Stand 23.08.2025

Embedded Linux Software Development - Live Online Training

**Ziele -
Ihr Nutzen**

This training focuses on the development of software for embedded Linux.

It highlights all aspects of system-near development and offers exercises using the related development tools.

Attendees get to know the Posix operating system and can handle the key development and diagnostic tools. The exercises comprise the operating system mechanisms as well as development and diagnostic tools.

Teilnehmer

Software developers, software architects

Voraussetzungen

Profound ANSI-C programming knowledge as well as good basic knowledge of Linux. Good C programming knowhow as well as proficiency in using the Linux Shell (e.g. ls, cp, mv, dd) with input/ output redirection.

Live Online Training

* Preis je Teilnehmer, in Euro zzgl. USt.

Anmeldecode: LE-LIN-SWE

Präsenz-Training - Englisch

Dauer
4 Tage

Live-Online - Deutsch

Dauer
4 Tage

Präsenz-Training - Deutsch

Termin	Dauer
20.10. – 23.10.2025	4 Tage

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Inhalt

System-Near Software Development

- Files, pipes and device nodes
- Processes, CPU affinity
- Scheduling; RT, deadline, batch task
- Processes, signals, core dump
- Shared memory, memory mapping
- Semaphore, message queue

- Multithreading
- Mutex, robust mutex, PI mutex, RW lock, barrier
- Hrtimer framework and Posix timer
- Hardware interfaces: GPIOs, I2C

Development Environment and Diagnostic Tools

- Cross development toolchain
- Cross debugging with gdb and gdbserver
- proc, sys and debug FS
- Memory leaks, memory overwrite; valgrind
- Code coverage analysis and profiling; gcov and gprof
- Ptrace interface of the Linux kernel; debugger operation
- strace and ltrace - operation and use
- Operation of the function trace frameworks (ftrace)
- Tracing of interrupt and scheduling events

Hardware

- All exercises are performed on a phyBOARD with ARM Cortex-A8 (AM-335x) using freely accessible open source tools (remote access).