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LPC1768 ARM Cortex M3 SVSEMBEDDED SYSTEMS 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.
- Standard I/O Library.

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- 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.

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Module-1:

1. Introduction to Microcontrollers.
2. Microcontroller's vs Microprocessors.
3. Introduction to LPC1768 ARM Cortex M3.
4. LPC1768 ARM Cortex M3 Architecture.
5. Basic Registers and addressing modes.
6. Special function Registers.
7. Instruction set.
8. Interrupts & Timers.
9. Programming Microcontrollers in 'C'
10. Introduction to Keil UV4.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

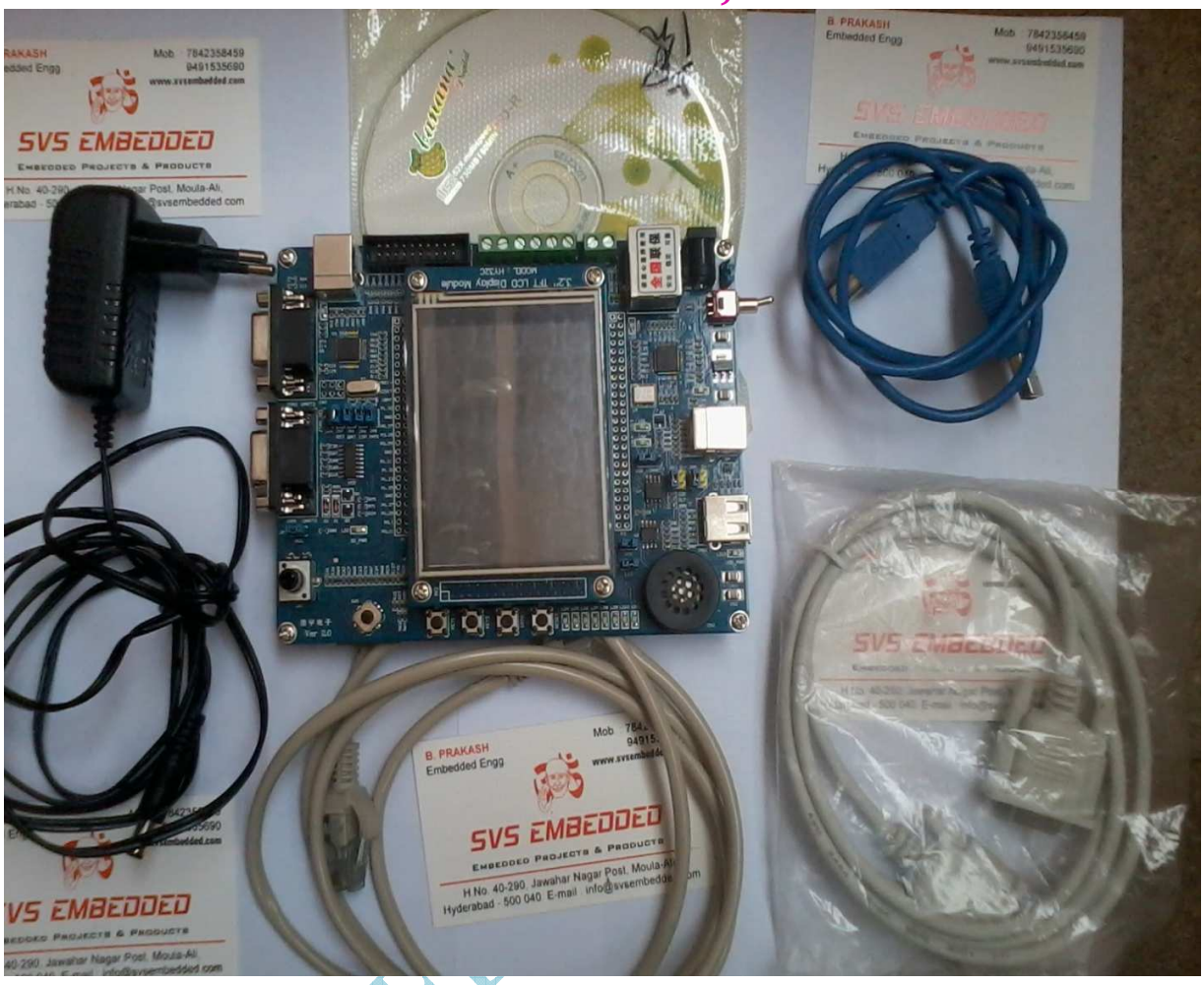
LAB WORKS:

➢ 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.



- **Hardware Interfacing Basic Devices**
  - LED.
  - Switches.
  - LCD.
  - 7-Segment display.
  - Keypad.
  - Relays.
  - Buzzers.
  - DC Motors.
  - Stepper Motors.

Module-2

- **Serial Communication.**
  - MAX-232.
- **Asynchronous Communication.**
  - RS-232
  - RS-485
- **Synchronous Communication.**
  - SPI
  - I2C
  - EEPROM
  - Real Time Clock
  - Converters
  - 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 I^2C
7. ADC
8. DAC

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

- I^2C.
- 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 provideSthe 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