IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 11, Issue 5, May 2024

DOI: 10.17148/IARJSET.2024.115111

# WIRELESS ELECTRONIC NOTICE BOARD SYSTEM USING IOT

**N S Hemalatha[1], DR. P Santhanalakshmi[2]**

II MCA Students, Master of Computer Applications, Hindusthan College of Engineering and Technology, Coimbatore, India[1]

Assistant Professor, Master of Computer Applications, Hindusthan College of Engineering and Technology, Coimbatore, India[2]

**Abstract**: The System aims to redefine traditional notice boards by integrating a microcontroller, MQTT, and an I2C LCD display. Through a physical button interface, users input data, transmitted via MQTT, leading to real-time updates on the LCD display. This innovation bridges web-based inputs with hardware communication, offering seamless and instant information dissemination. It revolutionizes communication in educational institutions, public spaces, and offices, allowing remote updates for notices, messages, or alerts. By merging IoT technology with a button-controlled microcontroller, the system enables dynamic content delivery, enhancing communication efficiency. This versatile solution transforms static notice boards into dynamic displays, facilitating swift and impactful information sharing. Its integration of web-based inputs, MQTT communication, and a user- friendly interface creates a novel platform for efficient, real-time communication in diverse environments.

**Keywords**: Node-MCU; LCD Display; I2C Adapter; Buzzer

## I. INTRODUCTION

In the System using MQTT as an input source establishes a robust communication framework between an MQTT platform and a microcontroller, facilitating real-time data transmission. Operating on the principle of MQTT data ingestion, this system receives user- generated content or messages from an MQTT broker, acting as the primary input source. Subsequently, this information is channeled to the microcontroller, leveraging MQTT's efficient publish-subscribe mechanism. In he microcontroller processes the received data and orchestrates the output mechanism, interfacing with an I2C LCD display. Through this seamless integration, the I2C LCD screen promptly showcases the transmitted information, enabling remote and instant updates.

This innovative system revolutionizes conventional communication methods by harnessing MQTT's agility to capture inputs from various sources. By employing MQTT's messaging protocol, it ensures swift and reliable data delivery to the microcontroller, fostering dynamic content presentation on the I2C LCD display. This paradigm shift from conventional input modes to MQTT-driven communication marks a significant leap in information dissemination, offering a versatile solution for diverse settings such as educational institutions, public spaces, and corporate environments.

In A wireless electronic notice board is a device that can display messages or information sent from a remote source, such as a mobile phone or a web browser. It is an application of IoT (Internet of Things), which connects devices and objects to the internet and enables remote control and communication. Wireless electronic notice boards can be used in various places, such as schools, colleges, banks, and other public places, to display announcements, advertisements, alerts, or other information. The scope of a wireless electronic notice board is to design and implement a device that can display messages or information sent from a remote source, such as a mobile phone or a web browser, using wireless communication technologies in [8].

A wireless electronic notice board can be used for various purposes, such as announcements, advertisements, alerts, or instructions, in different places, such as schools, colleges, banks, and other public places. A wireless electronic notice board can have different features and functions, depending on the components and technologies used, such as GSM, Wi-Fi, Bluetooth, ZigBee, etc. A wireless electronic notice board can also have different advantages and challenges, such as simplicity, low-cost, security, reliability, and energy-efficiency. A wireless electronic notice board is an application of IoT (Internet of Things), which connects devices and objects to the internet and enables remote control and communication.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 11, Issue 5, May 2024

DOI: 10.17148/IARJSET.2024.115111

In [7] The objective of the project is to establish a seamless communication interface between a microcontroller and an MQTT (IoT platform), enabling real-time data transmission. Through this system, users can input information via a physical button connected to the microcontroller, which is then relayed to the microcontroller through MQTT. The received data is subsequently displayed on the I2C LCD display in real time. This project aims to facilitate remote and instant updates on the display, enhancing communication efficiency in various settings, such as public spaces, educational institutions, or office environments.

## II. SCOPE

The scope of a wireless electronic notice board is to design and implement a device that can display messages or information sent from a remote source, such as a mobile phone or a web browser, using wireless communication technologies in [8]. A wireless electronic notice board can be used for various purposes, such as announcements, advertisements, alerts, or instructions, in different places, such as schools, colleges, banks, and other public places. A wireless electronic notice board can have different features and functions, depending on the components and technologies used, such as GSM, Wi-Fi, Bluetooth, ZigBee, etc. A wireless electronic notice board can also have different advantages and challenges, such as simplicity, low-cost, security, reliability, and energy-efficiency. A wireless electronic notice board is an application of IoT (Internet of Things), which connects devices and objects to the internet and enables remote control and communication.

