Embedded Linux Device Drivers using Xilinx Tools

Dates: 28th Apr to 30th Apr 2025 (Live Online sessions – 10am to 1pm)

Description:

This online, live, instructor-led program is designed to build a strong foundation for Embedded Linux device driver programming. It is intended for freshers and academic or industry professionals who want to learn or enhance their skills on Linux Device Drivers using Xilinx tools.

Duration:

- 3 Days (9 Hours – 3 hours/day – 10am to 1pm)

What do I gain?

- Explain what an embedded Linux kernel is
- Create a PetaLinux project to configure and build an image
- Create a working Arm® processor-based Linux system using the Vivado Design Suite and PetaLinux tools
- List various hardware interfacing options available for the Arm processor
- Describe the Linux device driver architecture
- Build custom hardware cores and device drivers using the user space I/O (UIO) framework

Pre-requisites:

- Comfort with Linux shell environment and Linux system programming
- Working knowledge of FPGA Design tool flow – Vivado and Vitis
- Embedded system software design with Zynq UltraScale+ MPSoC

Course Contents

Day 1:

- Introduction to Embedded Linux: Introduction to Embedded Linux, brief architectural overview, concept of toolchains and cross-compilation
- Embedded Linux Components: Describes the various components required for embedded Linux platforms and how the components affect the booting of Linux on these platforms
- Driving the PetaLinux Tool: Describes the PetaLinux tools, their requirements and workflows
- PetaLinux Tool Design Flow: Provides a brief description of the PetaLinux tool design flow and describes in detail various PetaLinux commands
- Lab: Build an embedded Linux environment and run it on the Arm Cortex-A9 processor using the PetaLinux tools
- Lab: Driving the PetaLinux tool

Day 2:

- PetaLinux Application Development: Introduces core concepts for developing, customizing, and running software applications in an embedded Linux environment.

- Customizing the Project: Analyzes different configuration options provided by the PetaLinux tool for firmware version, rootfs type, boot image storage, and primary flash partition. Also describes external file system boot configuration.
- Lab: PetaLinux Application Development
- Lab: QEMU Linux Application Development and Debugging

Day 3:

- Basic Hardware Design Process with Vivado: Describes the complete board bring-up process, which includes the hardware design as well as Linux image creation for the hardware.
- Customizing the Root File System: Provides a brief description on customizing the rootfs for embedded Linux components such as libraries, applications, modules, layers, recipes, and packages
- Lab: Basic Hardware Design Process with the Vivado Design Suite
- Lab: Custom Hardware Development – AXI PWM

Course Fee: 2 days (6 Hours) – INR 9,735/- (Non-refundable, Inclusive of tax)

Last date for confirmation: 27-Apr-2024

Registration link: Click here to register
For assistance, contact us: +91-7795093727, +91-6366238254