

Workshop Highlights:

- Work 1:1 with ARM9 - Boards (1 per participant)
- Kernel Source Version: 2.3.2x
- Platform: ARM9-based
- Live Examples: From ARM-based industry product(s)
- Hands-On: Linux Porting, Cross Development Tools, uboot, Kernel Internals, Basic Drivers, Embedded Application Programming
- No of Participant: Maximum 12
- Duration: 3 days

Trainer Profile: Mr. Adil SK

- **Product Design Engineer:** Embedded Systems Product team at Emertxe Information Technologies
- Design embedded products based on Microcontrollers and Microprocessors
- Worked on Linux Kernel Internals & Kernel Optimization
- Expertise on Embedded Linux Porting, Drivers, Board Support Packages, Boot-loaders
- Highly Experienced with designing High End Embedded Products based on ARM, x86, PIC's, 8051's AVR's

Detailed Workshop Contents:

- **Introduction (2 hrs)**
 - W's of Embedded Systems & The Real Time Aspect
 - Open Source & Free Software Fundamentals
- **Embedded Development & its Environment (½ day)**
 - Requirements & Setup
 - The Embedded Environment Tools
 - Toolchains (Cross Compilers & friends)
 - Building your own toolchain
 - Debug-ability
- **Linux as an Embedded OS (1 hr)**
 - Architecture
 - Choices to make
 - Applying Patches
 - Source Code Browsing Techniques
- **Linux Startup Sequence (½ day)**

- Bootloader Phases & uboot
- Kernel Image & The Kernel Args
- Booting the Kernel & Init
- Various Root File Systems
 - Initial RAM Disk
 - Flash File System
 - Network File System
- Building the Root FS

● The Embedded Kernel (½ day)

- Kernel Configuration & Building
- Memory Manager
- Scheduler
- Embedded Storage
- I/O Subsystem
- Network Subsystem

● Linux Device Drivers Overview (½ day)

- Character Drivers
- Kernel Memory & Hardware Access
- Kernel & Driver Debugging Options & Techniques
- Concurrency & Time
- Interrupts & the 2 Halves

● Embedded Application Programming (½ day)

- BusyBox
- Developing Applications
- Processes & IPCs
- Threads & Concurrency
- Application Debugging
- Programming for Real Time

By the End of 3 days you would:

- Know **“What”** is Open Source and **“How it benefits”** the Industry
- Be able to **“Make the choices for Embedded Linux”**
- Be equipped to **“Setup”** an ARM-based Platform
- Understand the **“Linux Boot Process & Role of a Bootloader”**
- Be able to **“Build your own toolchain for ARM”** platforms
- Be able to **“Make your own root file-systems for ARM-based Embedded Linux”**
- Be able to **“Install standard applications for Embedded Linux”**

- Be able to “**Configure & Compile your own Linux Kernel for Linux on ARM**”
- Be able to “**Write a basic char driver**”
- **Write your own applications for Embedded Linux on ARM**

Workshop Pre-requisites:

- Good C & Programming Skills
- Basic Linux Administration
 - Basic Scripting & Linux Commands usage
 - Familiarity with tools like gcc, gdb, make

Other Weekend Trainings: We also conduct openhouse Weekend **Linux Device Drivers** workshop for working professionals. Click <http://www.emertxe.com/content/view/64/120/> for details

For any further queries, email to trainings@emertxe.com

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