building Embedded Linux Systems** Jun 24 2020 Linux® is being adopted by an increasing number of embedded systems developers, who have been won over by its sophisticated scheduling and networking, its cost-free license, its open development model, and the support offered by rich and powerful programming tools. While there is a great deal of hype surrounding the use of Linux in embedded systems, there is not a lot of practical information. Building Embedded Linux Systems is the first in-depth, hard-core guide to putting together an embedded system based on the Linux kernel. This indispensable book features arcane and previously undocumented procedures for: Building your own GNU development toolchain Using an efficient embedded development framework Selecting, configuring, building, and installing a target-specific kernel Creating a complete target root filesystem Setting up, manipulating, and using solid-state storage devices Installing and configuring a bootloader for the target Cross-compiling a slew of utilities and packages Debugging your embedded system using a plethora of tools and techniques Details are provided for various target architectures and hardware configurations, including a thorough review of Linux's support for embedded hardware. All explanations rely on the use of open source and free software packages. By presenting how to build the operating system components from pristine sources and how to find more documentation or help, this book greatly simplifies the task of keeping complete control over one's embedded operating system, whether it be for technical or sound financial reasons.Author Karim Yaghmour, a well-known designer and speaker who is responsible for the Linux Trace Toolkit, starts by discussing the strengths and weaknesses of Linux as an embedded operating system. Licensing issues are included, followed by a discussion of the basics of building embedded Linux systems. The configuration, setup, and use of over forty different open source and free software packages commonly used in embedded Linux systems are also covered. uClibc, BusyBox, U-Boot, OpenSSH, thttpd, tftp, strace, and gdb are among the packages discussed.

**Mastering Embedded Linux Programming - Third Edition** Sep 08 2021 Harness the power of Linux to create versatile and robust embedded solutions Key Features Learn how to develop and configure robust embedded Linux devices Explore the new features of Linux 5.4 and the Yocto Project 3.1 (Dunfell) Discover different ways to debug and profile your code in both user space and the Linux kernel Book Description Embedded Linux runs many of the devices we use every day. From smart TVs and Wi-Fi routers to test equipment and industrial controllers, all of them have Linux at their heart. The Linux OS is one of the foundational technologies comprising the core of the Internet of Things (IoT). This book starts by breaking 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 explains 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 Linux implementation on embedded devices, then ... *Understanding the Linux Kernel* Jan 20 2020 To thoroughly understand what makes Linux tick and why it's so efficient, you need to delve deep into the heart of the operating system--into the Linux kernel itself. The kernel is Linux--in the case of the Linux operating system, it's the only bit of software to which the term "Linux" applies. The kernel handles all the requests or completed I/O operations and determines which programs will share its processing time, and in what order. Responsible for the sophisticated memory management of the whole system, the Linux kernel is the force behind the legendary Linux efficiency. The new edition of Understanding the Linux Kernel takes you on a guided tour through the most significant data structures, many algorithms, and programming tricks used in the kernel. Probing beyond the superficial features, the authors offer valuable insights to people who want to know how things really work inside their machine. Relevant segments of code are dissected and discussed line by line. The book covers more than just the functioning of the code, it explains the theoretical underpinnings for why Linux does things the way it does. The new edition of the book has been updated to cover version 2.4 of the kernel, which is quite different from version 2.2: the virtual memory system is entirely new, support for multiprocessor systems is improved, and whole new classes of hardware devices have been added. The authors explore each new feature in detail. Other topics in the book include: Memory management including file buffering, process swapping, and Direct memory Access (DMA) The Virtual Filesystem and the Second Extended Filesystem Process creation and scheduling Signals, interrupts, and the essential interfaces to device drivers Timing Synchronization in the kernel Interprocess Communication (IPC) Program execution Understanding the Linux Kernel, Second Edition will acquaint you with all the inner workings of Linux, but is 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. If knowledge is power, then this book will help you make the most of your Linux system.

