

Course : Yocto, developing your own embedded system under Linux

Practical course - 4d - 28h00 - Ref. LYN

Price : 2990 CHF E.T.

★★★★☆ 4,6 / 5

The Yocto environment enables you to develop reliable, robust embedded systems by isolating business application development from hardware-related lower layers. This training course will enable you to master the day-to-day use of Yocto, and generate and install Linux images with customized content.

Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Knowing the role of the various Yocto Project components
- ✓ Generate a standard embedded Linux image for a target board
- ✓ Add packages and customize the content of a Linux image
- ✓ Know how to use the Yocto SDK to develop custom application code

Intended audience

Architect or engineer needing to port Linux to new hardware or extend an embedded system.

Prerequisites

Programming skills. Knowledge of Linux (user level).

Practical details

Hands-on work

Practical work is carried out on Linux servers and Raspberry Pi 4 boards, which you will be able to take away with you after the course.

Course schedule

PARTICIPANTS

Architect or engineer needing to port Linux to new hardware or extend an embedded system.

PREREQUISITES

Programming skills. Knowledge of Linux (user level).

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

1 Creating an embedded Linux system

- Embedded Linux environment: concepts, components, generation tools, Buildroot and Yocto Project.
- Standard image production: working environment, Poky, configuration, specific layers, BitBake tool...
- Composition of an embedded Linux system: hardware, bootloader, Linux kernel, init process, boot scripts.

Hands-on work

Installation of Poky and meta-raspberrypi, production of a standard image.

2 On-board system customization

- System discovery and analysis: connection, file systems, standard tree structure, boot.
- Image customization: .bb file, recipe syntax, image recipe creation, users and passwords.
- Adding packages: standard Poky packages, supplied by OpenEmbedded, BusyBox configuration.

Hands-on work

Production of a complete, customized image for Raspberry Pi 4 with packages provided by Poky and meta-openembedded.

3 Advanced system configuration

- Recipe extensions: .bbappend files, recipe file overload, static network configuration.
- Create and apply patches: on a recipe data file, on a source file to be compiled.
- Linux kernel and Device Tree: kernel configuration, kernel patching, Device Tree patching.

Hands-on work

Extensions and patches for base-files, init-ifupdown, nano, BusyBox, kernel...

4 Business code development

- SDK installation: production, extraction and installation of the Yocto SDK.
- Application code compilation: toolchain examination, initialization scripts, cross-compilation of personal code.
- Debugging and fine-tuning: remote debugging with gdbserver, fine-tuning tools (gprof, valgrind, gcov...).
- Integration of business code in the image: recipes, startup launch.

Hands-on work

Writing, debugging and integrating business code into the image.

TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

Dates and locations

REMOTE CLASS

2026 : 16 June, 29 Sep., 8 Dec.