
COURSE CURRICULUM

(EMBEDDED C
PROGRAMMING,
EMBEDDED SYSTEM
DESIGN, INTERNET OF
THINGS, PCB DESIGN)

PCB DESIGN

- + Introduction to PCB Design and Terminologies and Installation of Orcad Trail version
- + Introduction to Schematic Capture
- + Introduction to Allegro and Footprint Creation
- + Importing Schematics in allegro ,Placement and route
- + Gerber Creation, BOM, PDF
- + How to Design a 8051 Microcontroller Board
- + Library Creation
- + Schematics Design
- + Footprint Creation
- + Design rules check-Import and Placement
- + Layout
- + Layout Design , Gerber Creation, Recap, schematic design consideration,Layout Design Consideration

EMBEDDED SYSTEM DESIGN & IOT

- + Introduction to Embedded System Design
- + Choosing the Right Processor and Embedded Product Life cycle
- + Challenges and Design Issues in Embedded Systems,
- + Introduction to Real-Time Concepts,
- + IoT Trends, IoT Architecture, IoT Applications, IoT Standards, and Protocols,

8051-Week 2

- + 8051 Architecture-Keil
- + Switch ,Relay,
- + UART,SPI
- + LCD,IIC
- + 8051 Mini Project-Bluetooth based Home automation

ARM7 -Week 3

- + ARM Architecture-Keil, LED Blinking
- + Switch ,Relay,
- + UART,SPI
- + LCD,IIC
- + ARM Mini Project -IoT based weather monitoirng system

CORTEX M4-Week 4

- + CORTEXM4 LPC4088 Architecture-Keil, LED Blinking
- + Switch ,Relay,
- + UART,SPI
- + LCD,IIC

WARRIORS WAY COACHING PROGRAM

- ✚ Cortex -M4 - Temperature Monitoring using Zigbee and LORA
PIC -Week 5
- ✚ Introduction to PIC Architecture
- ✚ MPLABIDE and LED Blinking
- ✚ Switch ,Relay, PWM
- ✚ UART,SPI
- ✚ LCD,IIC
- NodeMCU/ESP8266 -Week 6
- ✚ Introduction to NODE MCU
- ✚ Led,switch,relay,UART
- ✚ Iot Temperature Data Logging
- ✚ Build Your Home Automation with ESP8266 and Control
Devices from Anywhere in the World
- ✚ Conclusion and Wrap up-Graduation Day

INTERNET OF THINGS

IoT Introduction and Architectures

- ✚ Introduction to IoT
- ✚ IoT Communication Protocols
- ✚ Introduction to ESP32 and NodeMCU
- ✚ IoT Clouds, Analytics & Data Science
- ✚ Sensors for IoT

IoT using Thingspeak

- ✚ Sending Data to Thingspeak -Arduino+Humidity+Air quality(Weather monitoring system)
- ✚ How to Analyze IoT Data in ThingSpeak
- ✚ Deploying a Machine learning Model on the Cloud
- ✚ Thingspeak for IoT in agriculture
- ✚ Smart Humidity Sensor – ThingSpeak, MATLAB, and IFTTT

IoT with Microsoft Azure

- ✚ Introduction to IoT with Microsoft Azure
- ✚ Implementing IoT with Azure
- ✚ Edge Computing and Analytics
- ✚ Cognitive services, Computer vision API
- ✚ Weather monitoring station using Microsoft Azure and Arduino

IoT Projects and Case Study

- ✚ Home automation using Google Assistant
- ✚ Industrial IoT using Zigbee and WIFI(Windmill case study)
- ✚ Recording sensor data to google sheet using IFTTT with Arduino and sending alerts
- ✚ Real time Video surveillance esp32cam and Blynk App

WARRIORS WAY COACHING PROGRAM

- ✚ Predictive Maintenance of a Duct Fan Using Nodemcu, ThingSpeak and MATLAB






IoT with AWS IoT

- ✚ Introduction to AWS IoT, Setting up Free tier AWS, AWS CLI, Policies, Security Credentials, and Testing
- ✚ Raspberry PI3 with AWS IOT SDK
- ✚ SNS Push Notifications, AWS IoT Analytics
- ✚ AWS Lambda Functions for IoT
- ✚ HTTPs Arduino sketch to AWS IoT Core for the ESP8266 and ESP32
- ✚ Using Mongoose OS on embedded devices for AWS IoT
- ✚ Storing data into the Dynamo Database from the AWS IoT control panel
- ✚ AWS Quicksight for data analytics and visualizations
- ✚ AWS Device Shadows and multiple Pub/Sub's
- ✚ Weather monitoring station using AWS IOT

EMBEDDED C PROGRAMMING

- ✚ DAY – 1 Introduction, IDE Installation and Setting the Tone for 30 Days Challenge
- ✚ DAY – 2 Data types and variables, Your first C Program
- ✚ DAY – 3 Address Variables and Storage Classes
- ✚ DAY – 4 How to Write functions
- ✚ DAY – 5 Understanding Microcontroller programming
- ✚ DAY – 6 Build Process and Analyzing Embedded C Code
- ✚ DAY – 7 Floating Point data and Scanf
- ✚ DAY – 8 Pointers and stdint.h
- ✚ DAY – 9 Operators
- ✚ DAY – 10 Decision Making Loops
- ✚ DAY – 11 Bitwise Operators
- ✚ DAY – 12 Blinking LED
- ✚ DAY – 13 Bitwise Shift Operators
- ✚ DAY – 14 Looping
- ✚ DAY – 15 Type Qualifier 'Const'
- ✚ DAY – 16 Pinread and Optimization
- ✚ DAY – 17 'volatile' type Qualifier
- ✚ DAY – 18 Structures and Bit field
- ✚ DAY – 19 Usage of Bitfiled in embedded code
- ✚ DAY – 20 Keypad Interfacing
- ✚ DAY – 21 Arrays
- ✚ DAY – 22 Strings
- ✚ DAY – 23 Pre-processor Directives in C
- ✚ DAY – 24 LCD Programming in C
- ✚ DAY – 25 UART Programming in C

WARRIORS WAY COACHING PROGRAM

-  DAY – 26 SPI TFT Display in C
-  DAY – 27 IIC Memory Programming in C
-  DAY – 28 SPI ADC Programming in C
-  DAY – 29 Interview Question in C
-  DAY – 30 Graduation Day and Wrapp up