*Mastering Linux System Administration* Jun 05 2021 Achieve Linux system administration mastery with time-tested and proven techniques In Mastering Linux System Administration, Linux experts and system administrators Christine Bresnahan and Richard Blum deliver a comprehensive roadmap to go from Linux beginner to expert Linux system administrator with a learning-by-doing approach. Organized by do-it-yourself tasks, the book includes instructor materials like a sample syllabus, additional review questions, and slide decks. Amongst the practical applications of the Linux operating system included within, you'll find detailed and easy-to-follow instruction on: Installing Linux servers, understanding the boot and initialization processes, managing hardware, and working with networks Accessing the Linux command line, working with the virtual directory structure, and creating shell scripts to automate administrative tasks Managing Linux user accounts, system security, web and database servers, and virtualization environments Perfect for entry-level Linux system administrators, as well as system administrators familiar with Windows, Mac, NetWare, or other UNIX systems, Mastering Linux System Administration is a must-read guide to manage and secure Linux servers.

*Linux Device Drivers* Apr 27 2023 Provides information on writing a driver in Linux, covering such topics as character devices, network interfaces, driver debugging, concurrency, and interrupts.

**Raspberry Pi IoT In C Using Linux Drivers** Oct 21 2022 The Raspberry Pi makes an ideal match for the Internet of Things. To put it to good use in IoT you need two areas of expertise, electronics and programming and this presents a barrier to getting started. However, there is an overlooked route that can provide a shortcut. Pi OS, the Raspberry Pi's operating system is Linux based and Linux drivers are available for many off-the-shelf IoT devices. These provide a very easy-to-use, high-level way of working. The problem that this book solves is that there is very little documentation to help you get started. In it Harry Fairhead explains the principles so that you can tackle new devices and he also guides you through of using external hardware via standard Linux drivers. Throughout this book you will find a practical approach to understanding electronic circuits and datasheets and translating this to code, specifically using the C programming language. The main reason for choosing C is speed, a crucial factor when you are writing programs to communicate with the outside world and if you are familiar with another programming language, C shouldn't be hard to pick up. After a quick tour of the Raspberry Pi ecosystem, Visual Studio Code (VS Code) and how it can be used to develop remotely, is introduced. The first IoT program anyone writes is "blinky" to flash an LED and this book is no exception, but it might not be quite what you expect. Instead of using a GPIO line it uses the Linux LED driver - no hardware and no fuss. The GPIO isn't left out, however, as the next three chapters focus on its use via the new GPIO character driver, which replaces the old and very common sysfs GPIO driver. This is the way to do modern GPIO. A key component in any look at Linux and its relationship to hardware is the relatively new Device Tree. While most accounts of this resource are aimed at device driver writers, this one is aimed at device driver users and to this end we look at the DHT22 temperature and humidity driver. After a brief detour into some basic electronics, we look at Pulse Width Modulation supported via a driver rather than needing to be implemented using the GPIO. From here we tackle the two standard buses, I2C and SPI, first going through the basics and then looking at the two attempts to impose a higher organization, the hardware monitoring system, Hwmon, and Industrial I/O, IIO. The third standard bus, although generally not supported in hardware is the I-Wire bus. This is covered in detail and even includes an introduction to using Netlink, which uses the sockets API to send messages to and from the kernel to access the driver. The final chapter takes things to the next level and considers creating your own custom overlays by writing fragments to the device tree. Harry Fairhead has worked with microprocessors, and electronics in general, for many years and is an enthusiastic proponent of the IoT. He is the author of Raspberry Pi IoT in C, which has recently been republished in its second edition, updated for Raspberry Pi 4 and co-author of Raspberry Pi IoT in Python Using GPIO Zero. His other recent books include Micro: bit IoT in C, Fundamental C: Getting Closer To The Machine and Applying C For The IoT With Linux.

