

Embedded System Design & IoT Programming on ARM Cortex M4

- Day 1 Introduction to Embedded System Design
- Day 2 Choosing the Right Processor
- Day 3 Introduction to Cortex M4 Architecture
- Day 4 What is IDE & Installation
- Day 5 How to Create a Simple Project
- Day 6 Real time Debugging in STM32F411
- Day 7 Blinking LED and Switch
- Day 8 Memory Map and Bus Interface of Cortex Mx Processor
- Day 9 Understanding Stack Memory
- Day 10 Exception Model of ARM Cortex Mx Processor
- Day 11 Understanding Startup File
- Day 12 Understanding Linker Scripts
- Day 13 Fault Handling and Analysis
- Day 14 UART -PART 1
- Day 15 UART -PART 2
- Day 16 Interrupt Programming
- Day 17 System Tick Timer
- Day 18 Implementation of Task Scheduler
- Day 19 ADC
- Day 20 LCD
- Day 21 PWM
- Day 22 I2C -PART 1
- Day 23 I2C -PART 2
- Day 24 SPI -PART 1
- Day 25 SPI -PART 2
- Day 26 RTC
- Day 27 DMA Driver Development
- Day 28 Bluetooth Based Home Automation
- Day 29 Weather Monitoring using STM32 and Google cloud
- Day 30 Graduation Day

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
- 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

Embedded System Design & IoT

- Day 1 - Introduction to Embedded System Design
- Day 2 - Choosing the Right Processor and Embedded Product Life cycle
- Day 3 - Challenges and Design Issues in Embedded Systems,

- Day 4 - Introduction to Real-Time Concepts,
- Day 5 - IoT Trends, IoT Architecture, IoT Applications, IoT Standards, and Protocols,

- Week 2 - 8051

- Day 6 - 8051 Architecture-Keil
- Day 7 - Switch ,Relay,
- Day 8 - UART,SPI
- Day 9 - LCD,IIC
- Day 10 - 8051 Mini Project-Bluetooth based Home automation

- Week 3-ARM7

- Day 11-ARM Architecture-Keil, LED Blinking
- Day 12- Switch ,Relay,
- Day 13- UART,SPI
- Day 14- LCD,IIC
- Day 15- ARM Mini Project -IoT based weather monitoring system

- Week 4- CORTEX M4

- DAY 16- CORTEXM4 LPC4088 Architecture-Keil, LED Blinking
- DAY 17- Switch ,Relay,
- DAY 18- UART,SPI
- DAY 19- LCD,IIC
- DAY 20- Cortex -M4 - Temperature Monitoring using Zigbee and LORA

- Week 5 - PIC

- DAY 21- Introduction to PIC Architecture
- DAY 22- MPLABIDE and LED Blinking
- DAY 23- Switch ,Relay, PWM
- DAY 24- UART,SPI
- DAY 25- LCD,IIC
- Week 6- NodeMCU/ESP8266
- DAY 26- Introduction to NODE MCU
- DAY 27- Led,switch,relay,UART
- DAY 28- IoT Temperature Data Logging
- DAY 29- Build Your Home Automation with ESP8266 and Control Devices from Anywhere in the World
- DAY 30- Conclusion and Wrap up-Graduation Day

IoT Introduction and Architectures

- DAY-1 Introduction to IoT
- DAY-2 IoT Communication Protocols
- DAY-3 Introduction to ESP32 and NodeMCU
- DAY-4 IoT Clouds, Analytics & Data Science
- DAY-5 Sensors for IoT
- IoT using Thingspeak
- DAY - 6 Sending Data to Thingspeak -Arduino+Humidity+Air quality(Weather monitoring system)
- DAY - 7 How to Analyze IoT Data in ThingSpeak
- DAY - 8 Deploying a Machine learning Model on the Cloud
- DAY - 9 Thingspeak for IoT in agriculture
- DAY - 10 Smart Humidity Sensor – ThingSpeak, MATLAB, and IFTTT
- IoT with Microsoft Azure
- DAY- 11 Introduction to IoT with Microsoft Azure
- DAY- 12 Implementing IoT with Azure
- DAY- 13 Edge Computing and Analytics
- DAY- 14 Cognitive services, Computer vision API
- DAY- 15 Weather monitoring station using Microsoft Azure and Arduino

