PANYA TECHNOLOGIES

Technology to Live…

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Microcontroller Intel 8051

INTRODUCTION

- Microprocessor vs. Microcontroller
- CISC vs. RISC

Overview of Architecture of 8051

- Processor Core and Functional Block Diagram
- Description of memory organization
- Overview of ALL SFR's and their basic functionality

Low-level Programming Concepts

- Addressing Modes
- Instruction Set and Assembly Language (ALP)
- Developing, Building and Debugging ALP's

Middle Level Programming Concepts

- Cross Compiler
- Embedded C Implementation, program Debugging
- Differences from ASNSI-C
- Memory Models
- Library reference
- Use of #pragma directive
- Functions, Parameter passing and return types

On-Chip Peripherals

- Ports: Input/output
- Timers & Counters

- Interrupts, UART

External Interfaces

- LEDS
- Switches (Momentary type, Toggle type)
- Seven Segment Display: (Normal mode, BCD mode,
- Internal Multiplexing & External Multiplexing)
- LCD (4bit, 8bit, Busy Flag, Custom Character Generation)
- Keypad Matrix

Protocols

- I2C (EEPROM), SPI (EEPROM)

Keil's RTX51 Tiny / Pumpkin's Salvo

- Overview
- Specifications
- Single-Tasking Programs
- Multi-Tasking Programs
- RTX51 Tiny Programs
- Theory of Operation
- Timer Tick Interrupt
- Task Management & Scheduler Events
- Round-Robin & Co-operative Task Switching
- Idle Task
- Stack Management
- Function Reference
- Porting on to H/W
- Implementation Examples

Selective Discussion during Project Development

- A/D & D/A Converter
- Stepper motor, DC Motor
- I2C Protocol (RTC:800583,DS1307 ADC:PCF8591, DS1621)
- SPI Protocols   (ADC:MCP3001)
- IR Communications (Phillips RC5 Protocol)
- ZIGBEE, GSM, GPS, USB, MMC & SD
- Ethernet MAC, CAN Protocol