Wireless notice board design using bluetooth technologies

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Abstract
The work presented in this paper deals with the wireless notice board design using bluetooth technologies. This project deals with an innovative rather an interesting manner of intimating the message to the people using a wireless electronic display board which is synchronized using the Bluetooth technology. This will help us in passing any message almost immediately without any delay just by sending a SMS or voice message which is better and more reliable than the old traditional way of passing the message on notice board. This proposed technology can be used in colleges, many public places, malls or big buildings to enhance the security system and also create awareness of the emergency situations and avoid many dangers. Using Bluetooth module message can be displayed on the LCD display board and using GSM module SMS or voice message can be sent to the Bluetooth module. The Electronic notice board is wireless and needs no wires for displaying the information on the LCD Display. It is very easy to operate and consumes less power. The circuit of the wireless notice board is portable. The work presented here is the mini-project work of the second semester engineering students of electronics & communication engineering department of Dayananda Sagar College of Engg., Bangalore, Karnataka.
Keywords – Wireless LCD, SMS

1. Introduction to the project work
In this world Mobile Phones and 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. The use of cell phones has rapidly increased over the last decade and a half Upgradation in networking technologies has encouraged the development and growth of very dense networks. Now-a-days the general mass prefer communicating while on the move therefore landlines usage has been drastically reduced. Notice boards are one of the widely used ones ranging from primary schools to major organizations to convey messages at large. A lot of paper is been used and which is later wasted by the organizations. This in turn leads to a lot of deforestation thus leading to global warming. Small innovative steps in making use of technology for regular purposes would have an adverse effect on the environment issues which we are presently concerned about [1]. The main aim of this paper is to design a SMS driven automatic display Board which can replace the currently used programmable electronic display and conventional notice boards [2].

2. Problem Statement
Circulating important messages using the conventional methods is a tedious process and requires lot of effort and may not to be effective. Conventional means like handwritten notices are time consuming and tedious. A lot of paper is being used, which is later wasted by the organizations. [3].

3. Proposed methodologies adopted

In our project we make use of power supply, Arduino UNO, LCD display, Bluetooth HC-05 module and Arduino automation mobile application. The main components used are :

4. ARDUINO UNO

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino UNO is based on an ATmega328Pmicrocontroller. It includes 6 analog pin inputs, 14 digital pins, a USB connector, a power jack, and an ICSP (In-Circuit Serial Programming) header. It can run on both online and offline platforms [4].
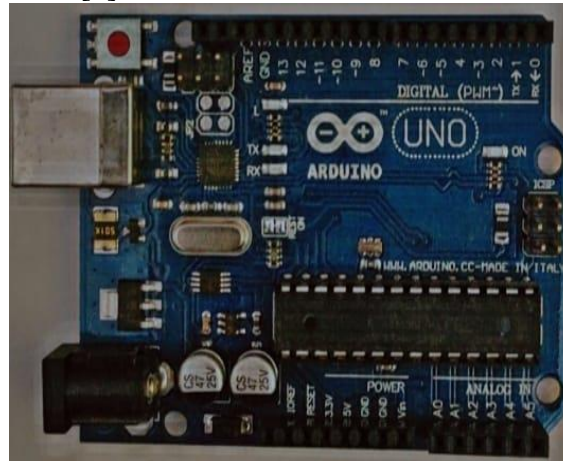

Fig. 1 : Arduino UNO

5. BLUETOOTH MODULE (HC-05)

HC-05 is a Bluetooth module which is designed for wireless communication purposes. It uses serial communication to communicate with devices. It has 6 pins & 2 modes of working [5].

Fig. 2 : Bluetooth module (HC-05)

6. LCD DISPLAY (16x2)

An LCD (Liquid Crystal Display) screen is an electronic display module. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. [6].

Fig. 3 : LCD display (16x2)

7. ARDUINO AUTOMATION

It is a terminal app with UART serial communication protocol that transmits & receives data wirelessly through Bluetooth connections [7].

Fig. 4 : Arduino Automation app logo

8. Implementation procedures carried out

After uploading the program to the Arduino UNO, we power them using external power supply. Due to that all functions of equipment's are on. Now, we can pass the notice/SMS or voice message which we want using the mobile application. This notice/SMS will be received by the Bluetooth terminal and by using Arduino this notice/SMS will be displayed on the digital notice board. [8].
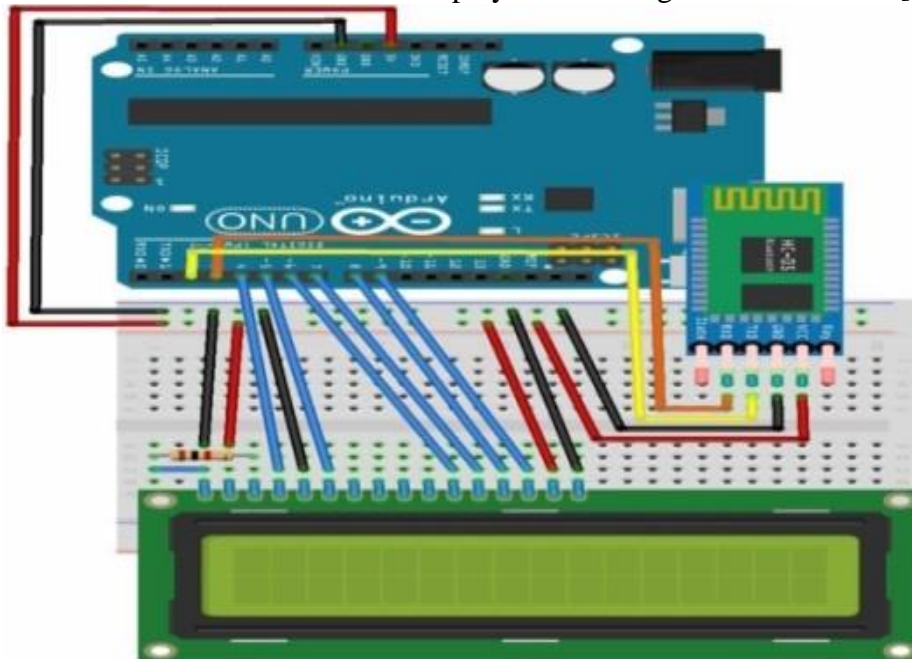

Fig. 5 : Circuit diagram of the wireless notice board

9. Working principle of the model

Using the block diagram shown in fig 6, the whole process can be described from the transmitter and receiver section. The Bluetooth module receives a message from the authorized mobile phone and the message is extracted by the microcontroller from the Bluetooth module and is displayed on the Matrix display board [9].

10. Results & Discussions

The result of the system is a simple display of the message on the LCD screen. We have developed an electronic notice board that is controlled by an android device and displays message on it. The output helps us to analyze that the result which was intended to achieve is successful. The output Displayed on the screen is the text sent or the voice command given using the Arduino Automation app to the HC-05 BT module. [10].

11. Conclusions & future work

Wireless notice board design using bluetooth technologies was developed as a prototype in this paper. As the technology is advancing every day the display board systems are moving from Normal handwriting display to digital display, further to wireless display units. [11].

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