**Linux Device Driver Development Cookbook** Aug 19 2022 Over 30 recipes to develop custom drivers for your embedded Linux applications. Key Features Use Kernel facilities to develop powerful drivers Via a practical approach, learn core concepts of developing device drivers Program a custom character device to get access to kernel internals Book Description Linux is a unified kernel that is widely used to develop embedded systems. As Linux has turned out to be one of the most popular operating systems used, the interest in developing proprietary device drivers has also increased. Device drivers play a critical role in how the system performs and ensures that the device works in the manner intended. By offering several examples on the development of character devices and how to use other kernel internals, such as interrupts, kernel timers, and wait queue, as well as how to manage a device tree, you will be able to add proper management for custom peripherals to your embedded system. You will begin by installing the Linux kernel and then configuring it. Once you have installed the system, you will learn to use the different kernel features and the character drivers. You will also cover interrupts in-depth and how you can manage them. Later, you will get into the kernel internals required for developing applications. Next, you will implement advanced character drivers and also become an expert in writing important Linux device drivers. By the end of the book, you will be able to easily write a custom character driver and kernel code as per your requirements. What you will learn Become familiar with the latest kernel releases (4.19+/5.x) running on the ESPRESSObin devkit, an ARM 64-bit machine Download, configure, modify, and build kernel sources Add and remove a device driver or a module from the kernel Master kernel programming Understand how to implement character drivers to manage different kinds of computer peripherals Become well versed with kernel helper functions and objects that can be used to build kernel applications Acquire a knowledge of in-depth concepts to manage custom hardware with Linux from both the kernel and user space Who this book is for This book will help anyone who wants to develop their own Linux device drivers for embedded systems. Having basic hand-on with Linux operating system and embedded concepts is necessary.

**Mastering Embedded Linux Programming-Second Edition** Apr 03 2021 Master the techniques needed to build great, efficient embedded devices on LinuxAbout This Book\* Discover how to build and configure reliable embedded Linux devices\* This book has been updated to include Linux 4.9 and Yocto Project 2.2 (Morty)\* This comprehensive guide covers the remote update of devices in the field and power managementWho This Book Is ForIf you are an engineer who wishes to understand and use Linux in embedded devices, this book is for you. It is also for Linux developers and system programmers who are familiar with embedded systems and want to learn and program the best in class devices. It is appropriate for students studying embedded techniques, for developers implementing embedded Linux devices, and engineers supporting existing Linux devices.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, ftrace, and valgrind\* Find out how to configure Linux as a real-time operating systemIn DetailEmbedded 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 inter-connected world of the Internet of Things.The comprehensive guide shows you the technologies and techniques required to build Linux into embedded systems. 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.Style and approachThis book is an easy-to-follow and pragmatic guide with in-depth analysis of the implementation of embedded devices. It follows the life cycle of a project from inception through to completion, at each stage giving both the theory that underlies the topic and practical step-by-step walkthroughs of an example implementation.

**LPI Linux Certification in a Nutshell** Dec 19 2019 Linux deployment continues to increase, and so does the demand for qualified and certified Linux system administrators. If you're seeking a job-based certification from the Linux Professional Institute (LPI), this updated guide will help you prepare for the technically challenging LPIC Level 1 Exams 101 and 102. The third edition of this book is a meticulously researched reference to these exams, written by trainers who work closely with LPI. You'll find an overview of each exam, a summary of the core skills you need, review questions and exercises, as well as a study guide, a practice test, and hints to help you focus. Major topics include: Critical GNU and Unix commands Linux installation and package management Devices and filesystems Text editing, processing, and printing The X Window System Networking and security Mail transfer agents Email, FTP, and web services These exams are for junior to mid-level Linux administrators with about two years of practical system administration experience. You should be comfortable with Linux at the command line and capable of performing simple tasks, including system installation and troubleshooting.

