GSM BASED SCROLLING LED DISPLAY

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Abstract—**Now-a-days, Scrolling LED Displays are normally used in stationaries, railway stations, banks, etc. everywhere in the daily occupational life. This LED's are pre-programmed in sense that they are already programmed to display a particular message; in case of editing or manipulating the message a person is needed around the display either by leased media or some kind of wireless media(within a limited area) which itself is an disadvantage because a the person cannot be always present at the location of the display board; a person might be at some other place and it is urgent for the person to display the message on the LED display board which is at a distant place, so this type of Scrolling LED Displays are not effective in all situations and also this display board cannot be placed anywhere because of complex and delicate wiring. "GSM based LED Scrolling Display Board" is a model for displaying notices or messages within any networked area through SMS which can be send by mobiles. The Project aims to provide the services of communication with LED displays remotely using GSM (that is by using SIM's SMSs via mobile phones) and updating message instantly on display board unlike a desk bound device such as PC or laptop. The user can update it even from a remote distant with simple user interaction.**

KEYWORDS- MOBILE TELECOMMUNICATION NETWORK, SHORT MESSAGE SERVICE, TRANSMISSION POLICY, WIRELESS TRANSMISSION, LED DISPLAY.

INTRODUCTION

In this modern world Mobile Phones and the related technologies are becoming more and more prevalent. Various technical arenas in the field of Telecommunication and Embedded Systems are becoming omnipresent in the people. [1][2] This Display doesn't need to be re-programmed because it is based on real-time computing which means that when a person sends a message using Short Message Service (SMS) then the already existing message is deleted from the SIM making a space for the next SMS. The use of "Embedded System Communication" has given rise to many interesting applications that ensures comfort and safety to human life. The proposed work provides easy and user-friendly interface to display any message on the LCD Screen. There is no need to manually write the message like in conventional display boards thus it is more popular. It consists of ardunio uno board, controller AT mega 328P, Bluetooth. mobile phone and LCD display board. LCD display board is used for testing the proposed model. The interfacing of ardunio uno board with mobile phone is quite easy with help of the terminal pin,

read/write pin. Hence, we employ Atmel ATmega328p microcontroller. [3]. This proposed system has many upcoming applications in educational institutions and organizations, crime prevention, traffic management, railways, advertisements etc. Been user friendly, long range and faster means of conveying information are major bolsters for this application. By using this proposed methodology, we can enhance the security system and also make awareness of the emergency situations and avoid many dangers. [2]

LITERATURE SURVEY

1] GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM):

This technical paper gives the knowledge about what is and how GSM it works. It details the history and evaluation of GSM. It shows how modules are linking within it using different types of system and hence, provides idea of how the networking is done within the different range of areas with its various services. [4]

2]Wireless Electronic Display Board Using GSM Technology [2013]:

This paper deals with an innovative rather an interesting manner of stating the message to the people using a wireless electronic display board which is synchronized using the GSM technology and hence, concluding that using this technology one can convey message even in crowdy place from schools to huge organizations at different scales. [5]

3] Display Message on notice Board using GSM [2013]:

This technical paper depicts that rather than using printed public utilities one can use GSM based notice board which saves time, energy and environment which saves cost of printing and photocopying; authorized person can spread or convey message to particular amount of people as per displays size. [6]

4] Transmission Policies for multi-Segment Short Messages [2015].

This paper implements analytical models for the study of multi-segment short messages and how it improves the performance of the MSM delivery by selecting needed parameters providing useful guidelines to configure parameters for SMS transmission policy. [7]

5] Cipher SMS-A Protocol for End to End Secure Transmission of SMS [2016].

This technical paper indicates how secure the SMSs are; since it proposes Cipher-SMS which provides end-to-end security during transmission of SMS over the network preventing man in the middle attack, relay attack and other simiar types of attacks. It supported regular key cryptography of AES and Caeser cipher. The Cipher-SMS protocol generates minimum communication and computation overheads as compare to existing. [8]Do not edit the header or footer of the document. Page numbers will be inserted later.

