SYNOPSIS

PROJECT TITLE : GSM BASED E-NOTICE BOARD

OBJECTIVE:

The main aim of this project will be to design a SMS driven automatic display board which can replace the currently used programmable electronic display. It is proposed to design receiver cum display board which can be programmed from an authorized mobile phone.

INTRODUCTION:

Wireless communication has announced its arrival on big stage and the world is going mobile. We want to control everything and without moving an inch. This remote control of appliances is possible through Embedded Systems. The use of "Embedded System in Communication" has given rise to many interesting applications that ensures comfort and safety to human life. The main aim of this project will be to design a SMS driven automatic display board which can replace the currently used programmable electronic display. It is proposed to design receiver cum display board which can be programmed from an authorized mobile phone. The message to be displayed is sent through a SMS from an authorized transmitter. The microcontroller receives the SMS, validates the sending Mobile Identification Number (MIN) and displays the desired information. Started off as an instantaneous News display unit, we have improved upon it and tried to take advantage of the computing capabilities of microcontroller. Looking into current trend of information transfer in the campus, it is seen that important notice take time to be displayed in the notice boards. This latency is not expected in most of the cases and must be avoided. It is proposed to implement this project at the institute level. It is proposed to place display boards in major access points. The electronics displays which are currently used are programmable displays which need to be reprogrammed each time. This makes it inefficient for immediate information transfer, and thus the display board loses its importance. The GSM based display board can be used as an add-on to these display boards and make it truly wireless. The display board programs itself with the help of the incoming SMS with proper validation. Such a system proves to be helpful for immediate information transfer. The system required for the purpose is nothing but a Microcontroller based SMS box. The main components of the kit

include microcontroller, GSM modem. These components are integrated with the display board and thus incorporate the wireless features. The GSM modem receives the SMS. The AT commands are serially transferred to the modem through Rx-Tx connection. In return the modem transmits the stored message through the COM port. The microcontroller validates the SMS and then displays the message in the LCD display board. Various time division multiplexing techniques have been suggested to make the display boards functionally efficient. The microcontroller used in this case is AT89S52. Motorola C168 is used as the GSM modem. In the prototype model, LCD display is used for simulation purpose. While implementation this can be replaced by actually display boards. The data will be displayed only after entering unique pass key .In addition to that address matching is done and data can be receive only by the dedicated receiver , and this data is displayed on LCD. The main focus of the thesis is on displaying information to a dedicated LCD by the any part of world using GSM network, which facilitate to control any message board globally from any location.

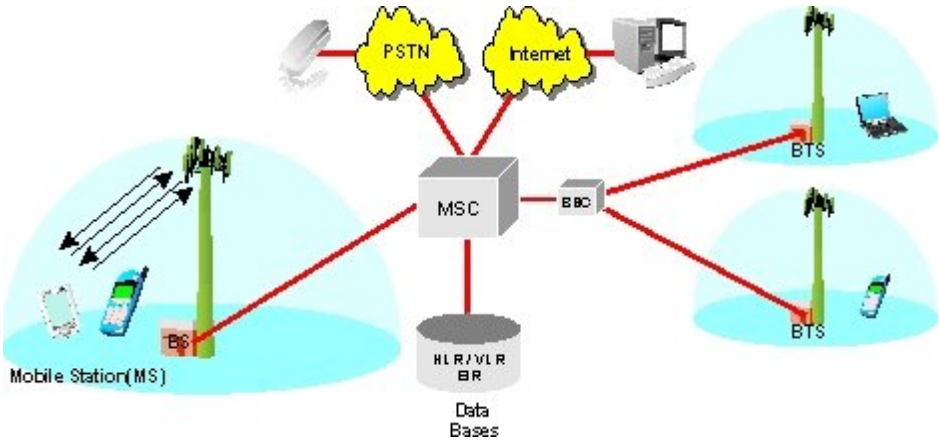
COMPONENT USED:

GSM BASED E-NOTICE BOARD			
Name	Capacity	Quantity	Code
Regulator	7805	1	U1
Capacitor	1000µf	1	C1
Capacitor	10µf	1	C2
Ceramic Capacitor	22pf	2	C3,C4
Diode		4	D1,D2,D3,D4
Push Button		1	
GSM Modem		1	
LCD	16*2	1	
40 Pin Base		1	U2
8051(AT89S52)		1	
Oscillator	11.0592mhz	1	X1

