0,Linux Device Driver

Detail Syllabus

Duration 100 hours

Linux Kernel
- Open source and Kernel source tree
- Kernel Architecture
- Kernel compilation
- Important of Make files for kernel compilation
- User mode and kernel mode
- Writing Modules and Kernel module compilation
- Kernel Segmentation

Programming development tools:
- Make, cscope, strace

The Boot Process
- BIOS Level
- Master Boot Record (MBR)
- Boot Loader
- Run Level, and run level program
- Setup, startup_32 function
- The start kernel() function

Introduction:
- Role of device Driver
- Classes of Device and Modules

Module Basics-Writing the first module
- Kernel module and applications
- Module Parameters
- Kernel Symbol tables
- Export Symbols from modules
- Modules parts
- Tasklets
- Understanding kernel threads

Operating system Services
- Atomic functions
- Semaphore
- Bit operations
- Time interval and jiffies
- The proc file system
- Usage counts

Kernel Debugging
- Kernel Debugging with kdb
- Course Outline

- Kernel Debugging with kgdb

Implementing System Calls
- System Calls Defined
- System Calls and APIs
- System Call Table
- Unistd.h and entry.S files
- Implementing a new system call

I/O Ports & Interrupts
- Use of I/O Ports and IRQs
- Reading & Writing I/O Ports
- Interrupt handling
- Registering and unregistering interrupt handler
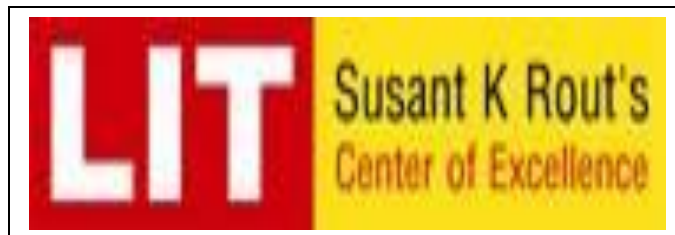- I/O Memory Mapping

Character Device Driver
- Types of device files
- Major & Minor numbers
- Register & Unregistered character device driver
- Implementing character device driver methods
- Device operation & file structure

Block Device Driver
- Mount and umount file system
- Request Queue
- Registering the Driver
- Handling request
- Mount and umount
- Removable devices

USB Driver
- Device enumeration & configuration
- USB Mouse descriptor
- Data Transfer