

INTUITIVE EMBEDDED TECH

Interactive Tech Education

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Embedded Linux Porting and Board Bring-Up

Total Duration for Complete Course:-

Approx. 16 - 20 Hours (Only On SATURDAY and SUNDAY)

Price: 5k without kit

NOTE: Hands-On will be done on Beagle-Bone Black (BBB)

Pre-Requisite: 1) Understanding of ARM Architecture is Must.

2) Understanding of OS Concepts is Must.

3) Familiarity with Linux is needed.

Course Intro:

“Embedded Linux Porting and Board Bring-Up” is an exclusive practical training for building the Embedded Linux System from scratch including Bootloader, kernel, drivers and Root file System.

The aim of this short crash course is to provide a basic overview of embedded GNU/Linux. What are the components needed to build an embedded GNU/Linux system, and where to get them from and how to configure/build/install them? Where to get help? What about licenses? Etc.

Once understand the basic student can able to work on any custom board provide during job.

Why Learn:

With the evolution of embedded systems, porting has become extremely important. Whenever you have new hardware at hand, the first and the most critical thing to be done is porting. Porting means making something work on an environment it is not designed for. Embedded Linux porting means making Linux work on an embedded platform, for which it was not designed. Porting involves Linux kernel porting, first stage bootloader porting, second stage bootloader porting and, finally the applications porting.

Usually, porting doesn't involve as much of coding as in development but it requires vast understanding of Linux and System architecture.

Another term for porting is BSP (Board Support Package) and BSP Development is one of the highest paid and most demanding job in embedded domain.

Course Outline

1. Introduction

1. What is GNU/Linux?
2. Licensing
3. Standards
4. Working with free software
5. The UNIX Philosophy

2. Stuff needed (part 1)

1. Toolchain Components
2. nfs server
3. tftp server

3. Evaluation board

1. What is the Beagle bone black?
2. Booting sequence.
3. Booting the Beagle
4. Partition/Format SD card
5. Configure serial console
6. Populate partitions with given boot-loader, kernel, rootfs
7. Board booting Linux
8. Get familiar with BBB.

4. Stuff needed (part 2)

1. U-boot
 1. What is U-boot?
 2. What does it do?
 3. Fancy Stuff
 4. Get/configure/build install
2. Tool-Chain
 1. Toolchain Components
 2. Building a cross-compiling tool chain.
 3. Toolchain Setup Environment
3. Linux kernel
 1. What is UImage?
 2. Get/configure/build install kernel.
 3. Kernel modules
4. Rootfs
 1. What is a Rootfs?
 2. Building Rootfs.

5. Embedded Linux Porting

1. Downloading pre-compiled Linux kernel images on Target board.
2. Using SD-Card for rootfs.
3. Configuring NFS and using rootfs over NFS.
4. Configuring TFTP and downloading kernel image over TFTP.

6. Kernel Modules

1. Hello Kernel, module-init-tools, Kconfig, Kbuild
2. out of tree, in tree

THANK YOU