## III. PROPOSED SYSTEM

The proposed system integrates an MQTT-driven communication model with a microcontroller and an I2C LCD display. Utilizing MQTT as the primary input source, the system captures data from an MQTT broker, facilitating seamless information ingestion. This data is then processed by the microcontroller, which orchestrates its display on the I2C LCD screen. The system operates via a publish-subscribe mechanism, ensuring efficient and reliable data transmission from the MQTT platform to the microcontroller. This design enables swift and real-time updates on the display, revolutionizing traditional notice board setups. By merging MQTT's robust messaging protocol with hardware integration, the system establishes an agile and responsive platform for remote content updates and dynamic information dissemination

.

## IV. METHODOLOGY

Notice boards and display boards are typically used in stores, hotels, businesses, and train stations. They are commonly used for advertisements, notifications, and message displays. However, changing it every day is a laborious chore. The Smart Display Board is now available. The goal of this project is to create a wireless display board that can show messages transmitted over a WiFi network via a local webpage. Creating a wireless notice board that shows messages from the webserver is the project's primary goal. A wifi module receives messages sent by users via the local web server whenever they are sent.

### 4.1 BLOCK DIGARAM

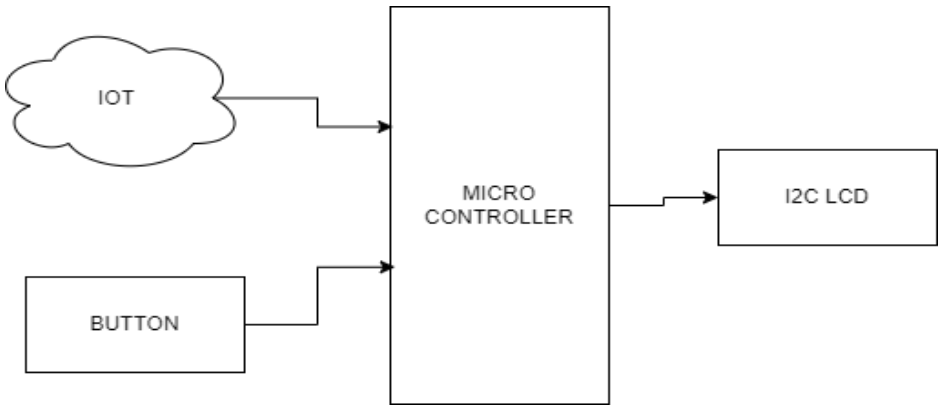



Fig. 4.1 Usecase Diagram

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 11, Issue 5, May 2024

DOI: 10.17148/IARJSET.2024.115111

### 4.2 COMPONENETS USED

**MQTT:** This component serves as the communication bridge between the user interface and the microcontroller. It receives data inputs from various sources, primarily a button press in this setup. When a user interacts with the button, triggering an event, the data is sent to the MQTT Broker for processing.

**Microcontroller:** Acting as the core processing unit, the microcontroller subscribes to the MQTT Broker to receive incoming data. Upon receiving input from the MQTT Broker, it interprets the information, specifically the data sent from the button press event. The microcontroller processes this data and prepares it for display.

**I2C LCD Display:** This output component receives processed data from the microcontroller. The microcontroller sends the formatted information to the I2C LCD Display, which then showcases the received data in a human-readable format, such as messages, notices, or alerts.The flow within this system begins with the user interacting with the button, which triggers a signal. This signal is transmitted via MQTT to the broker. The microcontroller, subscribed to the broker, retrieves this input. It processes the received data and subsequently sends instructions to the I2C LCD Display, resulting in the display of the intended information.