**Using and Administering Linux: Volume 2** Jul 18 2022 Experience an in-depth exploration of logical volume management and the use of file managers to manipulate files and directories and the critical concept that, in Linux, everything is a file and some fun and interesting uses of the fact that everything is a file. This book builds upon the skills you learned in Volume 1 of this course and it depends upon the virtual network and virtual machine created there. More experienced Linux users can begin with this volume and download the assigned script that will set up the VM for the start of Volume 2. Instructions with the script will provide specifications for configuration of the virtual network and the virtual machine. Refer to the volume overviews in the book's introduction to select the volume of this course most appropriate for your current skill level. You'll see how to manage and monitor running processes, discover the power of the special filesystems, monitor and tune the kernel while it is running – without a reboot. You'll then turn to regular expressions and the power that using them for pattern matching can bring to the command line, and learn to manage printers and printing from the command line and unlock the secrets of the hardware on which your Linux operating system is running. Experiment with command line programming and how to automate various administrative tasks, networking, and the many services that are required in a Linux system. Use the logs and journals to look for clues to problems and confirmation that things are working correctly, and learn to enhance the security of your Linux systems and how to perform easy local and remote backups. What You Will Learn Understand Logical Volume Management, using file managers, and special filesystemsExploit everything in a filePerform command line programming and basic automationConfigure printers and manage other hardwareManage system services with systemd, user management, security, and local and remote backups using simple and freely available tools Who This Book Is For Anyone who wants to continue to learn Linux in depth as an advanced user and system administrator at the command line while using the GUI desktop to leverage productivity.

**Smart Home Automation with Linux** Feb 25 2023 Linux users can now control their homes remotely! Are you a Linux user who has ever wanted to turn on the lights in your house, or open and close the curtains, while away on holiday? Want to be able to play the same music in every room, controlled from your laptop or mobile phone? Do you want to do these things without an expensive off-the-shelf kit? In Smart Home Automation with Linux, Steven Goodwin will show you how a house can be fully controlled by its occupants, all using open source software. From appliances to kettles to curtains, control your home remotely!

**Experiences with Oracle® 10gR2 Solutions on Linux for IBM System z** Aug 27 2020 This IBM Redbooks publication describes experiences gained while installing and testing several Oracle® solutions, such as: - Single Instance of Oracle Database 10gR2 - Including sharing ORACLE\_HOME and Cloning Oracle databases - RAC Instance of Oracle Database 10gR2 using raw devices, block devices, or OCFS2 files - Oracle E-Business Suite 11.5.10.2 with a split configuration database on Linux on System z - Oracle AS10g Interested readers include database consultants, installers, administrators, and system programmers. This book is not meant to replace Oracle documentation; it documents our experiences installing Oracle products.

**Linux Kernel Programming Part 2 - Char Device Drivers and Kernel Synchronization** Aug 07 2021 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 learnGet to grips with the basics of the modern Linux Device Model (LDM)Write a simple yet complete misc class character device driverPerform user-kernel interfacing using popular methodsUnderstand and handle hardware interrupts confidentlyPerform I/O on peripheral hardware chip memoryExplore kernel APIs to work with delays, timers, kthreads, and workqueuesUnderstand kernel concurrency issuesWork with key kernel synchronization primitives and discover how to detect and avoid deadlockWho 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.

**Red Hat Fedora Linux Secrets** Mar 22 2020 Featuring the latest changes in Fedora Core, this book offers valuable new secrets for Fedora users, including yum, mail filtering with SpamAssassin, mandatory access control with Security Enhanced Linux (SELinux), and improved device handling with udev Demonstrates how to use Linux for real-world tasks, from learning UNIX commands to setting up a secure Java-capable Web server for a business Because Fedora Core updates occur frequently, the book contains a helpful appendix with instructions on how to download and install the latest release of Fedora Core The DVD contains the Fedora distribution as well as all binary code packages and source code

**Essential Linux Device Drivers** Jul 06 2021 “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. Sreerishnan 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

