Embedded Linux Software Development - Live Online Training

Objectives

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.

Participants

Software developers, software architects

Requirements

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

* Price per attendee, in Euro plus VAT

Training code: LE-LIN-SWE

Face-To-Face - English

Duration
4 days

Live Online - German

Duration
4 days

Face-To-Face - German

Date	Duration
29.06. – 02.07.2026	4 days
14.12. – 17.12.2026	4 days

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Content
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).