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EMBEDDED OPERATING SYSTEM AND INTERNET OF THINGS

Chapter 1 OS concept, real time task, real time system, real time system types, RTOS, IoT introduction, Characteristics, functional blocks, communication.	6hrs
Chapter 2 Processor basics, integrated processors, SOC, ARM processor, Hardware platform, ARM architecture, ARM programming. Beaglebone Architecture, interfacing, programming, IoT level specification, Functional view, operational view, device and component interaction.	10hrs
Chapter 3 LSB,OSDL,OSDL mobile linux initiative, Linux background, Linux kernel construction, toll chain, tools overview, Kernel build system, kernel initialization, BIOS vs Boot Loader, U-boot, POST& BOOT Process, Kernel initialization,, storage consideration, memory management ,BusyBox, execution context, cross development environment, Embedded Linux distribution, kernel command line processing, subsystem initialization, Four pillars of IoT, M2M, internet of devices, RFID: internet of objects, WSN: internet of transducers, SCADA: internet of controllers, basi building blocks of IoT device, Exemplary device: Raspberry Pi, interfacing , programming with Python.	12hrs
Chapter 4 Device driver basics, PCI device drivers, File system, MTD subsystem, Embedded development environment, Protocol standardization for IoT, M2M & WSN protocol, SCADA & RFID protocol, BACNet protocol, Modbus, KNX, Zigbee Architecture.	8hrs
Chapter 5 Development Tools, SSH, kernel debugging techniques, debugging Embedded Linux application, Stepper motor controller interfacing using BBB Embedded Sytem, Embedded graphics & multimedia tools and application. Web of Things versus Internet of Things, Two Pillars of the Web, Architecture Standardization for WoT, Platform Middleware for WoT, Unified Multitier WoT Architecture, WoT Portals and Business Intelligence.	8hrs
Chapter 6 Porting Linux, Linux and Real Time, Embedded Android: Bootloader, Kernel, Init, Zygote, System Server, Activity Manager, Launcher (Home), Embedded Android Applications: Calculator, Twitter Search App, Slide Show App.	6hrs