**Mastering Embedded Linux Programming** Jan 24 2023

**LPI Linux Essentials Study Guide** Feb 01 2021 Provides a solid foundation for those considering a career in IT—covers the objectives of the new Linux Essentials Exam 010-160 v1.6 Linux is a secure, reliable, open source alternative to costly operating systems such as Microsoft Windows. As large organizations worldwide continue to add Linux servers, the need for IT professionals skilled in Linux continues to grow. The LPI Linux Essentials Study Guide is a valuable resource for anyone preparing to take the new Linux Essentials Exam—the entry-level certification from The Linux Professional Institute (LPI) which validates knowledge of Linux concepts and applications. Written by recognized experts on Linux and open source technologies, this accessible, user-friendly guide covers desktop skills, the command line, directories and files, networks, scripting, security, users and permissions, and much more. Clear, concise chapters provide numerous hands-on tutorials, real-world examples, color illustrations, and practical end-of-chapter exercises and review questions. An ideal introduction for those new to Linux or considering a career in IT, this guide helps readers: Learn the operation and components of Linux desktops and servers Understand open source software, licensing, and applications Configure networks, security, cloud services, storage, and devices Create users and groups and set permissions and ownership Use the command line and build automation scripts LPI Linux Essentials Study Guide: Exam 010 v1.6 is perfect for anyone beginning a career in IT, newcomers to Linux, students in computer courses, and system administrators working with other operating systems wanting to learn more about Linux and other open source solutions.

**LPIC-1: Linux Professional Institute Certification Study Guide** Dec 31 2020 Your complete guide to preparing for the LPIC-1 Linux Professional Institute Certification Exams 101-400 and 102-400 The LPIC-1 Linux Professional Institute Certification Study Guide, 4th Edition is your one-stop resource for complete coverage of Exams 101-400 and 102- 400. This Sybex Study Guide covers 100% of all exam 101-400 and 102-400 objectives. You'll prepare for the exams smarter and faster with Sybex thanks to superior content including, assessment tests that check exam readiness, objective map, real-world scenarios, hands-on exercises, key topic exam essentials, and challenging chapter review questions. Reinforce what you have learned with the exclusive Sybex online learning environment, assessable across multiple devices. Get prepared for the LPIC-1 Exams 101-400 and 102-400 with Sybex. Coverage of 100% of all exam objectives in this Study Guide means you'll be ready for: Managing Software Configuring Hardware Managing Files Booting Linux and Editing Files Configuring the X Window System Configuring Basic Networking Writing Scripts, Configuring Email, and Using Databases Covers 100% of exam objectives, including system architecture, GNU and UNIX commands, shells, scripting, and data management, administrative tasks, system services, networking, and much more... Includes interactive online learning environment with: Custom practice exams 150 electronic flashcards Searchable key term glossary Interactive learning environment Take your exam prep to the next level with Sybex's superior interactive online tools. To access the learning environment, simply visit: http://sybextestbanks.wiley.com, type in your unique PIN and instantly gain access to: Interactive online learning environment and test bank covering both LPIC-1 exams, including 200 chapter review questions and two 50-question bonus exams. 150 Electronic Flashcards to reinforce learning and provide last minute prep before the exam. Comprehensive searchable glossary in PDF format gives you instant access to the key terms so you are fully prepared.

**CompTIA Linux+ Powered by Linux Professional Institute Study Guide** Oct 29 2020 CompTIA Authorized Linux+ prep CompTIA Linux+ Study Guide is your comprehensive study guide for the Linux+ Powered by LPI certification exams. With complete coverage of 100% of the objectives on both exam LX0-103 and exam LX0-104, this study guide provides clear, concise information on all aspects of Linux administration, with a focus on the latest version of the exam. You'll gain the insight of examples drawn from real-world scenarios, with detailed guidance and authoritative coverage of key topics, including GNU and Unix commands, system operation, system administration, system services, security, and more, from a practical perspective that easily translates into on-the-job know-how. You'll also get access to helpful study tools, including bonus practice exams, electronic flashcards, and a searchable glossary of key terms that are important to know for exam day. Linux is viewed by many companies and organizations as an excellent, low-cost, secure alternative to expensive operating systems such as Microsoft Windows. The CompTIA Linux+ Powered by LPI exams test a candidate's understanding and familiarity with the Linux Kernel. Review the basic system architecture, installation, and management Understand commands, devices, and file systems Utilize shells, scripting, and data management techniques Navigate user interfaces, desktops, and essential system services As the Linux server market share continue to grow, so too does the demand for qualified and certified Linux administrators. Certification holders must recertify every five years, but LPI recommends recertifying every two years to stay fully up to date with new technologies and best practices. CompTIA Linux+ Study Guide gives you the advantage of exam day confidence.

