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Msys-Mobile

Msys-Mobile is all about designing a mobile phone. In the workshop, student learns to design and develop a mobile phone with basic functions like Call Dialing, Call Receiving, SMS Sending, and SMS receiving using GSM technology. GSM (Global System for Mobile communication) is a digital mobile telephony system that uses a variation of Time Division Multiple Accesses (TDMA) and most widely uses the three digital wireless telephony technologies i.e., TDMA, CDMA & FDMA. The Workshop begins with a brief overview on basic & digital electronics to help you recall the fundamentals and attain conceptualization about the stepping tools of embedded systems. It includes a detailed study structure, delivered & demonstrated live by our experts on "How to build a Mobile Phone???"

Our main aim is to effectively impart the basic know-how of designing a mobile phone and provide all the necessary tools to develop it. Input to the system is given through a handmade keypad. The numerals on the keypad (1 to 9) are used as the numbers of the 4X4 keypad. The alphabets (A, B, C, D, *, #) are used as buttons of the mobile for different purposes such as to call, to write a message, to send a message, to open inbox etc. As soon as you press a key from the keyboard, with respect to the key pressed the controller and the GSM modem give and receive instructions to and from each other. According to the instructions the controller and the modem work out their functions. The resultant messages are displayed on a Graphical 16X2 LCD.

We at ABLab Solutions would get you closer to the basic concepts of embedded system right from the fundamentals to its implementation to successfully design your own Mobile Phone.

Learning Outcomes

- **How to use different embedded software tools**
- **How to write program for ATmega16**
- **How to interface LED with AT mega 16**
- **How to generate different patterns in LED array**
- **How to interface 16X2 Alphanumeric LCD with ATmega16**
- **How to interface 4X4 Keypad with ATmega16**

- How to interface SIM 300 GSM/GPRS Modem with ATmega16
- How to detect SIM Card in SIM 300 GSM/GPRS Modem
- How to activate Calling Line Identification
- How to build a mobile phone

Program Benefits

- Clear your fundamentals on Embedded System.
- Build & develop your own Mobile phone
- Gain conceptual knowledge on embedded systems, embedded C, ATmega16, GSM etc.
- Get trained by experts
- Awarded certificate on "MSYS-Mobile"
- Live Demos and Interactive Question & Answer sessions
- Get useful Materials

Course Outline

- Introduction to Embedded System
- Application of Embedded Systems
- Overview of Basic Electronics
- Overview of Digital electronics
- AVR Software Tools-AVR Studio, WinAVR, SinaProg
- Introduction to ATmega16
- Features of ATmega16
- I/O Ports of Atmega16
- LED interfacing with Atmega16
- Different LED pattern Generation
- 4X4 Keypad
- 4X4 Keypad Interfacing with ATmega16
- 16X2 Alphanumeric LCD
- 16X2 Alphanumeric LCD interfacing with ATmega16
- Horizontal scrolling in 16X2 alphanumeric LCD with ATmega16
- Vertical scrolling in 16X2 alphanumeric LCD with ATmega16

- USART
- USART of ATmega16
- GSM Communication
- AT Command
- SIM 300 GSM/GPRS Modem Interfacing with ATmega16
- SIM Card Detection in SIM 300 GSM/GPRS Modem
- SMS Reading from SIM 300 GSM/GPRS Modem with ATmega16
- SMS Sending from SIM 300 GSM/GPRS Modem with ATmega16
- Calling from SIM 300 GSM/GPRS Modem with ATmega16
- Call Receiving from SIM 300 GSM/GPRS Modem with ATmega16
- Calling Line Identification

