LEARNING 360° ACADEMY

Embedded System (Job Oriented Training)

(2 Months)

Note: Anyone without a programming background can learn this course.

No cost repeat session | Life Long Doubt Clarification | 100% Practical Training

Ideal for students looking for jobs in core Electronics and IOT.

Topics	Subtopics	Assignments / Projects
Embedded C Programming		
C Programming	Introduction to C,	Program Debugging
	Software Description, Compilation Stages, C Program Structure,	Mini Project based on C Programming
	C I/O, C Format Specifiers, C Token, Identifiers, Keyword, Data Type	
Arrays, Strings, Storage	Arrays, Strings, Storage Classes, C Constant	
	C Operators, C variables, Storage Classes.	
Conditional Statement	Pre-Processor, Type Casting. Conditional Branching Control statements.	
	Conditional looping control statements	
	C programming Assignment	
Error Handling	Error Handling Function	
	Functions arguments,Data Structure, Variable Scope.	
Pointers, Memory	Pointers, Memory management, GNU GCC compiler, Make files	
AVR Microcontroller		
Introduction to AVR architecture	, AVR studio IDE, AVRfamily categories	Bluetooth Based Home Automation System using AVR
	and importance, Atmega16 pin details and specifications, Registerson	
	AVR, Different ports and DDR register.	
External hardware interfacing with	LED interfacing, LED To and FROmethod,	

ATmega16:		
	Traffic light controller, Seven segment display	
	interfacing, LCD interfacing,relay interfacing.	
	Timers/counters, Interrupts, Interrupt registers and Programming.	
Interfacing	4*4 Keypad interfacing, Motor interfacing (DC, Stepper, servo)	
	ADC interfacing, Serial communication using USART.	
	Wireless protocols: GSM, GPS, RFID, Bluetooth	
Communication	Serial communication protocols: SPI, I2C	
	Serial communication protocol: Inter Integrated Circuit (I2C),	
	I2C: Initialization procedure, Data transmission and reception.	

SPI (Serial Peripheral Interface), Need of SPI,
SPI
I2C Vs SPI.

	Introduction of SPI, Initialization Procedure.	
CAN Protocol	CAN (Controller Area Network): Need of CAN, Introduction of CAN.	
	Frame format, Modes of	
PIC18F4550 Microcontroller		
Architecture	Architecture overview of PIC18F4550, Registers of PIC18F4550,	MINI PROJECT: Temperature Sensing
	MPLAB IDE & C18compiler. Different ports and TRIS registers.	Program Debugging
	External hardware interfacing: LED interfacing, Traffic light controller,	Mini Project3(Based on PIC18f4550)
	Sevensegment display interfacing, LCD interfacing, 4*4 keypad	
	Timer/Counters, Interrupts, Serial communication using EUSART.	
Interfacing	Relay interfacing, Motor interfacing (DC, Stepper, Servo), ADC	
Protocols	Serial communication protocols: SPI, I2C.	

	Wireless protocol: RFID, Bluetooth.	
	Wireless protocol: GSM, GPS	
ARM7 Microcontroller		
Introduction of ARM as RISC machine	Overview of ARM family	Mini Project : Digital Clock using inbuilt RTC
	Features of ARMLPC2148, Processor operating modes, Thumb	Task1 : Program Debugging
	architecture-16 bit, 3 stages ARM pipeline.	Task2 : Mock Interview
	Load/store architecture, ARM operating modes, GPIO Registers and	Mini Project4(Based on LPC2148)
	External hardware interfacing: LED interfacing,	
	Timers and counters, PLL configuration, Power control, VPB.	
Interrupt	Vectored interrupted controller (VIC), External interrupt and	
	Analog to Digital converter (ADC), RTC programming.	
	Serial communication using UART, UART Programming	
Protocols	I2C Protocol interfacing with LPC2148	
	SPI protocol interfacing with LPC2148	
	Implementation of CAN protocol with LPC2148	
Interfacing	Wireless protocol: RFID, Xbee,	
	Wireless protocol: GPS, GSM, Bluetooth.	

Python Programming		
Introduction to Python	Difference between High level and low level language	**Python as a Calculator.**
	Environmental Setup, IDE, 3 Types of Windows.	
	Basic Input Output.	
	Variables, Data Types	
	Typecast and identify the types of data.	
Control Flow Structure	If Else Statement: While Loop: For Loop	**Rock, Paper and Scissor Game in Python**

	Jumping Statements: Break, Continue	
	Random Library: Random Functions	
Functions	User Defined Functions	**Password Generator for Web Application**
	Built In Functions	
	Arbitrary Functions	
Data Structures	List, Tuple	
	Dictionary Set & String	
Modules& Package	How to create packages	
	Usage of Module	
Object Oriented Programming	Concepts of class, object and instances	**Bike Rental System**
	Constructor, class attributes	
	Inheritance	
	Encapsulation	
	Polymorphism	
File Handling	Where we using File handling concept nowadays	
	Method	
	Reading the data from File	
	Writing the content in it	
	Appending File	
Errors and Exception Handling	What are Errors?	API Integration Assignment:
	Different types of errors	**Sending SMS using Twilio API**
	What is Exception Handling? Try, Except and Finally	
Database connectivity using python	What is Database	
	Python Database Interaction	
	SQL Database connection using python	
	Creating and searching tables	
	Reading and storing config information on database	

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	Programming using database connections	
Python Multithreading	Understanding threads	
	Synchronizing the threads Programming using multithreading	
Networking-Client and server program	What is Network?	**Chat Server Application**
	Why do we use networks in Python?	

	Client and Server Program	
Standard Template Library	What is Standard Template Library	
	Programs using Standard Library	
Python GUI Introduction	What is GUI?	**GUI with Data Connectivity**
	Creating Textbox, Listbox, Option Button, Menu, Canvas.	
	Writing python program for GUI applications	
	Converting py files to EXE files.	
Project Submission		

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