

GSM Based LCD Notice Board Display

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Abstract- Notice board is used to display the important notice. It is used to in various organization, bus stop, parks and railway stations. The displaying notice on the notice board is tedious and time consuming process. This paper present the advance approach to the notice board by sending the notice wirelessly by the mobile APP provided to the authenticated user. The operation of the system is performed by ATmega328P microcontroller. The SMS is send by the AT commands of the GSM900 module. The user sends the SMS through the android APP provided by registered mobile number. On the sender side mobile phone performed the operation while on receiver side the embedded system is developed to receive the SMS, validate the user and display the notice on the LCD display interfaced with the microcontroller. This system is tested on the real time environmvent.

Keywords- Android APP, AT328P, GSM, Wireless notice board, LCD

I. INTRODUCTION

Today's advertising is becoming digital. Department stores and shopping centers now use digital displays. Also, on trains and buses, information such as the platform number, ticket information is displayed on digital cards. People now adapt to the idea of the world in their fingers. The use of mobile phones has increased dramatically in recent years. Control and communication have become important in all parts of the world.

In this modern world, mobile phones and related technologies are becoming more frequent. Several technical areas in the field of telecommunications and integrated systems are becoming ubiquitous in people. The improvement of network technologies has encouraged the development and growth of very dense networks. Today, the general mass prefers When communicating on the move, the use of fixed lines has been drastically reduced [1,2].

Bulletin boards are among the most used ranging from elementary schools to large organizations to

broadcast messages in general. A lot of paper was used and then organizations wasted it. This, in turn, causes great deforestation and leads to global warming. Small innovative steps in the use of technology for regular purposes would have a negative effect on the environmental problems that currently affect us. The main objective of this method is to design automatic notice board system, in which the SMS is send by the users mobile phone. The SMS sent by the user first authenticated at the receivers side, then displayed on the notice board. Another feature provided is the priority. The priority is assign to the higher authority person like Head of Department of the department.

II. LITERATURE SURVEY

Guifen Gu et al. [6] mainly show the nature of the GSM (Global Mobile Communications System) network. The GSM system is today a world standard for second generation mobile telephony. The GMS system is very popular and important all over the world. It has many advantages and conveniences.

Foram Kamdar [7] proposed the electronic bulletin board system that saves time, energy and, therefore, the environment. The cost of printing and photocopying is also reduced, since it is possible to provide information to a large number of people from our hands. Therefore, we can conclude that this document gives an idea to use GSM in communications at a higher level.

N. Jagan Mohan Reddy et al. [8] develops a photographic laboratory model system with wireless bulletin boards with a connected GSM modem, which displays the message desired by the user through a text message in the most populated or crowded places. Bulletin boards are among the most used ranging from elementary schools to large organizations to broadcast messages in general.

Shruthi K. et al. [9] offers a discussion on current technology trends and how exactly, easy-to-wear devices to play a vital role in everyday life. Using current technological devices, this document explains how to create an intelligent and efficient bulletin board.

Neetesh Saxena et al. [10] explain that the EasySMS protocol is designed to provide secure end-to-end communications via SMS between mobile users. The analysis of the proposed protocol shows that the protocol can prevent different attacks. The transmission of the symmetric key to mobile users is managed efficiently by the protocol. This protocol produces less communication and overhead computing, uses bandwidth efficiently.

Yi-Bing Lin et al. [11] have proposed analytical models to investigate two multi-segment XI short message transmission policies. The analytical models have been validated in over 100 million measured data obtained from a 6 month SMS commercial operation. This analytical model can effectively accelerate network planning for the commercial SMS operation.

III. PROPOSED SYSTEM

The block diagram of the proposed system is as shown in Fig.1.

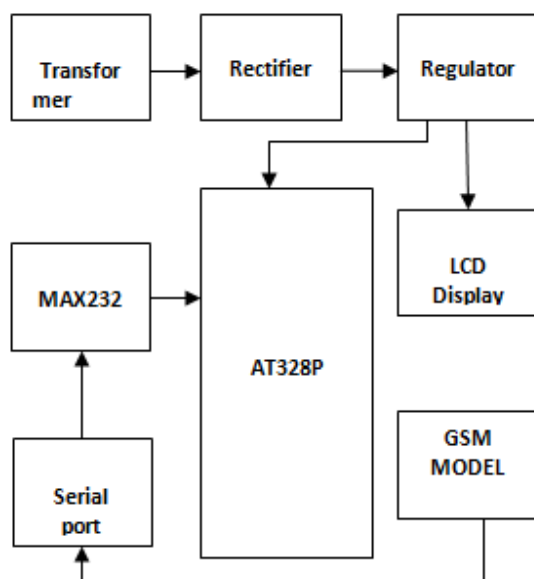


Fig.1. Block diagram of proposed GSM based wireless notice board

Each block of the proposed system is as explained below.

3.1 Atmega 328P

Microcontroller is based on a 32/16 bit ARM CPU. It provides large buffer size and high processing power. Various 32 bit timers, single or dual 10-bit ADC, 10-bit DAC, PWM channels and 45 fast GPIO lines level sensitive external interrupts pins.

