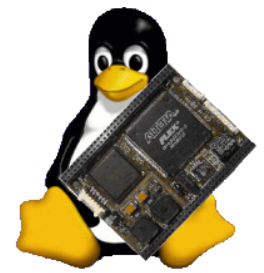


# Embedded Linux Training Program

The course is designed for those who want to develop Linux based Embedded Systems. Embedded System Technology Training enables a student, a technologist or a hobbyist to develop microcontroller based systems. The need of time is that engineer should equip with Embedded Technologies. This course of Embedded Linux is composed around ARM9 Microcontroller and Embedded Linux. This Course covers complete details about Linux kernel. Training will be given on ARM9 Development Board. It covers complete description of Embedded Linux, Programming, and Accessing of IO device. Various interfacing techniques like I2C, SPI, ADC, DAC, and USB are also discussed. So, utilize your talent with technology of present and technology of the future.



## Embedded linux at glance

Embedded Linux is the use of a Linux operating system in embedded computer systems such as mobile phones, personal digital assistants, media players and other consumer electronics devices, networking equipment, machine control, industrial automation, navigation equipment and medical instruments. According to survey conducted by Venture Development Corporation, Linux was used by 18% of embedded engineers.

Source: *Wikipedia*

## Embedded linux application



Mobile Phone



Portable Media Players



Robots



Network Device



Audio / Video Devices

## Features of embedded linux training

- ▲ Course starts with basic linux information.
- ▲ Practical oriented approach.
- ▲ Practice on professional ARM development board.
- ▲ Open source development tools are used.
- ▲ Linux kernel 2.6.x.

For more please visit <http://www.imbuent.com/specialfeature.html>

**EmbeddedLinux**  
OS on the chip

## Opportunities in embedded linux

Embedded linux is has important role in embedded system technology. It is a de facto standard in embedded operating systems. There is a growing demand of linux os in embedded systems. Lot of products is going to be designed on embedded linux platform. Linux the primary platform for new embedded development across a variety of devices. Learning of embedded linux will open doors in the world of development of embedded devices on linux platform. Embedded linux is used in many domains like medical domain, consumer electronics, defense and avionics, networking and telecommunication etc. Companies like windriver, montavista, timesys, denx etc provide embedded linux and commercial support. Many companies like Eurotech, Commell, qualcom etc are using embedded linux. Almost all silicon vendor like Freescale, Atmel, Renesas, Microchip, ARM are giving constant support of linux for their processor and give free linux toolchain and linux drivers for their development board. Linux development toolchain is also freely available. There is no doubt that embedded linux open new doors for those who want to make a career in embedded system field and for the companies who want to develop high quality product at the reasonable price.

## Course description

### 1. Linux Basics

- Introduction to Linux
- Linux basic commands
- Kernel classification (Monolith kernel and Microkernel)
- Kernel configuration and compilation
- GPL legal issues

### 2. Shell Programming

- Shell commands
- Shell variable
- Flow control
- Function
- IO
- Scripting

### 3. Linux Boots up

- Kernel Initialization
- System Initialization

### 4. Embedded Linux Development Environment

- Cross platform development
- Host system requirements

### 5. Development Tools

- GCC Compiler
- GDB Debugger
- GDB Server
- Trace and profiling tools
- Binary utilities

### 6. Debugging Techniques

- Kernel Debugging
- Application Debugging

### 7. Linux kernel overview

- Linux features
- Kernel code
- POSIX

- Kernel subsystems
- Kernel User interface

### 8. Linux kernel object and programming

- Process and Threads
- Semaphore
- Inter process communication
  - Socket
  - Pipe
- Signals
- Time

### 9. Linux file system

- Virtual file system
- Network File System
- Ramdisk
- Journaling flash file system
- PROC file system

### 10. Accessing Peripheral in Linux

- UART
- Memory
- GPIO
- USB
- Ethernet
- Memory IO

### 11. Networking

- TFTP
- FTP
- Web server

### 12. Linux as Real time kernel

- Real time concept
- Hard real time and soft real time
- Kernel preemption
- Linux real time kernel patch

## Important

### 1. CD Contents

- ▲ Example Programs
- ▲ Embedded Linux Presentations
- ▲ Embedded Linux Development Tools
- ▲ Embedded Linux Articles
- ▲ IMBUENT Book of Embedded Linux
- ▲ IMBUENT Data Sheets

### 2. Course Duration

60 Hours

### 3. Project

During training a trainee will work on a project. Expense of project is beard by trainee

### 4. Development board used in training program

ARM9 development board with embedded linux will be used in training program.

### Important Links

#### Sample lectures

<http://www.imbuent.com/sampleslides.html>

#### Registration procedure

<http://www.imbuent.com/traininglinux.html>

#### Development Boards

<http://www.imbuent.com/products.html>

#### Imbuent Embedded System Events

<http://www.imbuent.com/events.html>

## Prerequisite

Knowledge of Basic Electronics, General Programming Skills, and Knowledge of any microcontroller is added advantageous



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