International Journal of Engineering Researches and Management Studies

WIRELESS ELECTRONIC DISPLAY BOARD USING GSM TECHNOLOGY

Bhujbal Supriya*[1], Jadhav Madhuri[2], and Shinde Jyoti[3]
[*1,2&3]Research Scholar, Department of Electronics & Telecommunication Engineering, Jaihind Polytechnic Kuran, India

ABSTRACT

In this proposed system the idea of wireless Digital Notice Board Using GSM Technology has been presented. So our main aim is to reduce paper work and time. In this paper we are trying to implement our system in such a way that it can display message from authorized user sends to GSM module which is located on the notice board. So in short, the GSM module which is located at Digital notice board receives the message from authorized user and displayed on notice board which is situated at remote location, at same time this message will be sent to different users mobile numbers that are stored in microcontroller memory. So spreading of important message or notice will be takes place within very short span of time to respective mobile no's. Means user or registered person can able to send the message from anywhere and this message is displayed on LCD display.

Keywords- *GSM modem, LED Display, Microcontroller, etc*

1. INTRODUCTION

In this modern world Mobile Phones and the related technologies are becoming more and more prevalent. Various technical spaces in the field of Telecommunication and Embedded Systems are become universal in the people. The use of cell phones has rapidly increased over the last time and a half. Up gradation in networking technologies has stimulated the development and growth of very thicknetworks? Now-a-days the general formselect communicating while on the move therefore landlines usage has been slightly reduced. Notice board are one of the widely used ones ranging from primary schools to major organizations to send messages at large. A lot of paper is been used and which is later lost by the organizations. In this turntips to a lot of deforestation thus leadingto global warming. Small innovative steps in making use of technology for regular purposes would have an opposing effect on the environment problems which we are currentlydisturbed about. The main aim of this paper is to design a SMS driven automatic display Board which can replace the now used programmable electronic display and conventional notice boards. It is proposed to design receive with display toolkit which can be programmed and later be used from an official mobile phone. The complete process can be described from the block diagram.The GSM modem receives a message from the official mobile phone and the message is removed by the microcontroller from the GSM modem and is displayed on the LED display board. Serial communication is used for the complete process from GSM module to microcontroller and from microcontroller to the LED display.

2. LITERATURE REVIEW

With the development of cellular networks in the 1970's for growing the absence of frequencies in the radiotelephone services which in turn tip to introduction of AMPS (Advanced Mobile Phone System) where the broadcast was analog based. This was recognized to be the first generation in cellular networks. The second generation was based on digital broadcast and was called with various acronyms as GSM (Global System for Mobile communications), ERMES (European Radio Messaging System). Various Mobile telephone standards were similarlypresented during this time only. The third generation has increased with the union of different technologies; specific of them which are popularly recognizedare FPLMTS (Future Public Land Mobile Telecommunications System)

IJERMS

International Journal of Engineering Researches and Management Studies

3. OVERVIEW

To recognize the future wireless GSM Based Display unit the following example model has been developed in the laboratory. It consists of Microcontroller, GSM Modem, One mobile phone and LED display board. LED display board is used for testing the futureprocedure. The interfacing of a GSM modem with a normal PC is relatively easy with help of the AT commands sent to it from the HyperTerminal window. But we must take into detail that the modem needs a wired joining at one end and wireless at the other. As it is too expensive to use a devoted general purpose computer at every and each site of the display boards, the possibility of performance the objective with a devoted computer is not possible practically on cost factors. Hence we service Atmel ATmega32 microcontroller with 1024 bytes EEROM storage memory. The difficulty of coding considerably intensifies as compared with PC, but once programmed the microcontroller works at its best then it is a committed embedded system. The design procedure involves identifying the different components and assembling all of them and make sure safe interfacing between all these components. Then coding process has to be done, which has to take care of the delays between two continuous communications and most vastly the verification of the sender's number. The number of authenticated mobile numbers can be more than one. This enables the multiple users can operate the digital display. The main limiting check is the RAM of the microcontroller.
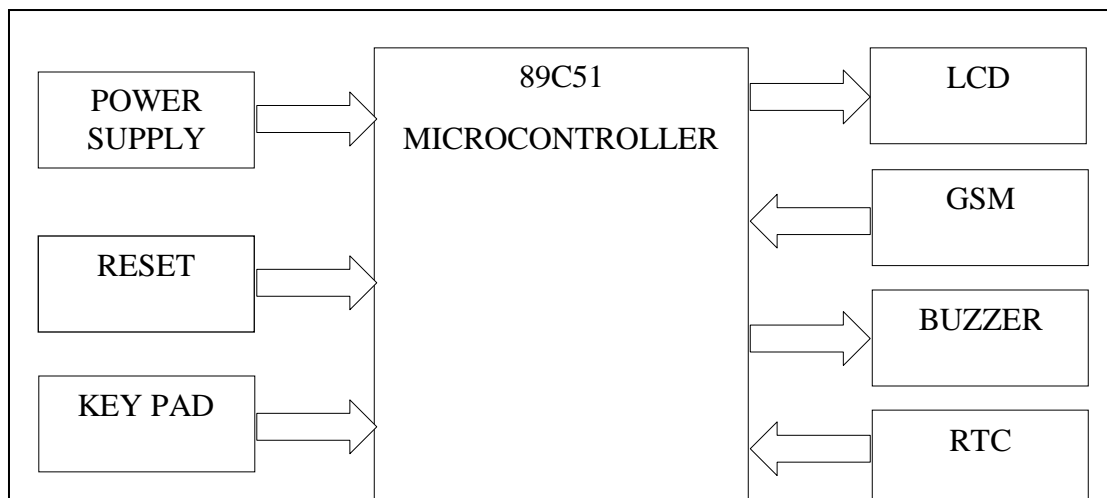
4. IMPLEMENTATION

