e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:07/Issue:04/April-2025 Impact Factor- 8.187 www.irjmets.com

WIRELESS NOTICEBOARD USING ARDUINO UNO AND BLUETOOTH HC-05

Saniya Mohite*1, Smita Bhosale*2, Sanika Khabale*3, Samruddhi Hawaldar*4, Ms. Sayali Mohite*5

*1,2,3,4Student, Dept. Of Computer Science Engineering, Tatyasaheb Kore Institute Of Engineering And Technology (Polytechnic), Warananagar, Maharashtra, India.

*5Guide, Dept. Of Computer Science Engineering, Tatyasaheb Kore Institute Of Engineering And Technology (Polytechnic),Warananagar, Maharashtra, India.

ABSTRACT

This research presents a wireless noticeboard system using Arduino UNO, Bluetooth HC-05, and an LCD display to show messages. We have developed an Android application and an SQLite database for efficient communication and data storage. This system allows us to display messages and notices dynamically in environments such as colleges, schools, offices, and other public places. The Arduino UNO acts as the main controller, while the Bluetooth HC-05 module enables wireless communication between the Android application and the system.

The Android application allows users to send messages to the noticeboard, with the data stored locally in an SQLite database which ensures efficient storage and retrieval of data, enhancing the performance and usability of the system. This solution offers a cost-effective, flexible, and scalable method for managing real-time information, significantly improving the traditional wired noticeboards by integrating modern wireless technologies and mobile app interfaces.

Keywords: Wireless Noticeboard, Arduino UNO, Bluetooth HC-05, Android Application, SQLite Database, Real-time Information, Wireless Communication, Dynamic Messaging, Remote Updates, Mobile Interface, Data Management.

I. INTRODUCTION

In this 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. The use of cell phones has rapidly increased over the last decade and a half up gradation in networking technologies has encouraged the development and growth of very dense networks. Now-a-days the general mass prefers 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. 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.

The main aim of this project is to design a SMS driven automatic display Board which can replace the currently used programmable electronic display and conventional notice boards. It is proposed to design to receive message in display toolkit which can be used from an authorized mobile phone. 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 LCD display board. This proposed system in this paper 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.

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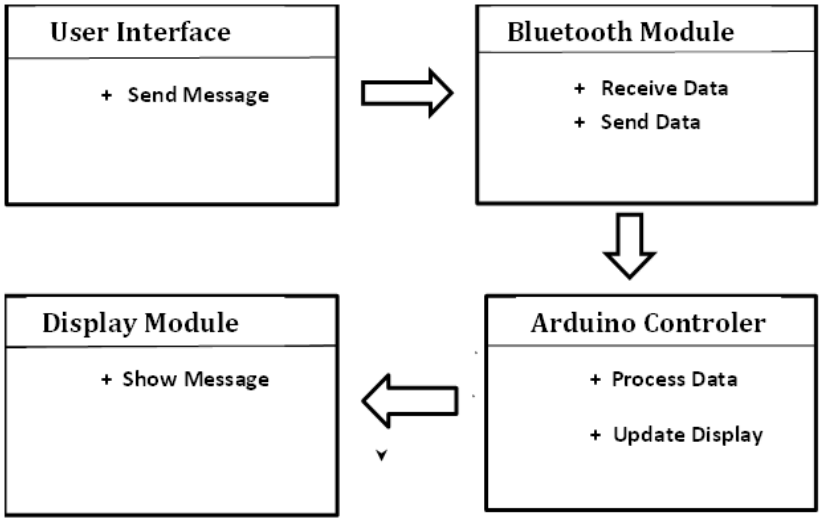
II. METHODOLOGY

UML DIAGRAM:

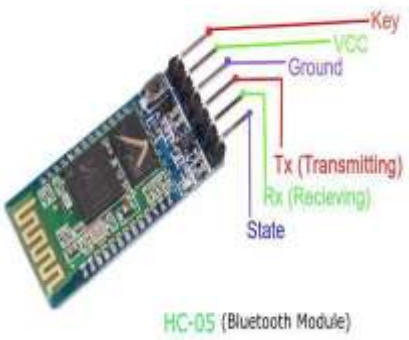


III. SOFTWARE REQUIREMENTS

Arduino uno:

Arduino Uno is an 8-bit ATmega328P microcontroller. To support the microcontroller, it uses the components such as crystal oscillator, serial communication, voltage regulator, etc. It has 14 digital I/O pins(6 pins can be used as PWM pins). It has six separate analog input pins, a USB connection, a Power barrel jack, an ICSP header, and a reset button.