PROPOSED SYSTEM

Notice board is used in institution or organization or public utility places like College campus, railway stations. But sending various notices day to day is a heavy process. [9] In this proposed system, the message is send from authorized user to GSM module which is located on the notice board. So, this GSM module receives the message and displayed on notice board, at same time this message will be send different mobile number store in memory of microcontroller. When new message is arrived at notice board than the buzzer will beep. Max232 shift the level of signal which converts the signal between the microcontroller and GSM module. After the conversion of signal this message will be displayed on notice board.[10].
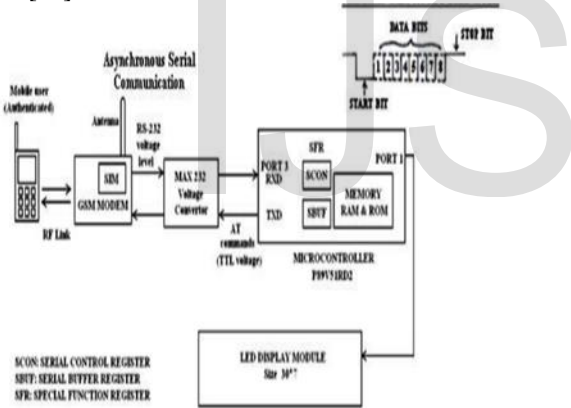

Fig 1: Block diagram

EXPECTED OUTPUT

As shown in figure a the message is sent as "@hello cbit#" because when @ is received the message reading starts and when # is received the message reading stops so whatever the message we want to display is kept in between @ and #. The message is received by the GSM module and is passed onto the microcontroller using serial communication. The GSM module uses the AT commands presented in a proper syntax. The GSM module receives the message and stores in the memory available in the SIM card. When the command AT+CMGR is executed in the microcontroller the message is transferred to the microcontroller. The GSM is connected to microcontroller board through serial communication using RS232 cable (DB9 pins). The LED display board is connected to microcontroller board by pins directly. The TxD and RxD

of display board are connected to P3.0 and P3.1 of microcontroller board. Initially when power is switched on and all the modules are kept ready, as there is no message is sent to the GSM module, the board displays the default message fed into it as shown in figure 2.
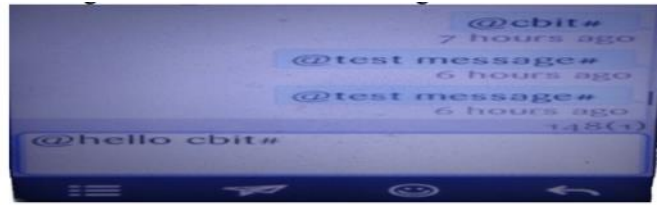

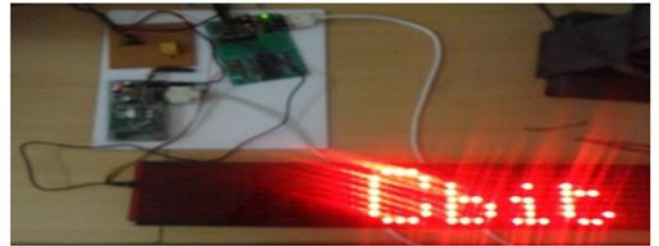Fig 2: A Mobile User sending the message in specified format .

Fig 3: LED Board displaying the default message.

Then as in figure a when a message is sent in the specified format, then a series of commands are executed which can be seen in a HyperTerminal when the kit is connected to the COM PORT of PC as in figure 4.
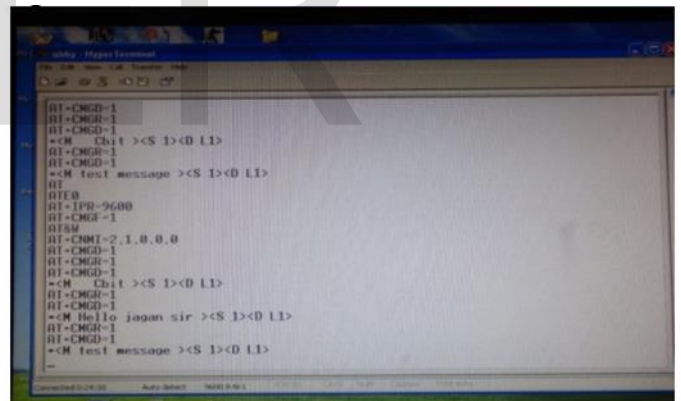

Fig 4: HyperTerminal window showing the sequence

After these commands are executed the microcontroller retrieves the message from GSM module and displays on the LED board as shown in figure 5.

Fig 5: LED board displaying the Message sent

CONCLUSIONS

The proposed system concludes that it is better than the previous models in comparison to performance, compabitility and it is an wireless model which used SIM services so it can be used world-wide anywhere. It can be used as local language which can be added as a variation in this project which again can be used as graphics and other decoding techniques. Also we realize that this project saves time, energy and hence environment. Thus we can say that this project is just a start, an idea to make use of GSM in communication to next level.

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