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Nota di contenuto	Front Cover; Linux for Embedded and Real-Time Applications; Copyright Page; Contents; Preface; About the Author; What's on the CD-ROM?; Chapter 1. The Embedded and Real-Time Space; What is Embedded?; What is Real-Time?; How and Why Does Linux Fit In?; Where is Linux Embedded?; Open Source Licensing; Resources; Chapter 2. Introducing Linux; Features; Protected Mode Architecture; The Linux Process Model; The Linux File system; System Configuration; The Shell; Getting Help; Resources; Chapter 3. The Host Development Environment; Linux Distributions; Dual-Booting Cross-Development Tools-The GNU Tool Chain Resources; Chapter 4. Configuring and Building the Kernel; Getting Started; Where is the Source Code?; Configuring the Kernel-make config, menuconfig, xconfig; Behind the Scenes-What's Really Happening; Booting the New Kernel; What Can Go Wrong?; Resources; Chapter 5. Blue Cat Linux; The "Less is More" Philosophy; Installing BlueCat Linux; X86 Target for BlueCat Linux; Configuring the Workstation; First Test Program; The "Shell" Kernel; Resources; Chapter 6. Debugging Embedded Software; The Target Setup; GDB; The Host as a Debug Environment Adding Programmable Setpoint and Limit Resources; Chapter 7. Kernel

Modules and Device Drivers; Kernel Modules; What's a Device Driver Anyway?; Linux Device Drivers; Internal Driver Structure; The Hardware; The Target Version of Thermostat; Debugging Kernel Code; Building Your Driver into the Kernel; An Alternative-uCLinux; The "Old Way"; Resources; Chapter 8. Embedded Networking; Sockets; A Simple Example; A Remote Thermostat; Embedded Web Servers; A Web-Enabled Thermostat; Embedded email; Other Application-Level Protocols; Resources; Chapter 9. Introduction to Real-Time Programming
Polling vs. Interrupts Tasks; Scheduling; Aperiodic Scheduling; Kernel Services; Inter-Task Communication; Problems with Solving the Resource Sharing Problem-Priority Inversion; Interrupts and Exceptions; Critical Sections; Resources; Chapter 10. Linux and Real-Time; Why Linux Isn't Real-Time; Two Approaches; Resources; Chapter 11. The RTAI Environment; Installing RTAI; Inter-Task Communication and Synchronization; Communicating with Linux Processes; Real-Time in User Space-LXRT; One Shot vs. Periodic Timing; Moving to Kernel Space; Real-Time FIFOs and Shared Memory; Suggested Exercises Resources Chapter 12. Posix Threads; Threads; Thread Attributes; Synchronization-Mutexes; Communication-Condition Variables; Pthreads in User Space; Moving to RTAI Kernel Space; Message Queues; Suggestions for Further Exploration; Resources; Chapter 13. Cutting It Down to Size; BusyBox; TinyLogin; uClinux; Summary; Resources; Chapter 14. Eclipse Integrated Development Environment; Overview; Installation; Using Eclipse; The C Development Environment (CDT); Summary; Resources; Appendix A. RTAI Application Programming Interface (API); Appendix B. Posix Threads (Pthreads) Application Appendix C. Why Software Should Not Have Owners

Sommario/riassunto

The open source nature of Linux has always intrigued embedded engineers, and the latest kernel releases have provided new features enabling more robust functionality for embedded applications. Enhanced real-time performance, easier porting to new architectures, support for micro controllers and an improved I/O system give embedded engineers even more reasons to love Linux! However, the rapid evolution of the Linux world can result in an eternal search for new information sources that will help embedded programmers to keep up!This completely updated second edition of noted author Doug Ab