

# INFOSOFT IT SOLUTIONS

**Training | Projects | Placements**

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## **Embedded System**

### **Embedded Basics**

- What is an Embedded Systems?
- What are the Embedded Applications and Functions?
- What are the Embedded Design constraints?
- What the components of Embedded Hardware and Software?
- What the Building block of embedded project?
- What are the Hardware and Software Embedded Tools?
- What is Embedded C?
- What is Microcontroller & Microprocessors?
- What is RTS?
- What is RTOS?
- Sample Embedded Hardware Schematic Creation
- Sample Embedded C program

### **Specific Processor Architectures (or) ControllersModule 3: 8051/PIC /Beagle Bone Black8/16/32 Bit Controller**

- Introduction to ( 8/16/32) 8051 and Pic Micro Controller
- Microchip's PIC® microcontrollers and its MCU family
- Introduction to Embedded C
- Working with PIC 16F877A using Embedded C

- MPLAB IDE with CCS and Hi-tech compiler suit
- Serial programming and In circuit system programming(ICSP) with 16F877A
- Working with system peripherals I/O, timers, PWM , ADC, CCP, UART,RTC and WDT of PIC 18F877A/Debugging with PICKIT 2
- Interfacing LEDs, LCD, Matrix keypad, Multiplexed 7 segment display, Relay and Motor

### **Embedded Application Development**

- Working with Communication protocols SPI, I2C and CAN with PIC16F877A
- Project development using PIC 16F877A/At89C51

### **Linux kernel**

- Introduction to the Linux kernel
- Linux kernel sources
- New features in Linux 2.6 (since 2.6.10)
- Linux kernel command usage
- Files and process subsystem in linux kernel
- Memory management in linux kernel
- Inter Process Communication
- Interrupts
- Time and Timers
- Creating Libraries
- Kernel Synchronization
- Kernel Parameters
- Kernel Configuration and Compilation
- Conceptual understanding of Device Drivers

## **Advance C Programming**

- Storage class
- Scope and Lifetime of a variable
- Arrays
- Strings
- Pointers
- Functions
- Structure and Union
- Recursive Functions
- Pointer
- Pointers and Arrays
- Pointers and Functions
- Pointers and Strings
- Function Pointers
- Command line arguments
- File Operations
- Complicated Declarations
- Linked List
- Sorting and Searching
- Stack and Queue

## **Embedded Linux system development**

- Introduction to embedded Linux
- Basic requirements for Embedded Linux Product Development Cross-compiling toolchains
- Building Development Environment
- Target & Host Setup
- Setting Up Networking Services

- Bootloader commands and usage
- Loading RootFS in Platform by various techniques
- Building Your Own Embedded Linux Distribution
- Kernel Configuration and Compilation
- Building embedded Linux systems with Buildroot
- Booting Linux
- Porting embedded linux (ubuntu version) to Beagle Bone Black Processor

### **Device drivers**

- Introduction to Device driver
- Kernel Module Programming Basics
- Kernel Debugging Techniques
- Accessing Hardware Mechanisms
- The proc file system programming
- Communicating with Hardware
- Hardware and Interrupt Handling
- Tasklets and Bottom halves
- Kernel Threads
- Sleep and wakeup (wait queues)

### **Buffer allocation Module 10: Memory Mapping and DMA**

- Memory Management
- Concurrency and Race Conditions
- Time, Delays and Deferred Work
- The Linux Device Model
- Character Device Drivers
- Block Device Drivers
- Serial device driver

## **Rtos**

- Introduction to Real Time systems
- What is Hard and Soft Real time systems
- Basic of RTS
- Training on RTOS Concepts (task, semaphore, Multitasking)
- Introduction to RTOS Tools (utron, Ucos, Nucleous, EFOS, Android, WINCE)
- Sample exercise on RTOS programming
- Embedded Latest technologies, Communication systems
- Training on GPS, GPRS / 3G, Tracking devices
- Training on Automotive Infotainment
- Introduction on Wi-Fi, Wi-Fi Direct, DLNA, Mira cast,
- HDMI, Mirror link technologies
- Introduction on Embedded Android Devices, Smartphone architectures