8051 MICROCONTROLLERS

CURRICULUM

8051 (MicroControllers using Assembly and C)

» Introduction to Embedded System
- History & Need of Embedded System
- Basic components of Embedded System
- Hardware Classification of Embedded System
- Programming Language Classification of Embedded System
- Advantage & Disadvantage of Low level & High level programming language of Embedded System

» Microprocessor & Microcontroller Classification
- Difference between Microprocessor & Microcontroller
- Classification based on architecture
- Classification based on Instruction Set
- Type of Microcontroller
- Memory Classification

» Introduction to 8051 Microcontroller
- Introduction of ATMEL 8051 family
- Block diagram description of AT89C51
- Special feature of AT89C51
- Pin description of AT89C51

» Registers & Memory of AT89C51
- Description of RAM
- Description of CPU Registers
- Function of SFR

» Assembly Language Programming of AT89C51
- Addressing modes of AT89C51
- Directives of Assembly Language
- Data Transfer Instruction
- Jump Instruction
- Arithmetic Instruction
- Logical Instruction
- Branching Instruction

» Interfacing of LED AND MATRIX
- Introduction of LED's
- Interfacing Circuit Description of LED's
- Programming of LED's Interfacing
- Interfacing of LED Matrix

» Interfacing of Seven and Fourteen Segment Display
- Introduction to 7 Segment Display
- Types of 7 Segment Display
- Interfacing Circuit Description of 7 Segment Display
- Programming of 7 Segment Display Interfacing
- Introduction to 14 Segment Display
- Types of 14 Segment Display
- Interfacing Circuit Description of 14 Segment Display

» Interfacing of LCD
- Introduction to 16 x 2 LCD
- Commands of 16 x 2 LCD
- Interfacing Circuit Description of 16 x 2 LCD
- Programming of 16 x 2 LCD

» Interfacing of Switches & Keyboard Matrix
- Introduction to Switches & Keyboard Matrix
- Interfacing Circuit of Switches & Keyboard Matrix
- Programming of Keyboard Matrix & Switches
- Controlling of LED's by using Switches
- Key board Matrix & LCD Interfacing Program

» Interfacing of Motors

- Introduction to Motors
- Types of Motors used in Embedded System
- Programming & Controlling of Motors in Embedded System

» Timers & Counter Programming

- Introduction to Timer & Counter
- Difference between Timer and Counter
- Description of SFR associated with Timer & Counter
- Programming of Timer & Counter

» Serial Communication Programming

- Introduction to Serial Communication
- Types of Serial Communication
- Description of SFR associated with Serial Communication
- Introduction & Interfacing of UART
- Programming of UART

» Interrupt driven Programming

- Introduction to Interrupts
- Types of Interrupts
- Programming of Software & Hardware Interrupts

» Interfacing of ADC

- Introduction to ADC
- Interfacing circuit of ADC
- Working & Interfacing of Temperature Sensor (DS1621 & LM35)

» Interfacing of External Memory

- Introduction to External Memory Interfacing
- Introduction to I2C Protocol
- Using I2C library to read/write External Memory

» Introduction of EMBEDDED C

- Introduction to Embedded C
- Different between C & Embedded C
- Data Type of Embedded C
- Operators of Embedded C
- Statements & Loops of Embedded C

» Interworking of Assembly & Embedded C

- Inline Function
- Inline Assembly Routines

» Programming & Interfacing using EMBEDDED C

- Programming of Timer & Counter
- Programming of Serial Port
- Programming of Interrupt
- LCD Interfacing
- Motor Interfacing
- Key board Matrix Interfacing

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