Practicals

- LED interfacing with ATmega16
- LED blinking with ATmega16
- LED pattern 1 with ATmega16
- LED pattern 2 with ATmega16
- LED pattern 3 with ATmega16
- LED pattern 4 with ATmega16
- LED pattern 5 with ATmega16
- LED pattern 6 with ATmega16
- LED pattern 7 with ATmega16
- LED pattern 8 with ATmega16
- LED dancing with ATmega16
- 4X4 Keypad Interfacing with ATmega16(LED Display)
- 4X4 Keypad Interfacing with ATmega16(LCD Display)
- 16X2 alphanumeric LCD interfacing with ATmega16
- Horizontal scrolling in 16X2 alphanumeric LCD with ATmega16
- Vertical scrolling in 16X2 alphanumeric LCD with ATmega16
- SIM 300 GSM/GPRS Modem Interfacing with ATmega16
- SIM Card Detection in SIM 300 GSM/GPRS Modem
- SMS Reading from SIM 300 GSM/GPRS Modem with ATmega16

- SMS Sending from SIM 300 GSM/GPRS Modem with ATmega16
- Calling from SIM 300 GSM/GPRS Modem with ATmega16
- Call Receiving from SIM 300 GSM/GPRS Modem with ATmega16
- Activation and Deactivation of Calling Line Identification in SIM 300 GSM/GPRS Modem with ATmega16

Kits Detail

- AVR Trainer Board-100 - 1pcs
- AVR USB Programmer - 1pcs
- SIM 300 GSM/GPRS Modem - 1pcs
- 16X2 Alphanumeric LCD - 1pcs
- 4X4 Keypad - 1pcs
- Head Phone - 1pcs
- Head Phone Interface - 1pcs
- 12V,1A Adapter - 1pcs
- Required Connectors

Materials

Sample Codes & Hex Files

- LED interfacing with ATmega16
- LED blinking with ATmega16
- LED pattern 1 with ATmega16
- LED pattern 2 with ATmega16
- LED pattern 3 with ATmega16
- LED pattern 4 with ATmega16
- LED pattern 5 with ATmega16
- LED pattern 6 with ATmega16
- LED pattern 7 with ATmega16
- LED pattern 8 with ATmega16
- LED dancing with ATmega16
- Buzzer interfacing with ATmega16

- 4X4 Keypad Interfacing with ATmega16(LED Display)
- 4X4 Keypad Interfacing with ATmega16(LCD Display)
- 4X4 Based Password with ATmega16(LED Display)
- 4X4 Based Password with ATmega16(LCD Display)
- 16X2 alphanumeric LCD interfacing with ATmega16
- Horizontal scrolling in 16X2 alphanumeric LCD with ATmega16
- Vertical scrolling in 16X2 alphanumeric LCD with ATmega16
- ATmega16 to PC Communication(LED Display)
- PC to ATmega16 Communication(LED Display)
- Full Duplex Communication between PC and ATmega16(LED Display)
- ATmega16 to PC Communication(LCD Display)
- PC to ATmega16 Communication(LCD Display)
- Full Duplex Communication between PC and ATmega16(LCD Display)
- SIM 300 GSM/GPRS Modem Interfacing with PC/Laptop
- SIM 300 GSM/GPRS Modem Interfacing with ATmega16
- SIM Card Detection in SIM 300 GSM/GPRS Modem
- Calling from SIM 300 GSM/GPRS Modem Interfacing with ATmega16
- Call Receiving from SIM 300 GSM/GPRS Modem with ATmega16
- SMS Sending from SIM 300 GSM/GPRS Modem with ATmega16
- SMS Reading from SIM 300 GSM/GPRS Modem with ATmega16
- Activation and Deactivation of Calling Line Identification in SIM 300 GSM/GPRS Modem with ATmega16

Softwares, Installation Guides, User Guides

- AVR Studio 4
- WinAVR 2010
- SinaProg
- USBasp driver(for Window XP, Vista & 7)

Header Files

- LCD
- KEYPAD
- USART
- SIM300

Datasheet

- ATmega16
- JHD162A
- SIM 300 GSM/GPRS Modem AT Commands

User Manuals

- AVR Trainer Board-100 user manual
- AVR USB Programmer user manual
- 4X4 Keypad user manual
- SIM 300 GSM/GPRS Modem user manual

Course Duration

The duration of the workshop will be of 16 hours (2 days) which includes both theory and practical sessions.

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