HC-05 Bluetooth



HC-05 is a Bluetooth module which is designed for wireless communication. This module can be used in a master or slave configuration. It is IEEE 802.15.1 standardized protocol, through which one can build wireless Personal Area Network (PAN). It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over the air. HC-05 communicates with the microcontroller using serial port (USART).

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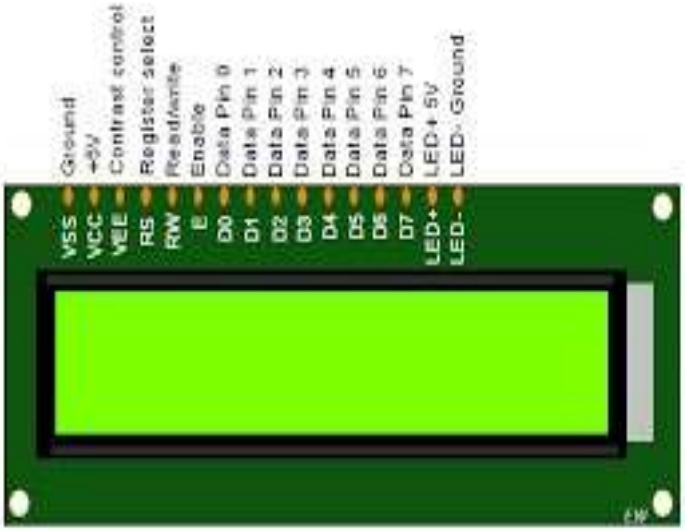
Standard LCD:



A Standard LCD is a liquid-crystal display [LCD] is a flat-panel display o that uses the light-modulating properties. Liquid crystals combined with polarizers. LCD does not emit light directly, instead using a backlight or reflector to produce images in color or monochrome (the same as black or white). A type of alphanumeric or graphic display based on liquid crystals. LCDs are available in a many sizes, shapes, and styles. Yours has 2 rows with 16 characters each

Breadboard and Jumper wires:

The jumper wire also known as DuPont wire. A breadboard also has internal wiring to make connections super-fast. Board on which you can build electronic circuits. It's like a patch panel, with rows of holes that allow you to connect wires and components together. Versions that require soldering are available, as well as the solder-less type used here.A board on which you can build electronic circuits. It's like a patch panel, with rows of holes that allow you to connect wires and components together. Versions that require soldering are available, as well as the solder-less type used here

Arduino IDE:

The IDE is a simple interface that runs on a computer running Windows, OS X, or Linux. You use the IDE to create a sketch (an Arduino program) that you then upload to the Arduino board using a PC and USB cable. The sketch tells the hardware what to do. I'll go into both the hardware and software.

The Arduino can be powered by batteries, USB, or an external power supply. Once the Arduino is programmed, it can be disconnected from your computer and will run independently using a power