### 4.3 CIRCUIT DIAGRAM

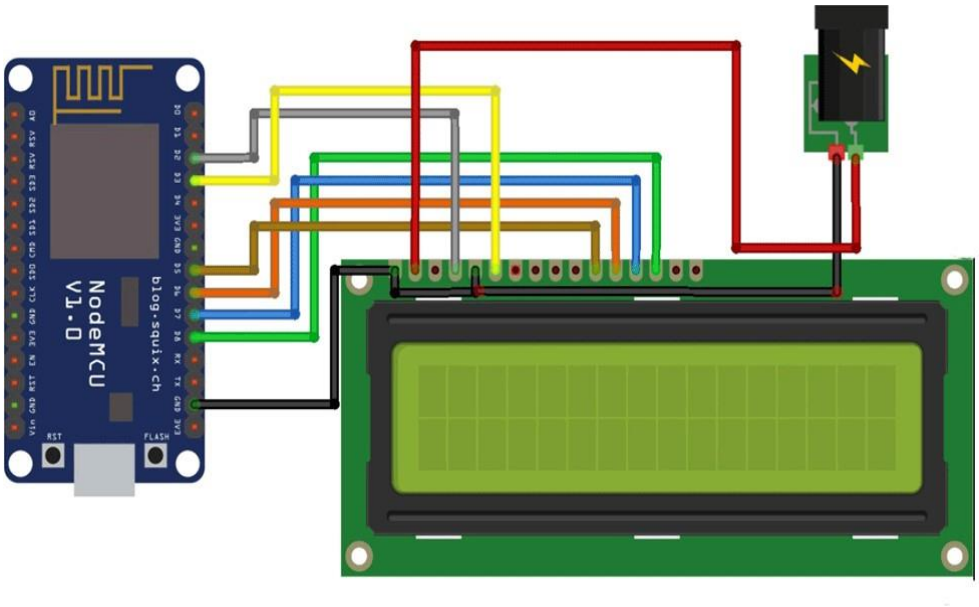



Fig. 4.2 CIRCUIT DIAGRAM

### 4.4 CIRCUIT DETAILS

The project makes use of a basic block model. The NodeMCU in this model has to be connected to a power source. Any power source can provide this power. Once the power source is connected to the NodeMCU, it will display a message requesting an IP address. It is necessary to connect the NodeMCU to a hotspot in order to enter an IP address. There will be an IP address screening on the NodeMCU following the connection to the hotspot. The functioning concept of this model is illustrated in Fig. 4.2.

### 4.5 WORKING PRINCIPLE

First, an unset IP address will appear on the display after powering up the NodeMCU, webserver, and application. The NodeMCU will obtain the established connection and display an IP address on the display by establishing a personal hotspot. However, in order to display the message, this must be linked to the same personal hotspot as it is frequently used by several users connecting with various phones, laptops, and other devices. Upon completion of this process, an application is available for connecting a NodeMCU to a phone. The phone will be immediately connected to the Android App when it is connected to the following IP address. By using this android app, we can write a notice and it will directly go to the NodeMCU.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 11, Issue 5, May 2024

DOI: 10.17148/IARJSET.2024.115111

The buzzer will ring and the notification message will appear on the display whenever NodeMCU receives a notice. The notification won't appear on the screen if there is an issue connecting an Android device to the IP address below, which indicates that the IP address displayed in the NodeMCU and the app don't match. If so, the steps need to be redone in order to put the entire process back together and apply the principles once more.

## V. IMPLEMENTATION AND RESULT ANALYSIS:

The process of creating, testing, and assessing a device that can show messages or information delivered from a distant source, like a mobile phone or a web browser, utilizing wireless communication technologies, is known as the implementation and result analysis of a wireless electronic notice board. A wireless electronic notice board may have a buzzer, LCD display, I2C adapter, GSM module, Wi-Fi module, microcontroller, and other parts and technologies. The following actions may be included in the setup and analysis of a wireless electronic notice board:

- **Circuit design:** This stage entails creating a schematic diagram that illustrates the component connections and configurations for the wireless electronic notice board.

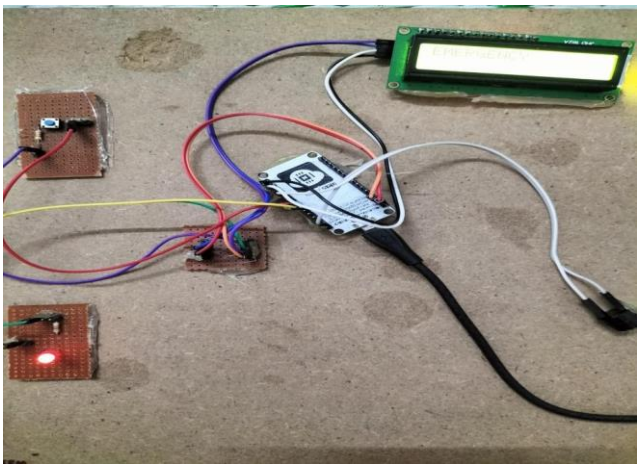
- **Software development:** This stage entails creating the program or code that manages the wireless electronic notice board's logic and communication.

- **Hardware construction:** In this stage, the parts are put together and the wires are soldered in accordance with the circuit design.

- **Simulation and testing:** Using software tools like Proteus, the Arduino IDE, or PyCharm, this stage simulates and tests the wireless electronic notice board's operation and performance. The properties of wireless communication, including range, bit error rate, received signal strength indication, signal attenuation, and power consumption, may be verified by simulation and testing.