- IoT Projects and Case Study
- Day-16 Home automation using Google Assistant
- Day-17 Industrial IoT using Zigbee and WIFI(Windmill case study)
- Day-18 Recording sensor data to google sheet using IFTTT with Arduino and sending alerts
- Day-19 Real time Video surveillance esp32cam and Blynk App
- Day-20 Predictive Maintenance of a Duct Fan Using Nodemcu, ThingSpeak and MATLAB
- IoT with AWS IoT
- Day 21 Introduction to AWS IoT, Setting up Free tier AWS, AWS CLI, Policies, Security Credentials, and Testing
- Day 22 Raspberry PI3 with AWS IOT SDK
- Day 23 SNS Push Notifications, AWS IoT Analytics
- Day 24 AWS Lambda Functions for IoT
- Day 25 HTTPs Arduino sketch to AWS IoT Core for the ESP8266 and ESP32
- Day 26 Using Mongoose OS on embedded devices for AWS IoT
- Day 27 Storing data into the Dynamo Database from the AWS IoT control panel
- Day 28 AWS Quicksight for data analytics and visualizations
- Day 29 AWS Device Shadows and multiple Pub/Sub's
- Day 30 Weather monitoring station using AWS IOT

PCB Design

- Day 1- Introduction to PCB Design and Terminologies and Installation of Orcad Trail version
- Day 2 -Introduction to Schematic Capture
- Day 3- Introduction to Allegro and Footprint Creation
- Day 4- Importing Schematics in allegro ,Placement and route
- Day 5- Gerber Creation, BOM, PDF
- Day 6- How to Design a 8051 Microcontroller Board
- Day 7- Library Creation
- Day 8- Schematics Design
- Day 9- Footprint Creation
- Day 10- Design rules check-Import and Placement
- Day 11- Layout
- Day 12- Layout Design , Gerber Creation, Recap, schematic design consideration, Layout Design Consideration

WARRIORSWAY Internship on FPGA (if 299 paid)

What will you Learn?

- Day 1 Introduction to FPGA

- Day 2 Introduction to VHDL , How to create a Project in Xilinx ISE .
- Day 3 Operators and Data Flow Modeling (VHDL)

- Day 4 Structural & Behavioral Modeling

- Day 5 Creating a Test Bench

- Day 6 How to Design a Spartan 6 FPGA Board
- Day 7 FPGA Programming for Blinking LED ,SWITCH, Relays and Buzzer

- Day 8 UART Programming on FPGA

- Day 9 LCD, SEVEN SEGMENT Programming on FPGA

- Day 10 ADC and DAC Programming on FPGA

- Day 11 Bluetooth and Relay Programming -Bluetooth Home Automation using FPGA

- Day 12 Internet of Things using FPGA -Part 1 (Interfacing with WIFI)

- Day 13 Internet of Things using FPGA -Part 2 (Sending Temperature data to Cloud)

- Day 14 Motor control using FPGA (PWM)

- Day 15 Embedded system Design using FPGA (C Based programming on FPGA)

- Day 16 Median Filter on Spartan 6 FPGA
- Day 17 Edge Detection on FPGA using C Language

- Day 18 IoT Programming on FPGA using C Language

- Day 19 Debugging with Chip scope PRO

- Day 20 Introduction to Python Programming on FPGA

- Day 21 Yolo object detection on FPGA

- Day 22 Real time edge detection using ZYNQ FPGA (pynq)
- Day 23 Real time Moving object detection using ZYNQ FPGA (pynq)
- Day 24 Discrete Wavelet Transform using Spartan 6 FPGA(C Language)
- Day 25 Image Segmentation using Spartan6 FPGA(Xilinx XPS)
- Day 26 Introduction to Vivado Design Suite
- Day 27 Implementing LED , UART Using – Vivado Design Suite
- Day 28 Machine Learning with Python in PYNQ
- Day 29 OpenCV for Image Processing & Video_processing (PYNQ with Python)-ZYNQ FPGA
- Day 30 Conclusion and Future of VLSI

WARRIORS WAY