VinTech

Embedded Academy

1.Embedded C

- Introduction to C
- Difference between Embedded c & Normal C
- Data types & its sizes, Variables & arrays
- Operators (Arithmetic, Boolean, Comparision, Shift & logical operations)
- Pointers & its types
- Structures and unions
- Macros & Macro functions
- Functions
- Compilation process
- Storage types
- Functions
- C memory layout
- Conditional compilation
- Reset & reset register bits using logical and shift operations

2. Assembly Language

- Introduction to Assembly level language
- Assembler
- Mnemonics
- Inline Assembly
- Example programs

3. Embedded System Basics

- Introduction to Embedded Systems
- What is Core
- What is Processor
- What is controller
- Difference between Core, Processor and Controller
- Types of Memories (RAM, ROM)
- Registers & its types
- Execution of instructions by processor
- Peripherals
- Bus and its types
- Processor architecture
- Little endian vs big endian
- Von Neuman vs Harward architecture
- CISC vs RISC

4. ARM-CortexM4

- Introduction to Arm processor
- Access levels of Arm processor & Example program
- Modes
- Print Hello World
- Reset sequence of processor
- T-bit
- Memory map
- Bus architecture
- Introduction to Interrupts
- System Exceptions

- Interrupts and example
- Task scheduling

5. SM32F4xx Driver Development

- Introduction to STM32F407 Microcontroller
- Peripherals of STM32
- STM32CubeIde (Debugging techniques)
- Memory map and bus Connection
- Driver implementation vs HAL
- Creating a new STM32 project
- What is Device Specific header file
- Introduction to GPIOS
- Registers of GPIOS
- Implementation of GPIO driver
- Test and verify working of GPIOS

6. SPI Driver

7.Uart Driver

8. I2C Driver

9. Interview questions and answers