- **Analysis and evaluation of the results:** This step entails analyzing and assessing the simulation and testing's outputs, including the wireless electronic notice board123's display quality, message delivery time, security, and dependability. Tables, graphs, charts, and pictures may all be used in the result analysis and assessment process to help explain and bolster the observations and results.





IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.066 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 11, Issue 5, May 2024

DOI: 10.17148/IARJSET.2024.115111

## VI. CONCLUSION

To sum up, System captures a revolutionary method of disseminating knowledge. Through the integration of Internet of Things connection, this project creates a dynamic, effective, and user-friendly communication platform by combining web-based input and physical output. Real-time visibility and immediate changes of written information are made possible by the smooth transfer of data from a webpage to an I2C LCD display with the use of a microcontroller. With its remote accessibility, instantaneous updates, and flexibility to accommodate shifting information demands, this invention surpasses the constraints of conventional notice boards. Its potential allows for improved communication efficiency in public locations, corporate settings, and educational institutions. The combination of physical display with online interaction highlights a major advancement in communication systems and opens the door to effective, flexible, and responsive information sharing in a variety of contexts.

## VII. FUTURE ENHANCEMENT

The following are some potential upgrades for a wireless electronic notice board in the future: Using a bigger, more colorful display, such an LED matrix or a TFT LCD, to enhance the messages' visibility and appeal.

- Including text-to-speech or voice capabilities so that communications may be both viewed and heard.
- Including sensors to display pertinent data or initiate certain activities based on environmental circumstances, such as motion, light, humidity, and temperature4.
- Linking up with social networking sites like Facebook, Instagram, or Twitter to show the most recent updates or postings from people or businesses.

Making better use of cloud computing and IoT platforms, such AWS, Azure, or Google Cloud, to store and manage messages and users more efficiently and securely.

## REFERENCES

[1]. Mr. Ramchandra K. Gurav, Mr. Rohit Jagtap, “Wireless Digital Notice Board Using GSM Technology”, International Research Journal of Engineering and Technology (IRJET), Volume: 02 Issue: 09 ,Dec-2015, e-ISSN: 2395 -0056

[2]. Prof. Sudhir Kadam , Abhishek Saxena , Tushar Gaurav, “Android Based Wireless Notice Board and Printer”, International Journal of Innovative Research in Computer and Communication Engineering, Vol. 3, Issue 12, December 2015, ISSN(Online): 2320-9801 ISSN (Print): 2320-9798.

[3]. C.N.Bhoyar , ShwetaKhobragade , Samiksha Neware, “Zigbee Based Electronic Notice Board”, International Journal of Engineering Science and Computing, March 2017 V.P.Pati, Onkar Hajare, Shekhar Palkhe,Burhanuddin Rangwala, “Wi-Fi Based Notification System”, The International Journal Of Engineering And Science (IJES),Volume 3 ,Issue 5 ,2014

[4]. S.ArulmuruganP P,S.AnithaP P,A.PriyangaP P,S.Sangeethapriya,” Smart Electronic Notice Board Using WI-FI”, - International Journal of Innovative Science, Engineering & Technology, Vol. 3 Issue 3, March 2016, ISSN 2348 – 7968

[5]. Liladhar P. Bhamre , Abhinay P.Bhavsar , Dushyant V. Bhole , Dhanshree S. Gade, “Zigbee Based Notice Board”, IJARIIE, Vol-3 Issue-1 2017,ISSN(O)-2395-4396.

[6]. Jaiswal Rohit , Kalawade Sanket , Kore Amod , Lagad Sanket, “Digital - Notice Board”, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 11, November 2015

[7]. Bhumi Merai, Rohit Jain , Ruby Mishra, “Smart Notice Board”, International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 4, April 2015, ISSN (Online) 2278-1021

[8]. Modi Tejal Prakash, Kureshi Noshin Ayaz, Ostwal Pratiksha Sumtilal “Digital Notice Board”, International Journal of Engineering Development and Research, Volume 5,Issue 2,2017, ISSN: 2321-9939

[9]. Suma M N, Amogh H Kashyap, Kajal D, Sunain A Paleka, “Voice over WiFi based smart wireless notice board”, SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE) – Volume 4 Issue 6 – June 2017 6

[10]. P.Pavankumar , Sonita, S.Shruti, “Wireless scrolling LED display Notice board using WI-FI”, International Journal of Multidisciplinary – Innovation and Research Analysis (IJMIRA), Volume – 1; Issue 4; JulySept 2017