LED		1	D5
Resistance	220Ω	1	R1
Resistance	1k	1	R3
Resistance	10k	1	R2

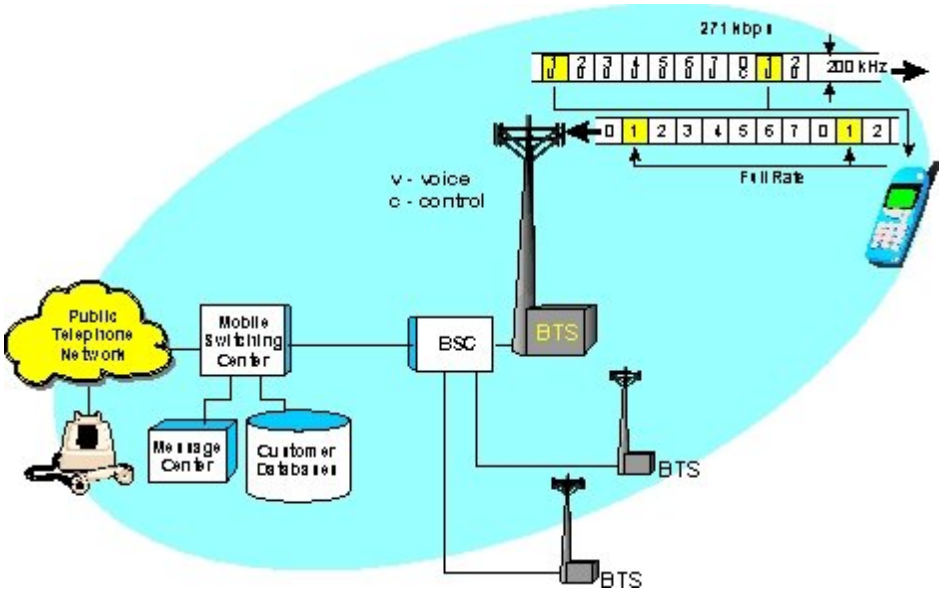
What is GSM?

Global system for mobile communication (GSM) is a **wide area wireless communications** system that uses digital radio transmission to provide voice, data, and multimedia communication services. A GSM system **coordinates** the communication between a mobile telephones (**mobile stations**), **base stations** (cell sites), and **switching systems**. Each GSM radio channel is 200 kHz wide channels that are further divided into frames that hold 8 time slots. GSM was originally named Groupe Special Mobile. The GSM system includes mobile telephones (mobile stations), radio towers (base stations), and interconnecting switching systems.This figure shows an overview of a GSM radio system. This diagram shows that the GSM system includes mobile communication devices that communicate through base stations (BS) and a mobile switching center (MSC) to connect to other mobile telephones, public telephones, or to the Internet. This diagram shows that the MSC connects to databases of customers. This example shows that the GSM system mobile devices can include mobile telephones or data communication devices such as laptop computers.



Global System for Mobile Communication - GSM System Diagram

This diagram shows that the **GSM** system uses a single type of **radio channel**. Each radio channel in the GSM system has a frequency bandwidth of **200 kHz** and a **data transmission rate** of approximately **270 kbps**. This example shows that each radio communication channel is divided into **8 time slots** (0 through 7). This diagram shows that a simultaneous two-way voice communication session requires at least one radio channel communicates from the base station to the mobile station (called the forward channel) and one channel communicates from the mobile station to the base station (called the reverse channel). This example also shows that some of the radio channel capacity is used to transfer voice (traffic) information and some of the radio channel capacity is used to transfer control messages.



GSM Radio Channel Structure Diagram

What are AT commands?

AT commands are instructions used to control a modem. AT is the abbreviation of Attention. Every command line starts with "AT" or "at". That's why modem commands are called AT commands. Many of the commands that are used to control wired dial-up modems, such as ATD (Dial), ATA (Answer), ATH (Hook control) and ATO (Return to online data state), are also supported by GSM/GPRS modems and mobile phones. Besides this common AT command set, GSM/GPRS modems and mobile phones support an AT command set that is specific to the GSM technology, which includes SMS-related commands like AT+CMGS (Send SMS message),

AT+CMSS (Send SMS message from storage), AT+CMGL (List SMS messages) and AT+CMGR (Read SMS messages).

Note that the starting "AT" is the prefix that informs the modem about the start of a command line. It is not part of the AT command name. For example, D is the actual AT command name in ATD and +CMGS is the actual AT command name in AT+CMGS. However, some books and web sites use them interchangeably as the name of an AT command.

