Smart Notice Board

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Abstract: Notice board is primary thing in any institution or organization or public utility places like bus stops, railway stations or parks. But sending various notices day to day is a tedious process. This project deals with advanced notice board. It presents an SMS based notice board incorporating the widely used GSM to facilitate the communication of displaying message on noticeboard via user's mobile phone. Its operation is based on microcontroller AT89c52 programmed in assembly language. A SIM300 GSM modem with a SIM card is interfaced to the ports of the microcontroller with the help of AT commands. When the user sends a SMS via a registered number from his mobile phone, it is received by SIM300 GSM modem at the receiver's end. SIM300 is duly interfaced to the microcontroller. The messaged is thus fetched into the microcontroller. It is further displayed on an electronic notice board which equipped with LCD display interfaced to microprocessor powered by a regulated power supply from mains. This project is our experiment on real time noticing.

Keywords: SMS Notice Board, GSM MODEM SIM 300A, LCD 16x4, Microcontroller At89c52, Mobile Phone.

I. INTRODUCTION

In the last couple of decades, communication technology has developed by leaps and bounds. The use of "Embedded System in Communication" has given rise to many interesting applications. Everything around us is becoming smart such as smart phones, smart refrigerators, so why not smart notice boards.At present, when information has to be updated in a notice board, it has to be done manually. To change message on display, itneeds to change microcontroller program code again. By adding GSM wireless communicationinterface to this system, we can make smart noticeboard to overcome these limitations. So we have interfaced GSM Modem with microcontroller andimplemented a SMS transmission and reception technique. The message on display is easily changed bysending SMS to it. Wireless notice board is a means of wireless data transfer for quick display of messages in real time. Being GSM- based system, it offers flexibility to display flash news or announcements faster than the programmable system. GSM-based display system can be used at other public places like schools, hospitals, railway stations, colleges, banks etc. This system is easy, robust, to use in normal life by anyone at anyplace with less errors and maintenance.

II. BLOCK DIAGRAM

Fig 1. Block Diagram of GSM Notice Board System

Let us discuss the components used in the GSM Notice Board System one by one:

1) GSM MODEM SIM 300A: Designed for global market, SIM300 is a Tri-band GSM/GPRS engine that works on frequencies EGSM 900 MHz, DCS 1800 MHz and PCS1900 MHz SIM300 provides GPRS multi-slot class 10 capabilities and support the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. SIM300 provide RF antenna interface. The SIM300 is integrated with the TCP/IP protocol, Extended TCP/IP AT commands are developed for customers to use the TCP/IP protocol easily, which is very useful for those data transfer applications.
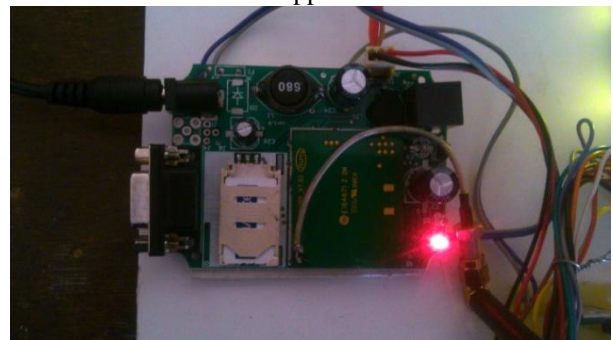

Fig 2. Picture of GSM MODEM SIM 300A

2) MICROCONTROLLERAT89c52: The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer with 8Kbytes of Flash programmable and erasable read only memory (PEROM). The device is manufactured using Atmel's high-density non-volatile memory technology and is compatible with the industry-standard 80C51 and 80C52 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a
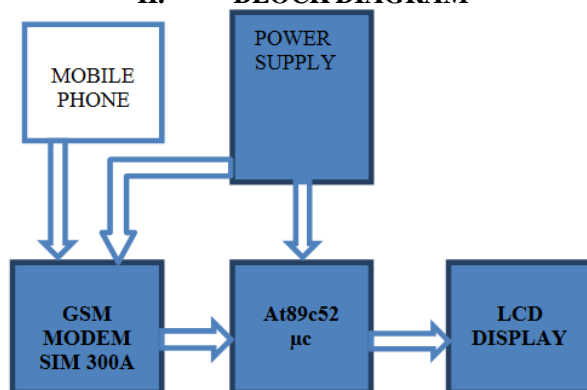
monolithic chip, the Atmel AT89C52 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

