AVR BASED EMBEDDED SYSTEM INTERNSHIP COURSE—

WEEK-1

Introduction:

- What is Embedded System ?
- Microprocessor vs Microcontroller
- CISC vs RISC

A few words about the family of AVR microcontrollers

Overview of Architecture of ATMEGA8515:

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

Week-2

Low Level programming Concepts:

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

Middle Level Programming Concepts:

- Cross Compiler
- Embedded C language implementation, programming & debugging
- Differences from ANSI-C
- Library reference
- Use of #prama directive

- Functions, Parameter passing and return types

Week-3

On-ChipPeripherals Study,Programming, and Application:

- Ports: Input/Output
- Timers & Counters
- UART
- Interrupts
- SPI
- Analog Comparator

External Interfaces Study,Programming and Applications :

- LEDS
- Switches(Momentary type, Toggle type)
- Seven Segment Display: (Normal mode, BCD mode,Internal Multiplexing & External Multiplexing)
- LCD (8bit, 4bit, Busy flag, custom character generation)
- Keypad Matrix

Week-4--

Protocols Study,Programming and Applications :

- I2C (EEPROM and RTC)
- SPI (EEPROM)
- I Wire(Sensor)
- Infrared Communication(RC5 protocol)

Week-5

Selective Discussion during Project Development

- A/D & D/A Converter
- Stepper Motor, DC Motor
- RF Communcation
- RFID
- CAN
- ZIGBEE
- GSM/GPS
- USB
- MMC & SD
- Ethernet MAC

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