Smartphone Controlled Wireless Notice Board Using Ardunio UNO

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ABSTRACT

The proposed system uses an electronic notice board that can show messages and is managed by a Smartphone device. Information displays are quickly moving toward digital technology these days. This would enable us to transmit messages nearly instantly and without delay just by sending an SMS, which is more dependable and superior than the outdated, customary method of posting messages on the bulletin board. This suggested technology may be utilized to improve security, increase emergency situation awareness, and prevent numerous risks at institutions, public spaces, malls, and large structures. Show the message on the display board using the Bluetooth module. This paper's primary goal is to create a wireless notice board that shows user-sent messages. The notice board is the most important feature of any establishment, whether it be a public park, railroad station, or bus stop. The field of communication technology has advanced rapidly during the past few decades. Its significance in disseminating knowledge about anything from domestic issues to global occurrences has already been shown. In this study, we describe the creation of an automatically and remotely updated e-notice board that is managed via SMS. An LCD display and a Microcontroller were used to operate a Bluetooth module integrated circuit (IC) in the system.

Keyword: *Notice Board, Bluetooth, Microcontroller, LCD, messages and Arduino Uno.*

1. INTRODUCTION

In the era of ubiquitous digital connection, it is imperative to utilize technology to optimize communication. An Arduino UNO-powered smartphone-controlled wireless notice board is one creative approach. The dynamic platform for real-time message and information display created by this project combines the flexibility of Arduino with the widespread use of smartphones. Central processing unit function is mostly performed by the Arduino UNO, which interfaces with other components to provide display and communication functions.[1] The project uses wireless communication modules, including Bluetooth and Wi-Fi, so that a smartphone and notice board may communicate with each other without any problems. Depending on the required level of complexity and aesthetic appeal, the notice board's functioning can be improved by a variety of components, such as LED matrices, LCD screens, or e-paper displays. These screens offer a variety of ways to present information, including text, pictures, and even animations. A layer of intuitive control is added by integrating a smartphone application, which enables users to remotely control the material that appears on the notice board. From the comfort of their mobile device, users may create messages, choose display styles, and schedule updates using this app. By interpreting directions from the app and turning them into useful instructions for the notice board, the Arduino UNO serves as a bridge between the smartphone and the display hardware. A flexible communication tool appropriate for a range of contexts, including business and educational settings, is the smartphone-controlled wireless notice board. Instant updates and customization options are provided, enabling users to personalize the display. It lets teachers post announcements, assignments, and reminders in real time in the classroom, and it acts as a central repository for important information at work. Using Arduino UNO technology, the Smartphone Controlled Wireless Notice Board is an affordable way to update communication networks. Supervisors can edit information remotely and notify staff

members of any changes. Because of the project's scalability, it is possible to expand and customize it as well as incorporate more sensors for improved usefulness. This adaptable platform offers timely and pertinent information in a variety of scenarios, improving productivity, engagement, and connectedness.
In the transmitter and receiver parts, the entire procedure is explained. The message is taken out of the Bluetooth module by the microcontroller and shown on the matrix display board when the Bluetooth module gets it from the approved mobile phone. The entire procedure, including the exchange of data between the microcontroller and the matrix display and the Bluetooth module, is based on serial-to-parallel communication. Any institution that needs to decrease physical labor and frequently disseminate notices can benefit from the low cost, speed, dependability, and security of the "Bluetooth-based Wireless Notice Board using Arduino" system. We're utilizing Bluetooth technology. No matter where we are, we can send out notification.[2]

2. PROPOSED SYSTEM

An external source of 6 to 20 volts can power the Arduino board. Pin 5 might, however, deliver less than five volts if the supply is less than seven volts, which could cause the board to become unstable. The voltage regulator might overheat and harm the board if more than 12 volts are provided. We used a 9 volt battery because the suggested range is 7 to 12 volts.[3] Simply type the message into the app on the user's smartphone, and it will be instantly delivered to the notice board and displayed.

