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8051 SVSEMBEDDED SYSTEM COURSE / HOBBY LEARNING / DEVELOPMENT KIT

Introduction to 'C':

- About 'C'
- Number system and working examples.
- 'C' Data types/Operators/Precedence.
- Basic GCC commands.
- Refresh Basic 'C' Programming.

Learning 'C':

- 'C' coding style rules.
- Compilation steps.
- Object/Executable file format.
- Linkers/Loaders and functionalities.
- Process image and its sections.
- 'C' process environment on Linux.
- Bit-wise operator's examples
- Preprocessor directives and examples.
- Arrays and Strings.
- Structures/Unions/Enumerations.
- Functions & Pointer.
- Dynamic memory allocation (Malloc, Calloc, Free).
- Files and Files Operations.

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- Standard I/O Library.
- Header Files.
- 'C' Program with multiple files.
- Storage classes.
- Const and volatile qualifiers.

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- Introduction to Embedded Systems.
 - Architecture of Embedded System.
 - Programming for Embedded System.
 - The Process of Embedded System Development.
 - Communication Interfaces.
 - Embedded/Real-Time Operating Systems.
 - Embedded Software Development on different Microcontrollers.
 - Network Programming.

Module-1

1. Introduction to Microcontrollers.
2. Microcontroller's vs Microprocessors.
3. Introduction to AT89S52.
4. AT89S52 Architecture.
5. Basic Registers and addressing modes.
6. Special function Registers.
7. Instruction set.
8. Interrupts & Timers.
9. Programming Microcontrollers in 'C'

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10. Introduction to RIDE {or} Keil.IDE Tools.

11. Understanding Basic Devices.

- Light emitting Diodes[LED].
- Switches.
- Liquid Crystal Displays.
- Seven segment display.
- Matrix keypad.
- Replays.
- Buzzers.
- Dc Motors & PWM [Pulse Width Modulation].
- Stepper motors.
- Sensors and signals Conditioning

LAB WORKS:

➤ Building a user Interface

1. Interfacing a light emitting diode.
2. Interfacing Switches.
3. Interrupts.
4. Timers and counters.
5. Interfacing a LCD Display.
 1. 8bit mode.
 2. 4bit mode.
 3. LCD Menus.
6. Interfacing a 4x4 Matrix Keypad.
7. Pulse Width Modulation.

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• **Hardware Interfacing Basic Devices**

- LED.
- Switches.
- LCD.
- 7-Segment display.
- Keypad.
- Relays.
- Buzzers.
- DC Motors.
- Stepper Motors.

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Module-2

- **Serial Communication.**
 - MAX-232.

- **Asynchronous Communication.**
 - RS-232
 - RS-485

- **Synchronous Communication.**
 - SPI
 - I2C
 - EEPROM
 - Real Time Clock
 - ADC
 - DAC

- Infrared & Radio Frequency.

- Interfacing Microcontrollers.

LAB WORKS:

1. RS 232.
2. RS 485.
3. Interfacing Microcontrollers to Microcontrollers.
4. Interfacing Microcontrollers to Computer.
5. SPI Protocol.
6. EEPROM Using I²C
7. ADC
8. DAC

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Module-3(learning of technologies)

- **Interfacing different devices.**
 1. WI-FI
 2. BLUETOOTH.
 3. GSM.
 4. GPS.
 5. RF-ID.
 6. FRINGER PRINT.
 7. RF.
 8. Xbee.
 9. GRAPHICAL LCD.

Module4: (learning of Protocols)

Embedded Protocol

- I²C.
- SPI.
- CAN.
- RS 232, RS 485.

Module5: (ACADEMIC PROJECTS ON DEVELOPEMNET KIT)

The above development board will guide u the 10 different technologies for the student. **svsembedded will provide the CD in that**

WE WILL PROVIDE

1. ABSTRACT
- 2.DATASHEETS
- 3.DOCUMENTATION
- 4.SCHEMATIC DIAGRAM.
5. SOFTWARE CODE
- 6.SAMPLE PPT
- 7.PHOTOS&VIDEO FILE ON ENTIRE PROJECT

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