**Linux Device Drivers Development** Nov 22 2022 Learn to develop customized device drivers for your embedded Linux system About This Book Learn to develop customized Linux device drivers Learn the core concepts of device drivers such as memory management, kernel caching, advanced IRQ management, and so on. Practical experience on the embedded side of Linux Who This Book Is For This book will help anyone who wants to get started with developing their own Linux device drivers for embedded systems. Embedded Linux users will benefit highly from this book. This book covers all about device driver development, from char drivers to network device drivers to memory management. 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 device tree 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 In Detail 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). Style and approach A set of engaging examples to develop Linux device drivers

**Linux Device Drivers** May 16 2022 Device drivers literally drive everything you're interested in--disks, monitors, keyboards, modems--everything outside the computer chip and memory. And writing device drivers is one of the few areas of programming for the Linux operating system that calls for unique, Linux-specific knowledge. For years now, programmers have relied on the classic Linux Device Drivers from O'Reilly to master this critical subject. Now in its third edition, this bestselling guide provides all the information you'll need to write drivers for a wide range of devices.Over the years the book has helped countless programmers learn: how to support computer peripherals under the Linux operating system how to develop and write software for new hardware under Linux the basics of Linux operation even if they are not expecting to write a driver The new edition of Linux Device Drivers is better than ever. The book covers all the significant changes to Version 2.6 of the Linux kernel, which simplifies many activities, and contains subtle new features that can make a driver both more efficient and more flexible. Readers will find new chapters on important types of drivers not covered previously, such as consoles, USB drivers, and more.Best of all, you don't have to be a kernel hacker to understand and enjoy this book. All you need is an understanding of the C programming language and some background in Unix system calls. And for maximum ease-of-use, the book uses full-featured examples that you can compile and run without special hardware.Today Linux holds fast as the most rapidly growing segment of the computer market and continues to win over enthusiastic adherents in many application areas. With this increasing support, Linux is now absolutely mainstream, and viewed as a solid platform for embedded systems. If you're writing device drivers, you'll want this book. In fact, you'll wonder how drivers are ever written without it.

**Mastering Embedded Linux Programming - Third Edition** Mar 14 2022 Harness the power of Linux to create versatile and robust embedded solutions Key Features: Learn how to develop and configure robust embedded Linux devices Explore the new features of Linux 5.4 and the Yocto Project 3.1 (Dunfell) Discover different ways to debug and profile your code in both user space and the Linux kernel Book Description: Embedded Linux runs many of the devices we use every day. From smart TVs and Wi-Fi routers to test equipment and industrial controllers, all of them have Linux at their heart. The Linux OS is one of the foundational technologies comprising the core of the Internet of Things (IoT). This book starts by breaking 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 explains 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 Linux implementation on embedded devices, then this book is for you. Embedded systems engineers accustomed to programming for low-power microcontrollers can use this book to help make the leap to high-speed systems on chips that can run Linux. Anyone responsible for developing new hardware that needs to run Linux will also find this book useful. Basic working knowledge of the POSIX standard, C programming, and shell scripting is assumed.