3.2 MAX 232IC

MAX232 IC is used to convert to TTL compatible digital logic from signal.

3.3 GSM900

A GSM is a type of specialized modem that accepts the SIM card and works by subscribing to a mobile operator, just like a mobile phone. From the point of view of the mobile operator, a GSM modem resembles a mobile phone. The GSM modem is available in various interfaces, such as USB and serial. However, the main difference is that the GSM modem is wireless.

3.4 AT cammands

AT commands are to handle the operation of MODEM. AT means Attention. Remote and wireless access modems require AT commands to interact with computers. In this project, it is used to make the GSM modem work.

3.5 LCD

In this system, the message sent by the user is displayed on 16x2 LCD screen. It required three control lines along with 4/8 control lines for data bus. The choice of the selection of 4bit or 8 bit LCD is depend on the user.

3.6 Power supply

The power supply is a source of electricity for the entire system. A device or system that supplies electricity or other power to an output load or group of loads is called a power supply unit.

3.7 Android APP

Android APP is developed for simplicity of the project. The user needs to write a message to be displayed on the notice board, set the priority and the PIN provided.

IV. ALGORITHM

The algorithm of the proposed system is as described below.

1. Start
2. Login or Register to Mobile application.
3. Type your notice, select Duration for notice and Notice will get priority as per user (ex. If HOD sends notice, priority will be 1 otherwise priority will be lower).
4. When a valid application user sends SMS to GSM Module, He gets an Acknowledgement.

5. The GSM processor receives the message, verifies it and transfers to the ARDUINO UNO.
6. AT328P will process the message and will send it to LED display.
7. LED display will display the message as per priority for limited duration.
8. End

Flow of the system is as shown in below Fig. 2

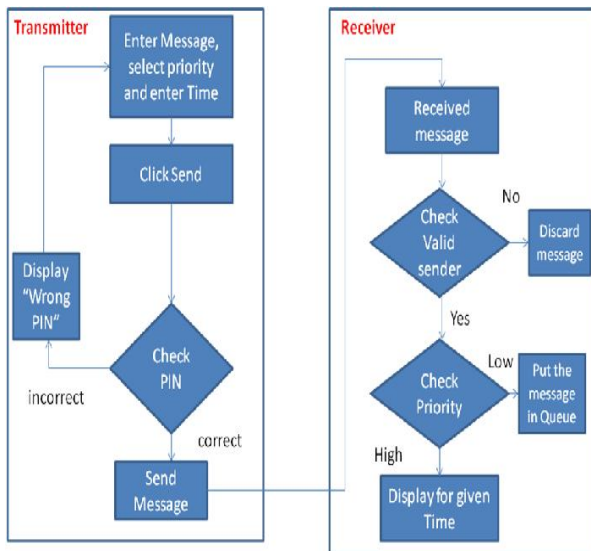


Fig.2. Flow chart of the proposed system

V. RESULTS

The final results of the proposed system is as shown in Fig below

5.1 Finding the module

While starting the hardware module the system first finding the GSM module



3.8 Module connected

The module is searching till the module is not found. Once the GSM module is found the message is printed on the LCD as 'Module Connected'.



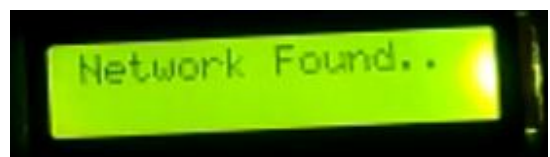
3.9 Disable the Echo

The Echo is used to finding the module. Once the module is found it is necessary to disable the ECHO.



3.10 Finding the Network

Now GSM is found, Echo is off, then Module searching the network range. Without network we cannot send or receive the message. Hence first module searches the network and printed 'Network Found' if network is obtained.

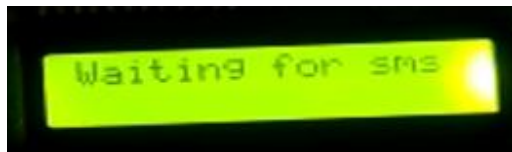


3.11 Initialization of the Project

Now GSM is initialize, network is found, the next task is the execution of the proposed wireless notice board system. First the Project title is printed on the LCD.



