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8051/8052/8031 Microcontroller

Course Name: Embedded system

Certification: BY UVSofts Technologies Pvt. Ltd.

Course Content:-

Introduction:-

- Introduction of Embedded System
- Evolution in Microcontroller technology
- Past, Present & Future 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
- MCS-51 Series Micro-Controllers & 8051/8052
  Drivers & Software Installation

Microcontroller 8051 :-

- Microcontroller 8051 Architecture
- Difference between Microprocessor & Microcontroller
- Classification based on architecture
- Classification based on Instruction Set
- Type of Microcontrollers
- Registers & memory
- Architecture
- Interrupts and Timers

INTRODUCTION OF EMBEDDED C

- Introduction to Embedded C
- Why C Benefits of C over Assembly
- Different between C & Embedded C
- Data Type of Embedded C
- Operators of Embedded C Statements & Loops of Embedded C

Constants, Variables & Data Types

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- Keywords & Identifiers
- Data type & its memory representation
- User Define data types (Structure)
- Array
- Pointers
- Operators
- Arithmetical Operator
- Logical Operator
- Bitwise Operators

Control Statement and Loops:-
- If
- Switch
- For
- While
- Do While
- Introduction to preprocessor directives
- Assembly within C (Inline Assembly)

IO Device Interface and Practical

Led
- What is led & it's working
- Interfacing of led with microcontroller
- Programming of Led
- Practices Of Led Programming

DC Motor
- Introduction of DC Motor
- What is DC gear Motor & it's working
- Interfacing of motor with microcontroller
- Control of motor with L293D IC
- Programming Of Motor
- Practices Of Led Programming

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Seven Segment

- What is Segment & it's working
- Types of segments
- Difference between Common Anode & common cathode
- Interfacing of segment with microcontroller
- Programming Of Seven Segments

Led Matrix

- What is LED MATRIX & it's working
- Types of MATRIX
- Interfacing of MATRIX with microcontroller
- Programming Of LED Matrix

LCD

- What is LCD & it's working
- Types of LCD
- Register of LCD
- Initialization of LCD Functions
- Command of LCD Functions
- Data of LCD Functions
- Interfacing of LCD with microcontroller
- Programming of Lcd In both 4 bit & 8bit mode
- Practices on Above all

Sensor

- What is sensor & it's working
- Types of sensors
- Difference between analog & digital sensor
- Interfacing of sensor with microcontroller
- Programming Of Sensor

DTMF

- What is DTMF & it's working
- IC 9170B
- Interfacing of DTMF with microcontroller
- Programming OF DTMF

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PROJECTS ON DTMF:-

- ➢ Mobile control Robot

RELAY

- What is RELAY & it's working
- ULN2003A
- Interfacing of RELAY with microcontroller
- Programming OF RELAY

UART

- Serial vs Parallel Communication
- What is UART & it's working
- Register of UART
- Initialization Of UART
- Transmission from UART
- Receive from UART
- Interfacing of UART with microcontroller
- TESTING OF UART

PROJECT ON UART:-

- PC CONTROL ROBOT

PROJECT BY STUDENTS

- **Traffic Light Controlled System PROJECT**
- **LCD Based notification Board**
- **Keyboard Based LCD Display board**
- **Autonomous Object avoidance Robot**
- **Autonomous Object Follower Robot**
- **Basic Line Follower Robot (using LM324)**
- **Autonomous Line follower Robot**
- **Autonomous edge avoider Robot**

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NOTE:

1. **Software tools** – Development Board and Programming AVR using AVR studio4 & Writing program using the AVR IDE & AVR Dude software to burn the program.
2. All faculties' members are from UVSOFTS TECHNOLOGIES PVT LTD. They are enriched in their industrial experience.

SMART BENEFITS:-

- Multi time boost in Confidence level and understanding of EMBEDDED world.
- A certificate will be awarded to each student. This will be recognized as a UVSOFTS certificate.
- You will be able to do your minor and major projects of academic value on your own
- This will be a gateway for Embedded Technology
- A fast emerging technology for Electronics professionals