



Embedded System & IOT syllabus

1. C Programming and Data structure.

1. C and Data Structures
2. Introduction of C Programming.
3. Data Types.
4. Types Operators and Expressions
5. The decision Control Structure.
6. The loop Control Structure.
7. The case Control Structure.
8. Arrays String Function and pointer
9. Dynamic memory allocation.
10. Structures and union
11. Operation On Bits
12. File Input and Output
13. Linked list
14. The Stack
15. Queues
16. Sorting & Searching

2. 8051 Microcontroller using Embedded C.

1. Introduction to Computing
2. The 8051 Microcontrollers
3. 8051 Assembly Language Programming
4. Programming Embedded System In C
5. Reading Switches and Blinking LED
6. JUMP, LOOP, AND Call Instructions
7. I/O Port Programming
8. 8051 Addressing Modes
9. Arithmetic & Logic Instructions and Programs
10. 8051 Programming in Embedded C
11. 8051 Hardware Connection and Hex File
12. 8051 Timer/Counter Programming in Embedded C
13. 8051 Serial Port Programming in Embedded C
14. Interrupts Programming in Assembly Embedded C
15. Interfacing (LCD, Keyboard, ADC, DAC, Sensor Interfacing, External Memory and DS1306 RTC)
16. Motor Control : Relay, PWM, DC, Stepper and Servo Motors

ARM CORTEX M-3 using Embedded C.

3. ARM9 Processors Using Embedded C.

- a. ARM9 CPU Core.



1. Outline
 2. The Pipeline
 3. Registers
 4. Current Program Status Register
 5. Exception Modes
 6. ARM 9 Instruction Set
 7. Branching
 8. Data Processing Instructions
 9. Copying Registers
 10. Copying Multiple Registers
 11. Swap Instruction
 12. Modifying The Status Registers
 13. Software Interrupt
 14. MAC Unit
 15. THUMB Instruction Set
- b. Software Development.**
1. Interworking ARM/THUMB Code
 2. STUDIO Libraries
 3. Accessing Peripherals
 4. Interrupt Service Routines
 5. Exception Source Constants Table C Function Prototype
 6. Software Interrupt
 7. Locating Code in RAM
 8. Operating System Support
 9. Fixing Objects at Absolute Locations
 10. Inline Assembler
 11. Hardware Debugging Tools
 12. Introduction to The LPC1768 Introduction
- c. System Peripherals.**
1. Outline
 2. Bus Structure
 3. Memory Map
 4. Register Programming
 5. Memory Accelerator Module
 6. Example MAM Configuration
 7. FLASH Memory Programming
 8. Memory Map Control
 9. Boot loader
 10. Utility
 11. In-Application Programming
 12. External Bus Interface
 13. External Memory Interface
 14. Using The External Bus Interface
 15. Booting From ROM
 16. Phase Locked Loop
 17. VLSI Peripheral Bus Divider



18. Example Code: PLL and VPB Configuration
19. Power Control
20. LPC1768 Interrupt System
21. Pin Connect Block
22. External Interrupt Pins
23. Interrupt Structure
24. FIQ Interrupt
25. Leaving an FIQ Interrupt
26. Example Program: FIQ Interrupt
27. Vectored IRQ
28. Leaving an IRQ Interrupt
29. Leaving an IRQ Interrupt
30. Example Program: IRQ Interrupt Non-Vectored Interrupts
31. Leaving A Non-Vectored IRQ Interrupt
32. Example Program: Non-Vectored Interrupt
33. Nested Interrupt

d. User Peripherals.

1. Outline
2. Introduction to the LPC1768.

e. General Purpose I/O.

1. General Purpose Timers
2. PWM Modulator
3. Real Time Clock
4. Watchdog
5. UART
6. I2C Interface, SPI Interface
7. Analog to Digital Converter
8. Digital to Analog Converter
9. CAN Controller
10. ISO 7 Layer Model
11. CAN Node Design
12. CAN Message Objects
13. CAN Bus Arbitration
14. Bit Timing
15. CAN Message Transmission
16. CAN Error Containment
17. CAN Message Reception
18. Acceptance Filtering
19. Configuring The Acceptance Filter

IoT using Arduino Syllabus

4. Python Programming/Scripting.



1. Introduction to Python.
2. Python Data Types.
3. Python Program Flow and control.
4. Python string, List and Dictionary Manipulations.
5. Python Functions, Modules and Packages.
6. Python File Operations.
7. Python Exception Handling.
8. Python Regular Expression.
9. Python Class and Object Oriented Programming.
10. Python Network Programming.

5. IoT Implementation using ARDUINO.

1. Introduction of Sensors and Actuators.
2. Introduction of Arduino Mega2560.
3. Reading Switches and Blinking LED.
4. Analog/Digital Port Programming.
5. 4 bit-LCD Interfacing with Arduino Mega2560.
6. Keypad Interfacing with Arduino Mega2560.
7. Stepper Motor Interfacing with Arduino Mega2560.
8. Serial Port Programming in Embedded C.
9. Temperature Sensor (LM35) Interfacing with Arduino Mega2560.
10. Humidity Sensor (DHT11) Interfacing with Arduino Mega2560.
11. Accelerometer Sensor Interfacing with Arduino Mega2560.
12. PIR Sensor Interfacing with Arduino Mega2560.
13. Wi-Fi (ESP8266) Interfacing with Arduino Mega2560.
14. Controlling Sensor data using Cloud.(things speak)

6. Linux

1. Introduction to the Linux Operating System
2. Linux Distributions & Installation
3. Linux Directories.
4. Linux File.
5. Linux File Hierarchy
6. Linux Filters
7. Linux Users.
8. Linux File Security.
9. Linux shell commands.
10. Process Management.

*** FINAL PROJECT AFTER COMPLETION OF ALL ABOVE MODULES**

Training Programe Methodology

1. Theory and practical class
2. Assessment after each module
3. Software
4. Project
5. Interview preparation



COMPANIES RECRUITING EMBEDDED STUDENTS

1. Robert Bosch
2. Hawaii
3. Versa Byte Data system Pvt. Ltd
4. ISRO
5. SUNLUX TECHNOLOGIES
6. Sasken
7. Honey Well
8. Jasmin Infotech pvt ltd
9. HCL
10. KPIT
11. ITC
12. INTEL
13. Nokia Seimens
14. Torry Horris Business Solution
15. Wipro
16. Global Edge
17. TCS
18. Infosys
19. Cisco
20. Automatic Robotic Pvt Ltd.

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