Embedded Linux Systems (SoC, IoT) (code: LX-EMBEDDED)

Ask for details
Phone +44 203 608 6289
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Overview

During the five days of this training, the participants will learn the fundamentals of embedded Linux programming, starting from the very basics of the technology and terminology, through setting up a development environment and operating system, to the programming itself. This training focuses on ARM, MIPS and PowerPC architectures, and covers the practical topics related to embedded programming, such as most interesting applications, anatomy of a SoC device, crucial peripheral devices and solving common problems. During workshop and exercises, the participants use BeagleBone Black Industrial 4G minimodules (in case of on-demand training, the customer can choose any other minimodule to use).

Duration

5 days

Agenda

1. An introduction to embedded Linux solutions
   - Preparing cross-compilation environment for MIPS, ARM and PowerPC architecture.
   - Manual compilation of the standard library, binutils and gcc
   - Automatic compilation
   - Bootloader: u-boot
2. Kernel configuration
   - Device drivers
   - Little-endian and big-endian
   - Floating-point units and their emulation
   - Non-volatile memory (NAND and NOR), MTD devices in Linux
   - UBI, UBIfs, squashfs, ext2 and execute-in-place filesystems
   - Input/output buses (GPIO, SSC, SPI, I2C, One-Wire, MCI, etc.)
   - Memory cards (SD)
   - USB host and USB gadget (client)
3. Userspace programs
   - System architecture, manual component compilation
   - UClibc and libc
   - Basic programs
   - Buildroot, embedded Linux distributions
   - Installer packages: ipkg, ports
4. Example devices
   - Linux on a MIPS router
   - Keyboard and LEDs connected via GPIO
   - Sound card (ALSA driver)
   - Live mp3 compression, applying sound effects
   - Open-source speech synthesizer
   - Java virtual machine (MIDP + CDC, CLDC)

Target audience and prerequisites

Training participants should be familiar with both C programming fundamentals and working in Linux console (as a casual user, not necessarily as an

administrator).

Certificates

Course participants receive completion certificates signed by ALX.

Locations

— Online (English) – your home, office or wherever you want
— Warsaw (English) – Jasna 14/16A
— any other location (London, UK, EU) on request

Price

1490 EUR

The price includes:

— course materials,
— meals,
— snacks, coffee, tea and soft drinks,
— course completion certificate,
— one-time consultation with the instructor after course completion.

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