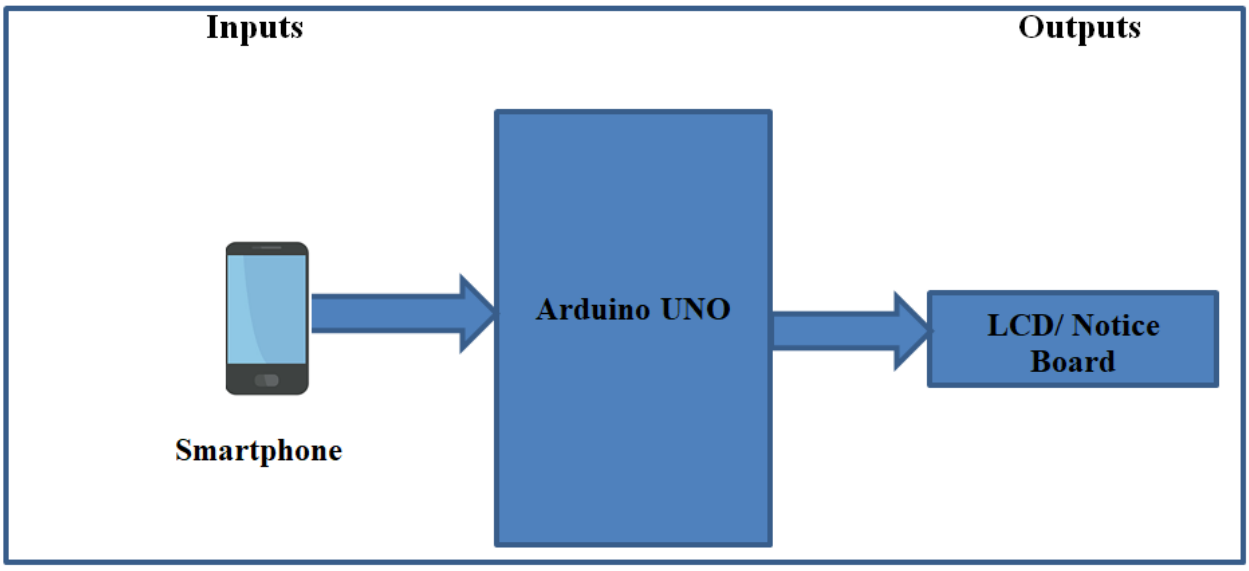


Fig -1: Block diagram of the Proposed System

3. Necessary Tools

3.1 Arduino UNO: The open-source electronics platform Arduino is built on user-friendly hardware and software. An Arduino board may be used to receive inputs, such as light from a sensor, a finger pressing a button, or a tweet, and convert them into outputs, such as driving a motor, turning on an LCD, or posting content to the internet. By delivering a set of instructions to the microcontroller on the board, you may direct your board on what to do. You utilize the Arduino Software (IDE), which is based on processing, and Arduino programming to do this.[4]

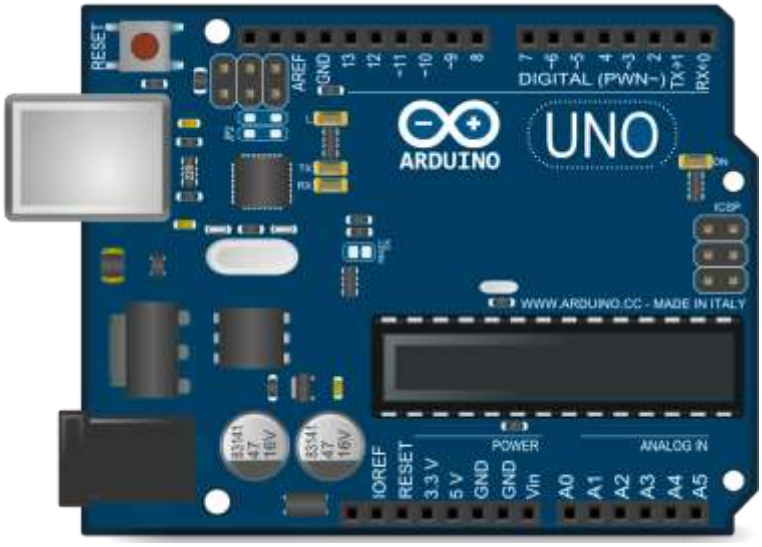


Fig -2: Arduino UNO

3.2 LCD 16x2: There are several uses for an LCD (Liquid Crystal Display) screen, which is an electrical display module. A 16x2 LCD display is a relatively simple module that is frequently seen in many different kinds of circuits and devices. An LCD that is 16 by 2 may show up to 16 characters on each of its two lines. Every character on this LCD is shown as a 5x7 pixel matrix. There are 224 distinct letters and symbols that may be shown on the 16 x 2 intelligent alphanumeric dot matrix display. There are two registers on this LCD: Command and Data.[5]

Fig -3: LCD 16x2

3.3 HC-05 Bluetooth Modules: It is utilized in a wide range of consumer applications, including wireless headsets, game controllers, mice, keyboards, and many more. Its range is around 100 meters, depending on the transmitter and receiver, the atmosphere, and the geographic and urban situations. Wireless Personal Area Networks (PANs) may be constructed using the IEEE 802.15.1 defined protocol. For data transmission over the air, frequency-hopping spread

spectrum (FHSS) radio technology is used. To communicate with devices, it makes advantage of serial communication. Serial port (USART) is used for communication between it and the microcontroller.[6]