Fig 3. Picture of AT89c52 μc

3) LCD DISPLAY:A liquid crystal display (LCD) is a thin, flat display device made up of any number of colour or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.
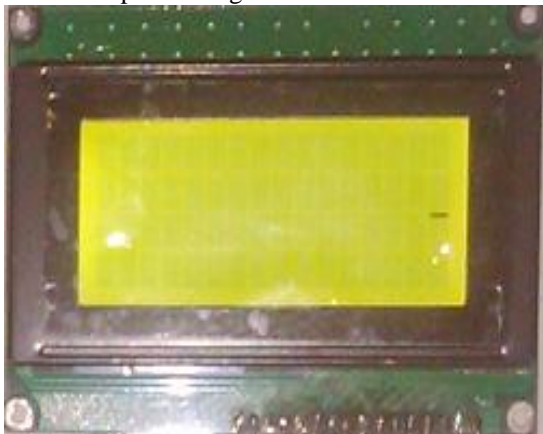

Fig 4. Picture of LCD 16x4

4) POWER SUPPLY/ADOPTER: Power supply is the source of electrical power. Normally any electronic circuit uses +5v DC power for its regular working .User can directly built +5v Dc power supply using 4 diodes, filter capacitors and regulator IC-7805(Integrated Circuit)or can directly purchase a +5v DC power adopter from the local market.

VI.   PRE-REQUISITE

1) HyperTerminal   AT+CMGD=1,   AT+CMGD=2, AT+CMGD=3.
2) Check the range accessibility of GSM modem. LED should blink every 3 second.
3) Sender should send the message with a '*' at the beginning.
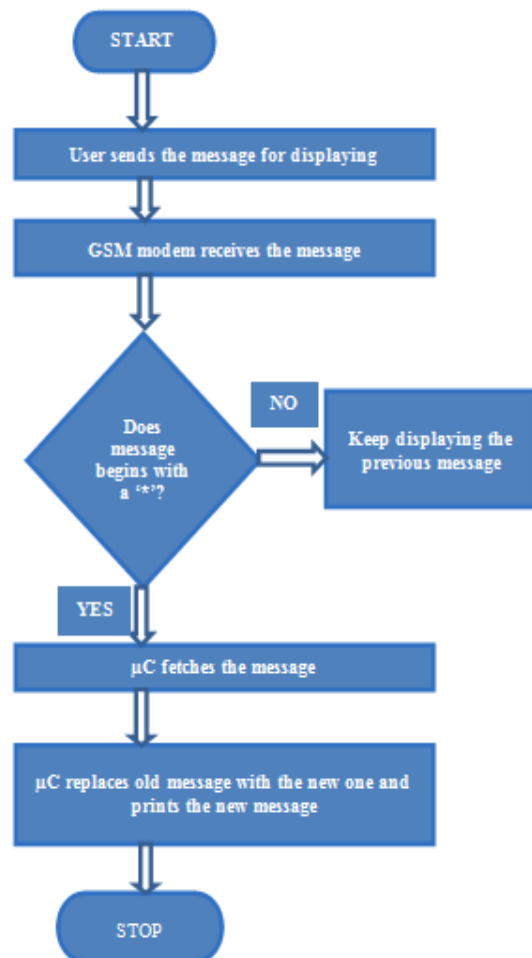4) Message should have a minimum character limit of 20.