The initialization of the programming parameter takes some time. Once the parameters are initializing then the message is printed on LCD as 'ALL SET' and 'Waiting for SMS'



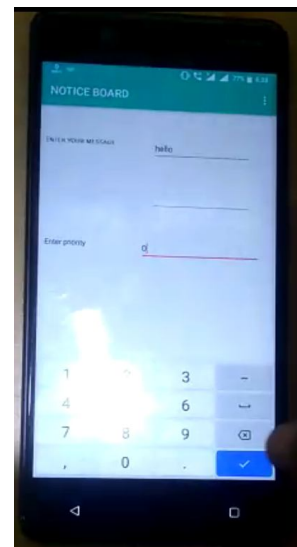
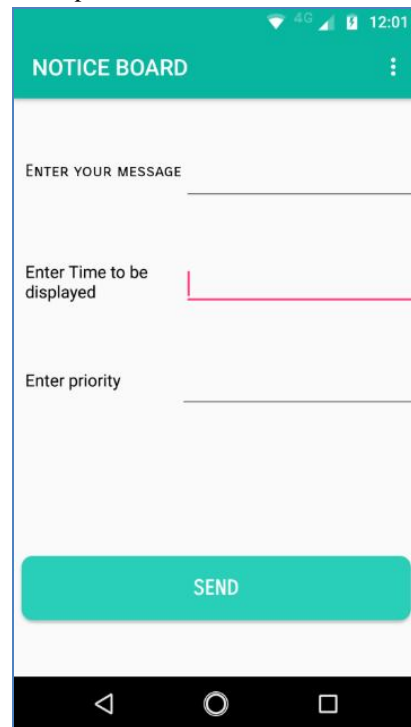
3.12 High priority SMS sending from Transmitter side.

The receiver system is ready for receiving the SMS from sender. Android APP is developed at the transmitter side to transmit the message to the notice board wirelessly. The GUI of the android APP is shown in below Picture. The android app consists of three basic thing:

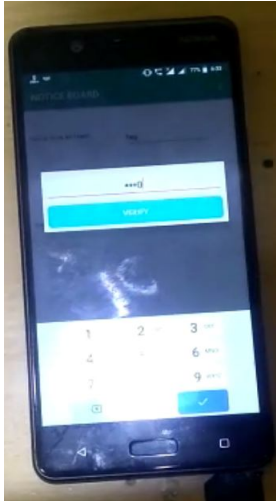
1. Enter Your Message
2. The message to be display on the Notice board is write in the blank space provided on the APP.
3. Enter Time to be Display
4. The times for message to be display have to set. The time is in Minuit. This is important because every message has it time importance.
5. Enter Priority

One of the most important feature is added in this approach is priority. The priority is most valuable thing. HODS of the department have high priority for sending the message. The high priority messages are denoted by '1' and low priority messages are denoted by '0'. The high priority message executes first and low priority messages pending in

the queue. Each task required security hence for authentication four digits PIN is provided with this APP.



Initially low priority message 'hello' is sending from the android APP. it is displayed on the notice board. While displaying the low priority message on the Notice Board, The high priority message 'hey' is sending from the user android APP by setting priority as '1', the low priority message send to the queue and high priority message is displayed on the Notice board.



VI. CONCLUSION

Smart E-notice board system is the innovative idea for the notice or message to be displayed on the notice board or any digital board wirelessly. This system consists of transmitter and receiver system. Android APP is developed for sending the message from user side and embedded system is developed at the receiver side to receive the sending message and displaying on the notice board. The priority based message system is helpful to display the emergency message on the notice board. Another features added for security is the PIN, which provided this services to the authenticate persons only.

This system is efficient, low cost, low complex, time efficient, smarter and portable.

REFERENCES

- [1] Muhammad Ali Mazidi, Janice G. Mazidi, Rolin D. McKinlay, The 8051 microcontroller and embedded systems using assembly and C, 2nd edition 01-Sep-2007, Pearson Education India.
- [2] SMS And MMS Interworking In Mobile Networks Arnaud Henry-Labordère , Artech House mobile communications, 2004- Technology & Engineering.
- [3] Ayala, Kenneth J. (1996), The 8051 Microcontroller-Architecture, Programming and Applications, Delmar Publishers, Inc. India Reprint.
- [4] GSM telecommunication standards, June 2000 Second edition, European Telecommunications Standards Institute.
- [5] M Samiullah, NS Qureshi, "SMS Repository and Control System using GSM-SMS Technology," European journal of scientific research, 2012.
- [6] Guifen Gu and Guili Peng The Survey of GSM Wireless Communication System, International Conference on Computer and Information Application (ICCA 2010).
- [7] Foram Kamdar, Anubhav Malhotra and Pritish Mahadik Display Message on Notice Board using GSM ISSN 2231-1297, Volume 3, Number 7 (2013), pp. 827- 832 Research India Publications
- [8] N. Jagan Mohan Reddy and G.Venkeshwaralu Wireless Electronics Display Board Using GSM Technology, International Journal of Electrical, Electronics and Data Communication, ISSN: 2320-2084.
- [9] Shruthi K., Harsha Chawla, Abhishek Bhaduri "SMART NOTICE BOARD", Department of Electronics and Communication, Manipal Institute of Technology, Manipal University, Karnataka.
- [10] Neetesh Saxena and Narendra S. Chaudhari, EasySMS: A Protocol for End-to-End Secure Transmission of SMS IEEE Transactions on Information Forensics and Security, vol. 9, No. 7, July 2014.
- [11] Yi-Bing Lin, Sok-Ian Sou, and Chao-Liang Luo Transmission Policies for Multi-Segment Short Messages" DOI 0.1109/TVT.2457914.2015.