**Ubuntu Linux Bible** May 24 2020 Everything you need to know—and then some! It's the fastest-growing, coolest Linux distribution out there, and now you can join the excitement with this information-packed guide. Want to edit graphics? Create a spreadsheet? Manage groups? Set up an NFS server? You'll learn it all and more with the expert guidance, tips, and techniques in this first-ever soup-to-nuts book on Ubuntu. From the basics for newcomers to enterprise management for system administrators, it's what you need to succeed with Ubuntu. Master the fundamentals for desktop and networks Send e-mail, share files, edit text, and print Download music, watch DVDs, and play games Use Ubuntu on laptops, go wireless, or synch it with your PDA Set up Web, mail, print, DNS, DHCP, and other servers Manage groups and secure your network What's on the CD-ROM? Test-drive Ubuntu on your computer without changing a thing using the bootable Ubuntu Desktop Live CD included with this book. If you decide to install it permanently, a simple, easy-to-use installer is provided. Also on the CD, you'll find: Popular open-source software for Microsoft(r) Windows(r), such as AbiWord, Firefox(r), GIMP, and more An easy-to-use application that simplifies installing these programs on your Microsoft Windows system System Requirements: Please see the "About the CD-ROM Appendix" for details and complete system requirements. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

**Practical Linux Forensics** Nov 29 2020 A resource to help forensic investigators locate, analyze, and understand digital evidence found on modern Linux systems after a crime, security incident or cyber attack. Practical Linux Forensics dives into the technical details of analyzing postmortem forensic images of Linux systems which have been misused, abused, or the target of malicious attacks. It helps forensic investigators locate and analyze digital evidence found on Linux desktops, servers, and IoT devices. Throughout the book, you learn how to identify digital artifacts which may be of interest to an investigation, draw logical conclusions, and reconstruct past activity from incidents. You'll learn how Linux works from a digital forensics and investigation perspective, and how to interpret evidence from Linux environments. The techniques shown are intended to be independent of the forensic analysis platforms and tools used. Learn how to: Extract evidence from storage devices and analyze partition tables, volume managers, popular Linux filesystems (Ext4, Btrfs, and Xfs), and encryption Investigate evidence from Linux logs, including traditional syslog, the systemd journal, kernel and audit logs, and logs from daemons and applications Reconstruct the Linux startup process, from boot loaders (UEFI and Grub) and kernel initialization, to systemd unit files and targets leading up to a graphical login Perform analysis of power, temperature, and the physical

environment of a Linux machine, and find evidence of sleep, hibernation, shutdowns, reboots, and crashes Examine installed software, including distro installers, package formats, and package management systems from Debian, Fedora, SUSE, Arch, and other distros Perform analysis of time and Locale settings, internationalization including language and keyboard settings, and geolocation on a Linux system Reconstruct user login sessions (shell, X11 and Wayland), desktops (Gnome, KDE, and others) and analyze keyrings, wallets, trash cans, clipboards, thumbnails, recent files and other desktop artifacts Analyze network configuration, including interfaces, addresses, network managers, DNS, wireless artifacts (Wi-Fi, Bluetooth, WWAN), VPNs (including WireGuard), firewalls, and proxy settings Identify traces of attached peripheral devices (PCI, USB, Thunderbolt, Bluetooth) including external storage, cameras, and mobiles, and reconstruct printing and scanning activity

**Easy Linux Device Driver, Second Edition** Jun 17 2022 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 Definations 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 Importent 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 Sofirqs, 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

**Embedded Linux** Sep 27 2020 A guide to using Linux on embedded platforms for interfacing to the real world. "Embedded Linux" is one of the first books available that teaches readers development and implementation of interfacing applications on an Embedded Linux platform.

**Linux Device Drivers** Mar 26 2023 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

**Ubuntu Linux Bible** Feb 19 2020 The best reference for Ubuntu Linux Ubuntu Linux is a popular, powerful, and versatile operating system. Now you can get the most out of everything Ubuntu Linux has to offer with the Ubuntu Linux Bible. This complete and comprehensive guide introduces you to Ubuntu and shows you how to use it to its fullest, whether you're a typical desktop user or a system administrator. You'll learn to do everything from reading email to configuring wireless networks. You'll reap huge rewards from this book, regardless of how much prior experience you have with Ubuntu. Get started with Ubuntu Linux and see what's in the newest version (20.04) Learn how to read emails, surf the web, and create and publish documents Take on system administration tasks, like creating and managing users and adding new disks to the system Discover how to use Ubuntu Linux in an enterprise or personal environment Figure out how to set up Ubuntu Linux servers for the web, email, shared printing, and more Find out why Ubuntu Linux is the most popular Linux operating system in the world