Block Diagram

Fig. 1:- Wireless electronic display board using GSM technology
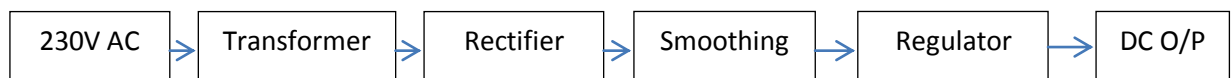
5. POWER SUPPLY

Fig. 2:- Block Diagram of power supply

Microcontroller required regulated Dc Power supply . It convets high AC voltage into Regulated Dc voltage .It contains Transformer, Rectifier, Filter ,Regulator IC.

International **J**ournal of **E**ngineering **R**esearches and **M**anagement **S**tudies

- **Transformer -** steps down high voltage AC mains to low voltage AC**.**
- **Rectifier**- converts AC to DC, but the DC output is varying**.**
- **Smoothing -** smoothest the DC from varying greatly to a small ripple.
- **Regulator**- eliminates ripple by setting DC output to a fixed voltage.

6.   MICROCONTROLLER

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer

7.   LCD DISPLAY

LCD (liquid crystal display) is the technology used for displays in notebook and other smaller computers. Like light-emitting diode (LED) and gas-plasma technologies, LCDs allow displays to be much thinner than cathode ray tube (CRT) technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it.
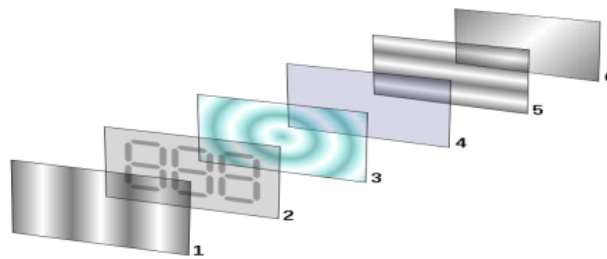

Fig. 3:- LCD working Display

8.   BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

9.   REAL-TIME CLOCK

A real-time clock (RTC) is a computer clock (most often in the form of an integrated circuit) that keeps track of the current time. Although the term often refers to the devices in personal computers, servers and embedded systems, RTCs are present in almost any electronic device which needs to keep accurate time.

10. KEYPAD

A keypad is a set of buttons arranged in a block or "pad" which bear digits, symbols or alphabetical letters. Pads mostly containing numbers are called a numeric keypad. Numeric keypads are found on alphanumeric keyboards and on other devices which require mainly numeric input such as calculators, push-buttontelephones, vending machines, ATMs, Point of Sale devices combination locks, and digitaldoorlocks. Many devices follow the E.161standard for their arrangement

International Journal of Engineering Researches and Management Studies

Fig. 4:- Keyboard interfaced for data entry

11. GSM

GSM is stands for Global System for Mobile GSM standard is developed by the European Telecommunications Standards Institute(ETSI) to describe the protocols for second-generation (2G) digital networks used by mobile or cell phones. A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem performs like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate. Generally, computers use AT commands to control modems. Reading of message from the SIM card inserted into the modem is done by transfer the suitable AT command to the modem. In addition to the standard AT commands, GSM modems support anlong set of AT commands. These long AT commands are defined in the GSM standards. Here we use GSM SIM800 it is Best for interfacing with any microcontroller- 8051, AVR,PIC, ARM, Raspberry I, etc. or with a computer. It followed Most common AT Commands .SIM800 - GSM/GPRS module Designed for global market, SIM800 is a quad-band GSM/GPRS module that works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHZ.