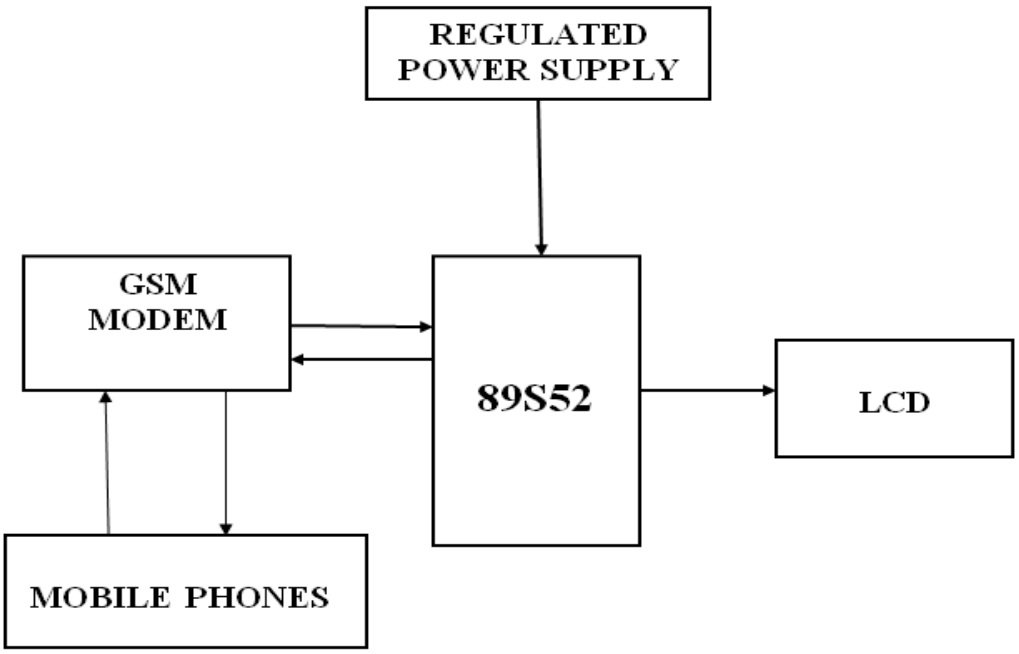
Here are some of the tasks that can be done using AT commands with a GSM/GPRS modem or mobile phone:

- Get basic information about the mobile phone or GSM/GPRS modem. For example, name of manufacturer (AT+CGMI), model number (AT+CGMM), IMEI number (International Mobile Equipment Identity) (AT+CGSN) and software version (AT+CGMR).
- Get basic information about the subscriber. For example, MSISDN (AT+CNUM) and IMSI number (International Mobile Subscriber Identity) (AT+CIMI).
- Get the current status of the mobile phone or GSM/GPRS modem. For example, mobile phone activity status (AT+CPAS), mobile network registration status (AT+CREG), radio signal strength (AT+CSQ), battery charge level and battery charging status (AT+CBC).
- Establish a data connection or voice connection to a remote modem (ATD, ATA, etc).
- Send and receive fax (ATD, ATA, AT+F*).
- Send (AT+CMGS, AT+CMSS), read (AT+CMGR, AT+CMGL), write (AT+CMGW) or delete (AT+CMGD) SMS messages and obtain notifications of newly received SMS messages (AT+CNMI).
- Read (AT+CPBR), write (AT+CPBW) or search (AT+CPBF) phonebook entries.
- Perform security-related tasks, such as opening or closing facility locks (AT+CLCK), checking whether a facility is locked (AT+CLCK) and changing passwords (AT+CPWD).

