CETPA INFOTECH PVT. LTD.

CURRICULUM OF ARM

INTRODUCTION TO PROCESSING DEVICES

- Introduction to Microcontrollers
- Introduction to Microprocessor
- Other Programmable devices
- Difference b/w various processing devices

BASICS OF COMPUTER ARCHITECTURE

- RISC vs. CISC Architecture
- RISC vs. ARM 32 bit

ARM ARCHITECTURE

- Introduction to ARM Architecture
- Block Diagram
- Harvard and Von-Neumann Architecture
- Functional Diagram

REGISTER AND MEMORY OF ARM7TDMI

- Various types of memory
- ARM Register Set
- 32 bit CPU registers
- CPSR and SPSR register
- ARM pipeline

ARM INSTRUCTION SET'S

- Introduction to 32 bit ARM instruction set
- Introduction to 16 bit THUMB instruction set
- Introduction to 8- bit Jazelle instruction set
- Keypad interfacing
- LCD interfacing
- Motor Interfacing

TIMERS

- Timer 0 and Timer 1 Feathers
- Pin Description
- Register Description
- Basics of Timer Handling

SERIAL PORT

- Basics of serial port **(RS232)**
- Types of connectors
- Interfacing pc with micro controller
- MAX 232 interface Hardware structure
- Serial port configuration (mode selection)
- UART0 and UART1 handling

INTERRUPT CONTROLLER

- Basics of interrupt
- Polling method
- Difference between polling and interrupt method
- Interrupt service routine (ISR)
- Vector Interrupt Control
  FIQ
  IRQ

ADC

- Theory of ADC
- Types
- Inbuilt ADC
- Interfacing external device to ADC

PULSE WIDTH MODULATION

- PWM Generator
- Register Description
- Application

REAL TIME CLOCK

- Feathers
- Resister Description
- RTC Interrupts

WORKING WITH FLASH MEMORY SYSTEM AND PROGRAMMING

- Flash Memory System
- Flash Boot Loader and Feathers
- Working
- Introduction to JTAG

PRACTICAL

- **Practical 1:** Interfacing LED with Controller
- **Practical 2:** Interfacing Switches with Controller
- **Practical 3 :** Interfacing 7 segment with controller
- **Practical 4:** Interfacing Keypad with controller
- **Practical 5:** Interfacing LCD with controller
- **Practical 6:** Interfacing Motors with controller
- **Practical 7:** Using Timers 8 bit and 16 bit.
- **Practical 8:** Using Serial port of ARM, Data Communication between ARM micro controller and PC.
- **Practical 9:** Using Interrupts, above practical will be designed using interrupt method.
- **Practical 10:** Using inbuilt ADC of ARM

PIN CONTROL BLOCK

- Phase lock loop
- Pin Configuration
- Pin connect block
- General Purpose I/P

EMBEDDED C PROGRAMMING

- C programming basics
- Difference between C and Embedded C
- Compiler handling
- Creating and modifying projects in Compiler Conventional programs
- Basic Embedded programs structure
- Getting your programs into a compiler, writing your programs

INTRODUCTION TO REAL WORLD INTERFACE

- Led interfacing
- Seven Segment interfacing
- Micro switch Interfacing

SENSOR INTERFACING

- Introduction to Sensing Devices
- IR Sensor Interfacing
- Temperature Sensor Interfacing

I2C PROTOCOL INTERFACING

- Feathers
- Applications
- Pin Description
- Architecture and Register Description

SERIAL PERIPHERAL INTERFACE (SPI)

- Feathers
- Applications
- Pin Description
- Architecture and Register Description
- Introduction to CAN

- **Practical 11:** Application Programming using FIQ and IRQ
- **Practical 12:** Applications of Timer UART and Interrupts

PRE-REQUISITES:

- Candidate must have prior Embedded System knowledge (specifically using Embedded C programming).
- Candidate should be comfortable in C programming (especially w.r.t. pointers and usage of functions).

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