Fig. 5:- GSM Modem for data transmission

Circuit Algorithm
- Initialize the LCD and UART protocol

IJERMS

International Journal of Engineering Researches and Management Studies

- Check for the command **+CMTI: "SM",3 (Location number)** to know whether the new message is received or not
- If you receive the command then store message location number.
- Now read that particular location and extract the body of the message
- Display the message on LCD

Application Of Wireless Electronic Board Using GSM
- Educational institutions and organization
- Used in bus stations, parks, etc. to display the messages wirelessly
- Crime prevention
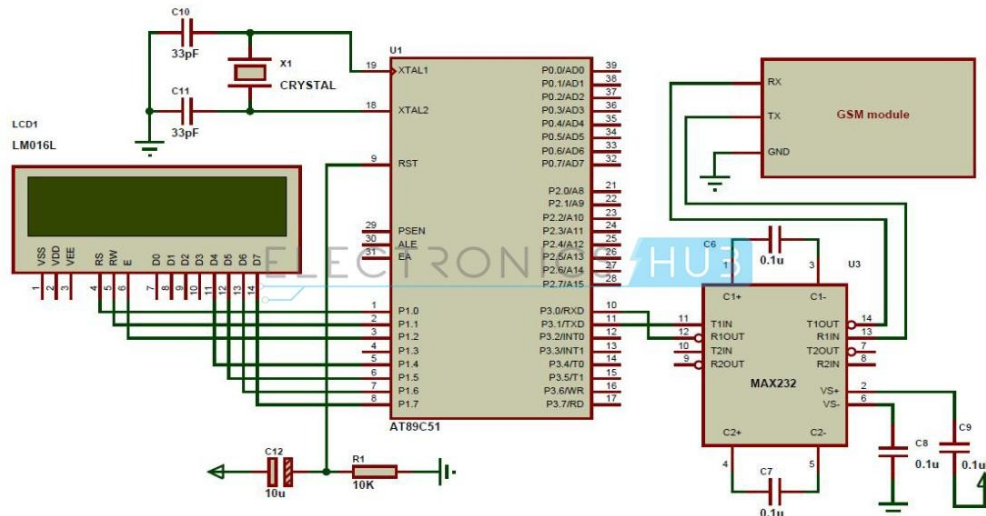- Managing Traffic
- Advertisement.
- Railway Stations

Fig. 6:- Circuit implementation layout

Hardware Implementation
- Microcontroller 89C52
- 16X 4 LCD Display Normal & Jumbo
- Buzzer
- Power Supply
- Level Converter MAX 232
- GSM MODEM
- SIM

Software Implementation
- Keil uVision IDE
- Flash magic
- Proteus

International **J**ournal of **E**ngineering **R**esearches and **M**anagement **S**tudies

12. RESULTS

The wireless Notice Board using GSM was designed and Implemented Successfully. The working condition and the various forces were popularly Studied before going through the designing stage. We choose easily available components throughout the designing. The final output of the system is received message from GSM is displayed in LCD with our conditions.
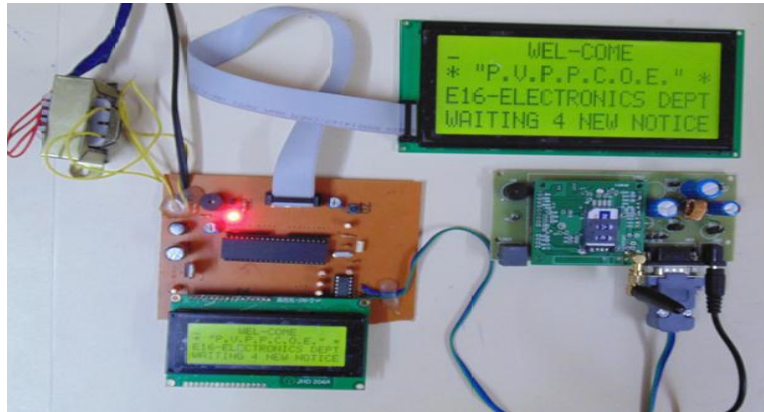

Fig.7 Final result with display

13. FUTURE WORK

This technology could be further modified and more upgraded as per individual need and interest. We have discussed some basic ideas of this technology. And depending on innovative applications user can upgrade as per requirement.

14. CONCLUSION

The above technical paper explains how we can develop as well as modify GSM based e-notice board. In addition to this, for bringing new applications every time we need to only burn the HEX code of target program. The target program could be GSM based home appliance, GSM based railway reservation, GSM based home security, GSM based robot control, and GSM based stepper motor controller and many more. Make new HEX code and get completely new application without further modifying the hardware

REFERENCES

[1] *Artificial Intelligence – Elain Rich & Kevin Knight, Tata Mc Graw Hill, 2nd Edition*
[2] *A. Clark and R. Harun, Assessment of kalman-_lter channel estimators for an HF radio link," IEE Proceedings, vol. 133, pp. 513{521, Oct 1986.*
[3] *Kumar Pawan, BhardwajVikas, PalKiran, Singh Narayan, Mishra Amit , "GSM based e-Notice Board: Wireless Communication" ,in International Journal of Soft Computing and Engineering, Volume No. 2, Issue No. 3, July 2012, pp. 601_605*