supply or batteries

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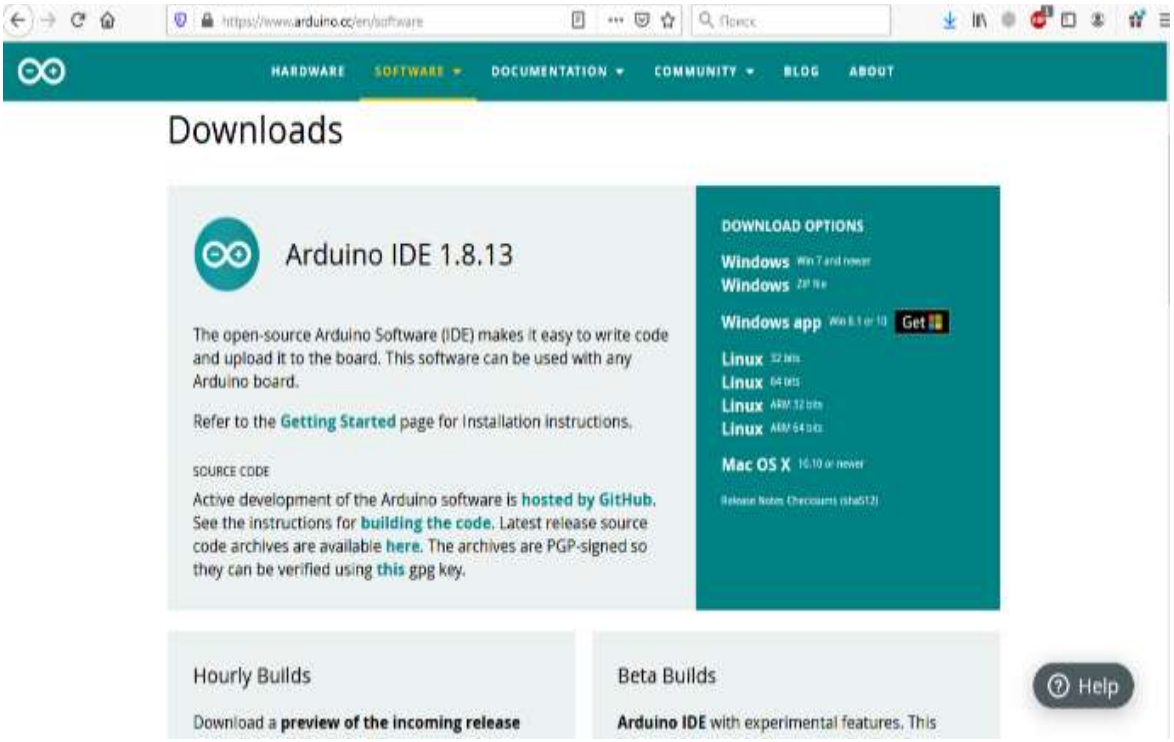
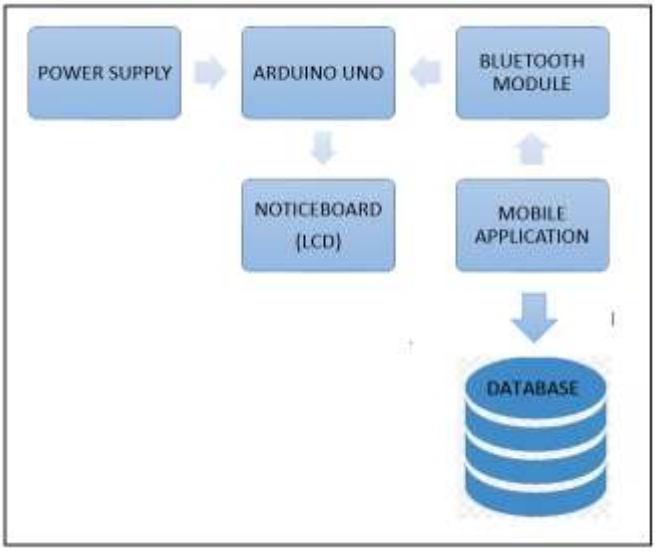
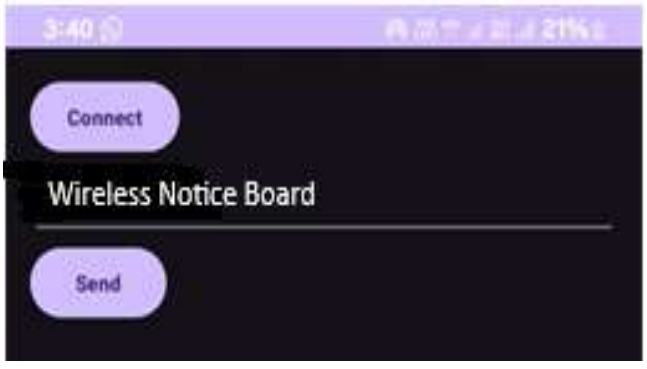


IV. MODELING AND ANALYSIS



V. RESULTS AND DISCUSSION

Mobile Application:



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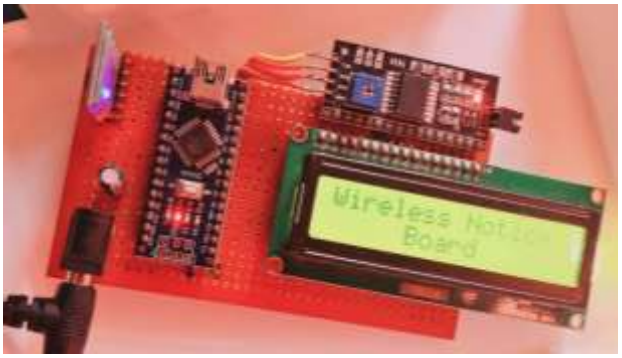
Hardware Model:



VI. CONCLUSION

The Digital Wireless Notice Board project, utilizing Arduino, Bluetooth, and a mobile application, offers an efficient and modern solution for displaying and managing notices in various environments like schools, offices, and public spaces. The addition of a database for message storage enhances the system's functionality by allowing easy message management, historical tracking, and efficient retrieval of content.

VII. REFERENCES

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