



Linux Fundamentals

Day 1

Overview of structure and function of Linux

Bootloader, kernel, user space

File system

Boot process

UNIX daemons

Shell programming (sh, sed, awk)

Overview and comparison of the most important file systems of Linux

ext2, ext3, btrfs, jfs2, yaffs, ubifs

Process management (daemons, system infos, ...)

TCP/IP network

Kernel - Linux Kernel by your own

native for x86 kernel

Build System for kernel – an introduction

Kernel configuration

Build System for Kernel (Debian based)

Kernel configuration



Day 2

📦 Native application development

GNU tools: gcc, binutils, ...

Introduction to ELF binary format

Introduction to dynamic linking

IDE (Integrated development environment)

shell, vi, emacs – short presentation

Eclipse – theoretical introduction, presentation

Makefiles

Debugging with GDB

Day 3

📦 Root File System

rfs – what is that? What have I to do to get my own rfs?

📦 Difference between native and cross development

Overview about the principle approaches

📦 Cross development for applications I

NFS as a tool for the development of embedded systems

📦 Cross development for applications II

Cross Debugging with gdbserver

📦 Overview Open-Source software and Licenses

Remark: This will be just a short introduction and overview. A real consulting must be done by a lawyer.

📦 Reasonable HW infrastructure for Linux development

📦 Reasonable SW Infrastructure for Linux development (Build System, version control system, distributed development ...)

Software:

Linutronix provides an USB HDD with an x86 64-bit based Debian system for the host system, a Debian and a toolchain and for the target system an ARM Linux (running in a virtual machine). The HDD is a gift for the participant and can be taken home for further studies.

Hands-On training:

Scheduled are hands-on examples for the following themes: shell, cross compiling, and cross debugging

Hands-on examples might be limited to 2 persons for a single device

Number of participants:

Due to our experience we know that a single instructor could coach a maximum of 6 persons. Our courses are therefore limited to this number of individuals.