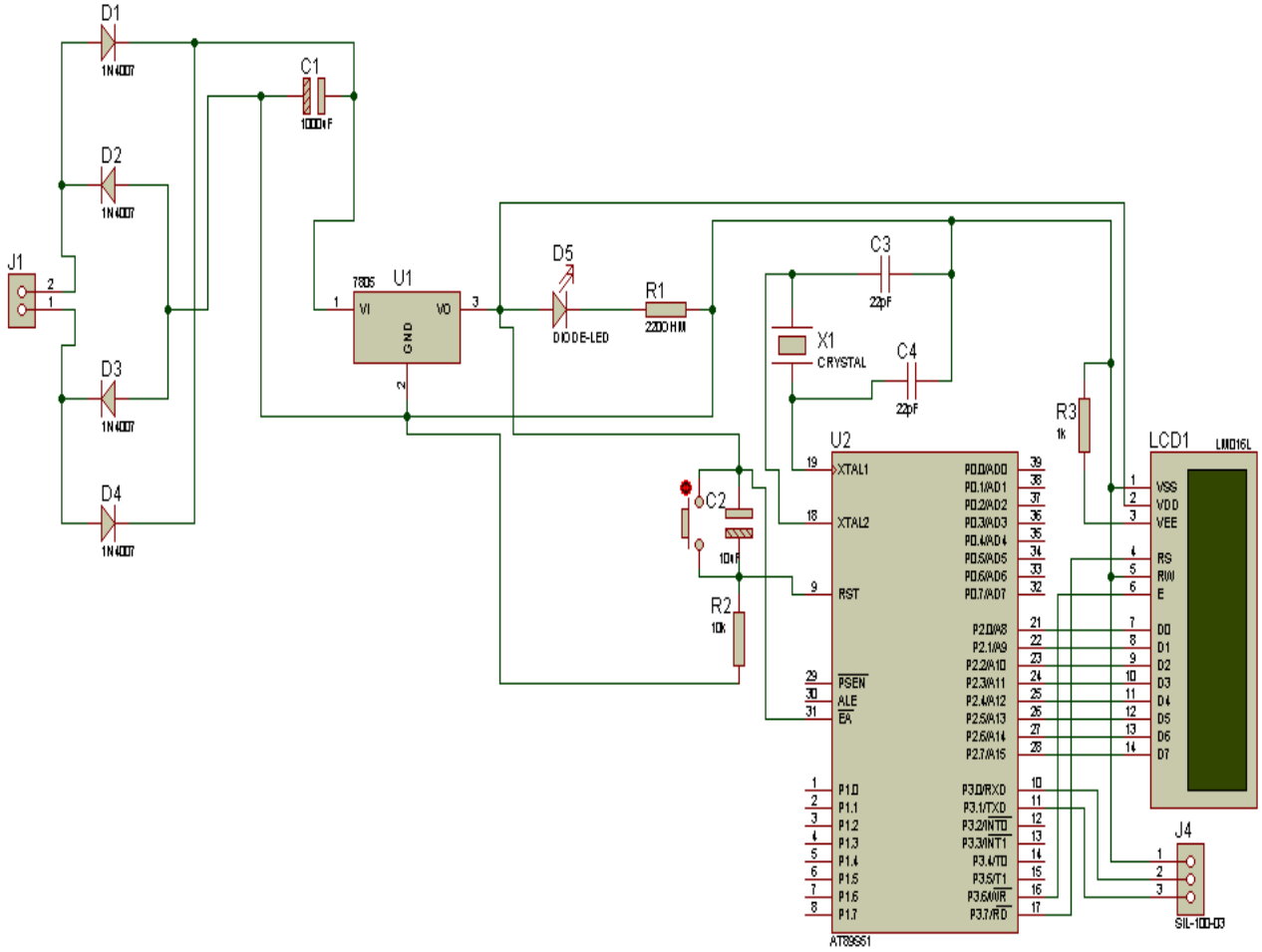
  (Facility lock examples: SIM lock [a password must be given to the SIM card every time the mobile phone is switched on] and PH-SIM lock [a certain SIM card is associated with the mobile phone. To use other SIM cards with the mobile phone, a password must be entered.])

- Control the presentation of result codes / error messages of AT commands. For example, you can control whether to enable certain error messages (AT+CMEE) and whether error messages should be displayed in numeric format or verbose format (AT+CMEE=1 or AT+CMEE=2).
- Get or change the configurations of the mobile phone or GSM/GPRS modem. For example, change the GSM network (AT+COPS), bearer service type (AT+CBST), radio link protocol parameters (AT+CRLP), SMS center address (AT+CSCA) and storage of SMS messages (AT+CPMS).
- Save and restore configurations of the mobile phone or GSM/GPRS modem. For example, save (AT+CSAS) and restore (AT+CRES) settings related to SMS messaging such as the SMS center address.

BLOCK DIAGRAM:



CIRCUIT DIAGRAM:



WORKING:

In this project we interfaced 8051 microcontroller with sim-com 300 modem to decode the received message and do the required action. The protocol used for the communication between the two is AT command. The microcontroller pulls the SMS received by phone, decodes it, recognizes the Mobile no. and then switches on the relays attached to its port to control the appliances. After successful operation, controller sends back the acknowledgement to the user's mobile through SMS.

APPLICATION:

- Offices
- Educational institutions

- Bus stations
- Railway stations
- Other public utility places

ADVANTAGES:

- Wireless system
- Text can be entered from remote place
- Data will not be lost in power failure condition
- GSM based home appliance control.
- GSM based anti theft system for vehicles.
- GSM based generator start stop and many more.

REFRENCE:

[1] www.e-project.com

[2] www.google.com

[3] www.newprojectideas.com