IV.   WORKING

A. Transmitting Section

Transmitting section consists of just mobile which has inbuilt GSM modem for wireless data transfer through GSM.
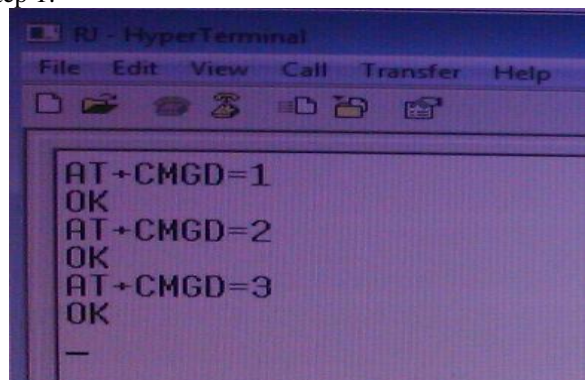
B. Receiving Section

Receiving section consists of GSM modem and microcontroller which fetches the message and helps in displaying on LCD.
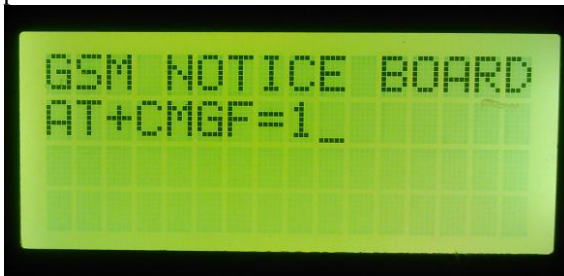
C. Flow Chart

V.   WORKING MODEL

Step 1:

We delete the memory initially to store the new message.

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Step 2:

The GSM modem gets activated once it is in the range and also activates the LCD Display.

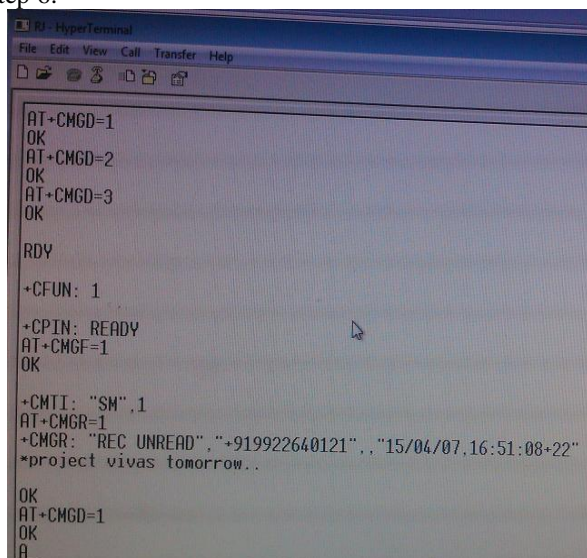Step 3: Send the message using a GSM mobile phone

Step 4:

The GSM Modem receives the message and sends it to the microcontroller for processing. The message gets stored in the memory which is shown as above on the LCD.

Step 5:

The final message then gets displayed

Step 6:

The complete final message gets displayed on the HyperTerminal along with the Date and Time and also the number from which it is received.

VI.   FUTURE SCOPE

1. 16x4 LCD Display can be replaced by other LCDs which can display more characters according to the need.
2. Along with the notice messages, date and time; breaking news can be flashed timely.
3. Currently only one message can be displayed at a time this can be overcome by using many LCDs to display different messages.
4. This system can also be made password protected.

VII.   CONCLUSION

The project "Smart Notice Board" has been successfully completed and tested with troubleshooting to the best of our knowledge. Each block present in it has been reasoned and justified.The project is very cost efficient and marketable and the components used are very simple and easily available in the market. We believe that our project can become commercial and can be used in places such as colleges, banks railway station etc.Finally we conclude that this project being based on the widely used GSM technology has further scope for future development and research and can be modified according to its application.

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