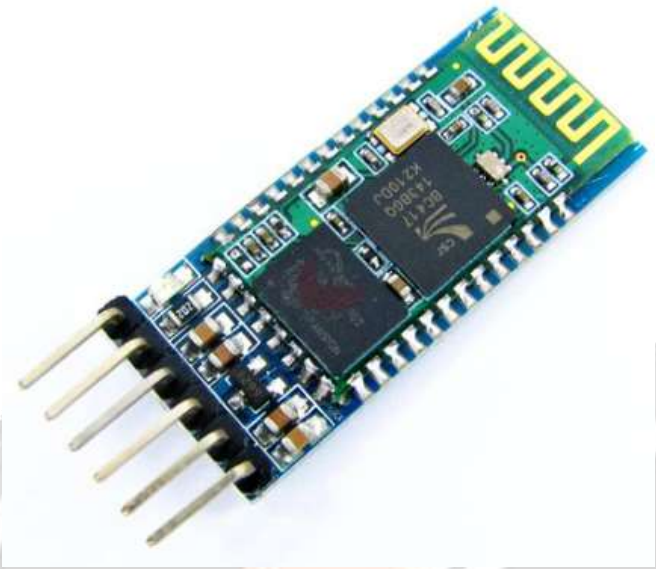


Fig -4: Bluetooth Module

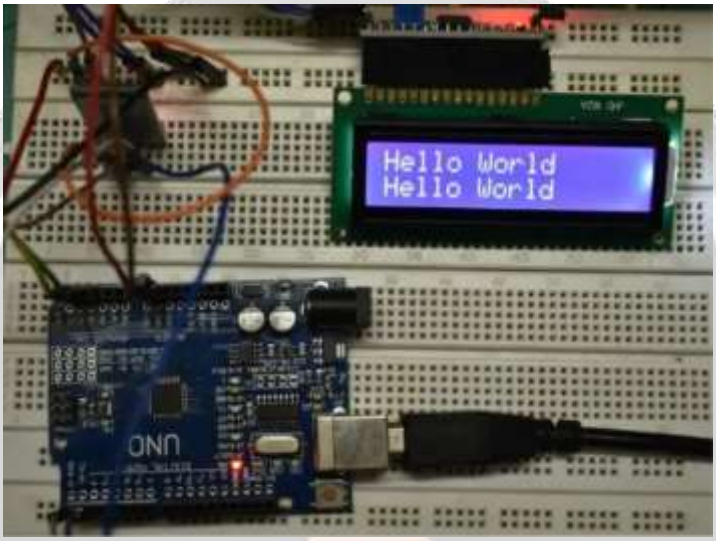
3.4 Breadboard: A semi-permanent prototype of an electrical circuit is constructed on a breadboard, often known as a solderless breadboard or protoboard. Because they don't require soldering or track damage, breadboards are reusable in contrast to perfboards and stripboards. Because of this, students and those teaching technology education also like using breadboards. Using breadboards, a wide range of electronic systems, from tiny analog and digital circuits to whole central processing units (CPUs), may be prototyped. In contrast to permanent circuit connection techniques, contemporary breadboards have elevated parasitic capacitance, comparatively elevated resistance, and less dependable connections susceptible to physical deterioration and jostling. About 10 MHz is the maximum frequency at which signaling can operate, and even then, not everything functions correctly.[7]

Fig -4: Breadboard

4. Applications

- Education: Displaying announcements, homework assignments, and class schedules in schools.
- Offices: Exchanging notifications from the firm, project updates, and meeting scheduling.
- Public Spaces: Displaying community bulletins, safety alerts, and event schedules.
- Retail: Putting menu items on display, publicizing special events, and advertising specials.
- Transportation: Giving out departure times and real-time travel information.
- Healthcare: Posting health advice and appointment reminders at clinics and hospitals.
- Events: Displaying conference schedules, speaker bios, and sponsor logos.
- Smart Homes: Showing calendar events, to-do lists, and weather predictions to residents.

5. PHYSICAL VIEW OF THE SYSTEM



6. CONCLUSION

Display board systems are evolving from traditional handwriting displays to digital displays and now wireless display units. This study develops a wireless notice board system with Arduino and Bluetooth connected to it that displays the user's desired message through an SMS in the most populated or crowded places. There are many upcoming applications for this proposed system in educational institutions and organizations, as well as in crime prevention, traffic management, railways, advertisements, and other areas. The application is supported by its user-friendliness, long-range communication capabilities, and speedy information delivery. Long-distance operation is not possible since Bluetooth technology is being employed here. We plan to employ GSM technology in the future to enable global notice board operation from any location.

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