**Red Hat Fedora Linux 2 All-in-One Desk Reference For Dummies** Jul 26 2020 This essential reference organizes material into a set of nine stand-alone, task-oriented minibooks that enable readers to understand all aspects of the Fedora OS, the latest release of the most popular Linux distribution Each minibook covers a different aspect of Fedora, such as getting users started with Fedora, the various workstations and applications, OpenOffice.org, networking, system administration, security, running Internet servers on a Fedora system, and programming More experienced readers can use this desktop reference to look up how to perform specific tasks, such as hooking up to the Internet, using a cable modem, or reading e-mail Includes the full Fedora Core distribution with source code on DVD and all of the CD content that comes with Fedora, saving readers hours of download time

**Mastering Embedded Linux Programming** Dec 11 2021 Master the techniques needed to build great, efficient embedded devices on Linux About This Book Discover how to build and configure reliable embedded Linux devices This book has been updated to include Linux 4.9 and Yocto Project 2.2 (Morty) This comprehensive guide covers the remote update of devices in the field and power management Who This Book Is For If you are an engineer who wishes to understand and use Linux in embedded devices, this book is for you. It is also for Linux developers and system programmers who are familiar with embedded systems and want to learn and program the best in class devices. It is appropriate for students studying embedded techniques, for developers implementing embedded Linux devices, and engineers supporting existing Linux devices. 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 perk, ftrace, and valgrind Find out how to configure Linux as a real-time operating system In Detail 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 inter-connected world of the Internet of Things. The comprehensive guide shows you the technologies and techniques required to build Linux into embedded systems. 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. Style and approach This book is an easy-to-follow and pragmatic guide with in-depth analysis of the implementation of embedded devices. It follows the life cycle of a project from inception through to completion, at each stage giving both the theory that underlies the topic and practical step-by-step walkthroughs of an example implementation.

**Linux Device Drivers Development** Feb 13 2022 Learn to develop customized device drivers for your embedded Linux systemAbout This Book\* Learn to develop customized Linux device drivers\* Learn the core concepts of device drivers such as memory management, kernel caching, advanced IRQ management, and so on.\* Practical experience on the embedded side of LinuxWho This Book Is ForThis book will help anyone who wants to get started with developing their own Linux device drivers for embedded systems. Embedded Linux users will benefit highly from this book.This book covers all about device driver development, from char drivers to network device drivers to memory management.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 driversIn DetailLinux 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).Style and approachA set of engaging examples to develop Linux device drivers

**AN INTRODUCTION TO OPERATING SYSTEMS : CONCEPTS AND PRACTICE (GNU/LINUX AND WINDOWS), FIFTH EDITION** Jan 12 2022 The book, now in its Fifth Edition, aims to provide a practical view of GNU/Linux and Windows 7, 8 and 10, covering different design considerations and patterns of use. The section on concepts covers fundamental principles, such as file systems, process management, memory management, input-output, resource sharing, inter-process communication (IPC), distributed computing, OS security, real-time and microkernel design. This thoroughly revised edition comes with a description of an instructional OS to support teaching of OS and also covers Android, currently the most popular OS for handheld systems. Basically, this text enables students to learn by practicing with the examples and doing exercises. NEW TO THE FIFTH EDITION • Includes the details on Windows 7, 8 and 10 • Describes an Instructional Operating System (PintOS), FEDORA and Android • The following additional material related to the book is available at www.phindia.com/bhatt. o Source Code Control System in UNIX o X-Windows in UNIX o System Administration in UNIX o VxWorks Operating System (full chapter) o OS for handheld systems, excluding Android o The student projects o Questions for practice for selected chapters TARGET AUDIENCE • BE/B.Tech (Computer Science and Engineering and Information Technology) • M.Sc. (Computer Science) BCA/MCA

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