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# WIRELESS DIGITAL NOTICE BOARD

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**Abstract -** *Now a day's the notice board is used widely in extreme way. These notice boards can be used in many places like educational institutions, stations etc to display notices or some information to the people who need it. As the technology was increasing day by day, the use of it was also increasing. So, traditional notice board can be replaced with digital notice board that means the conversion of analog to digital systems including Wi-Fi systems. Since the whole world is running out through internet, our project is mainly based on Wi-Fi module. By using a website we can pass a message to a digital notice board in a wireless communication. To avoid the use of manual work done by a separate person we are attempting to digitalize the information. The main objective of our project is by sitting anywhere we can add or remove the message that is to be displayed on the LED screen.*

***Key Words***: **Arduino, Wi-Fi module, LED matrix, Interface.**

## 1. INTRODUCTION

In earlier days people used the paper as the medium to convey any message and printed paper is used to display on a notice board. These conventional notice boards are not so connected for the changes in the message which is to be displayed. Also needs huge amount of time, resources and manpower. Notice boards are one amongst the mainly used ones, which are ranging from primary schools to major organizations to convey information. Individuals using these notice boards through wireless communication can interconnect with people easily and it requires less amount of time. Wi-Fi network has been used to give a wide area network that permits to transfer the information into text message through LED display that acts as a notice board.

The main purpose of this project is to develop a wireless notice board that display message or the information sent from the user through a simple interface and which displays it on LED screen. To originate a Wi-Fi driven automatic display Board which can replace the presently used paper based notice board and conventional notice boards. So this document gives us clear idea of how to change the contents of Digital display using Wi-Fi. So for that we use some Embedded as well as communication idea and using Arduino board we try to implement our system.

## 2. EXISTING SYSTEM

In the current situation the notice boards are being managed manually through a keyboard or any other devices. This is a time taking task to put up notices on the notice board. This wastes a lot of resources like paper, printer ink, man power and also time. The existing system is based on GSM technology so it requires SIM card to send the messages on notice board. In the existing system is also holds international roaming capability of GSM, so we can send message to receiver from anywhere of the world and requires extra charges. The drawbacks of this type of systems are: as there is no password any one can send the message to display and also when there is a network problem the GSM doesn't work.

## 3. PROPOSED SYSTEM

Technology is affecting every characteristic of our society and in such case we use this in many institutions. A Digital Notice board is a very innovative system for any organization. In our proposed system, the digital notice board allows the user to display the notices wirelessly. The system uses a Wi-Fi module for communication purpose, connected to Arduino Board and a LED screen display. The system consists of a simple buzzer so as to get notification of new notice as an alert signal. For displaying the notice a webpage has been created with the IP address that is generated only when the credentials like network name and password are similar and the user can access the webpage before sending the notice. All the programming related to the system had been done using embedded language. The Notice board also sends an acceptance to the user by displaying the current existing notice in webpage. Initially, the programs are executed. After successful execution of the programs an IP address is generated. With the help of IP address we can access the webpage. The webpage includes the text area in which we can enter the message and can be updated. And also contains additional features like changing the levels of brightness and delay time of the scrolling text. The sent message is received at Wi-Fi module, which then transmits it serially to the LED matrix. Finally the message is displayed on the LED Display.

### 3.1 IMPLEMENTATION

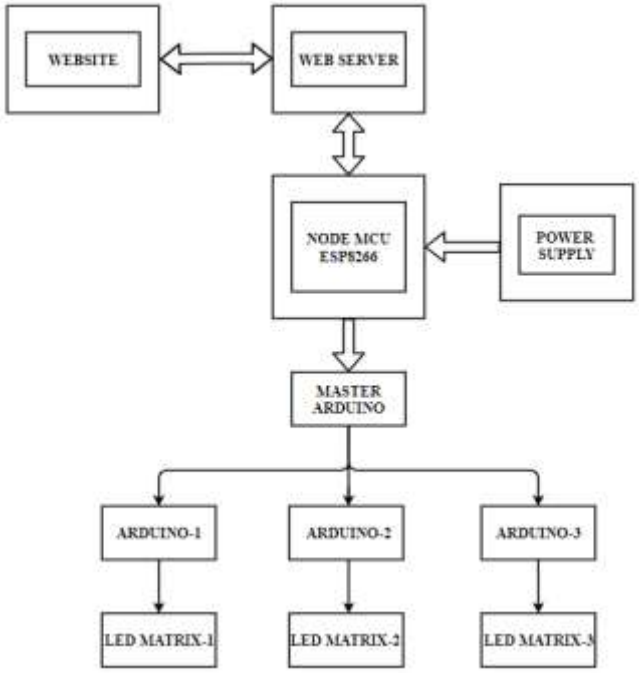


**Fig-1:** Block Diagram of Wireless Digital Notice Board

### 3.2 NODE MCU

NodeMCU is an IoT Module based on ESP8266 Wi-Fi Module. It uses Lua Scripting language and is an open source Internet of Things (IoT) platform. This module has CH340g USB to TTL IC. **Features:-** Open source IoT Platform, Easily Programmable, Low cost & Easy to Implement, WI-FI enabled.

**Fig-2:** ESP8266 Wi-Fi Module

### 3.3 LED DOT MATRIX DISPLAY MODULE

The MAX7219 is combined with a series of input and output common cathode display driver, it is connected to a microprocessor. LED matrix can also be linked to the bar graph display. MAX7219 also permits the user to select on each data coding or non-coding. Simply an LED Matrix is connected to multiplexer. **Features:-**A single module can operate an 8X8 common cathode lattice, Module voltage: 5V, Module size: 5 cm in length x 3.2 cm in width x 1.5 cm.

**Fig-3:** 8 x 8 LED Dot Matrix

### 3.4 BUZZER

A buzzer is an audio signaling device, which may be mechanical or electromechanical. In this project we are using buzzer as output device. The buzzer is connected to the Wi-Fi module. With the arrival of new notice, the buzzer gives alert signal.

**Fig-4:** Buzzer

### 3.5 JUMPER WIRES

A jumper is an electrical wire, or group of them in a cable, which have a connector or pin at each end and it is normally used for making connections between items on your breadboard and your Arduino's header pins. In our project these are used to connect LED matrix and Wi-Fi module.

**Fig-5:** Jumper Wires

### 3.6 POWER SUPPLY

This project uses a synchronized 5V, 500 Ma power supply. It requires a 2.5A power supply to run the Arduino. Mainly power supply is given to the pin at Wi-Fi module.

## 4. LITERATURE SURVEY

### 4.1 Display Message on Notice Board using GSM:

Author: Foram Kamdar, Anubbhav Malhotra and Pritish Mahadik.

This paper mainly deals with an SMS based notice board including GSM to enable the communication of displaying message on notice board via user's mobile phone. Its working is based on microcontroller ATMEGA32 programmed in assembly language. ASIM300 GSM modem with a SIM card is connected to the ports of the microcontroller with the help of AT commands. When the user sends an SMS via a registered mobile phone number, then it is received by SIM300 GSM modem at the receiver end.

Limitations:

- SMS based system.
- Unable to display audio and video.
- No scheduling.

### 4.2 Wireless Electronic Display Board using GSM Technology:

Author: N.Jagan Mohan Reddy, G.Venkareshwarlu.

This paper works with the design of SMS based automated Display Board which can change the presently used programmable electronic display and conventional notice boards. It is suggested to design receive as well as display toolkit which can be programmed and further can be used from an authorized mobile phone.

Limitations:

- Uses LED board.
- Unable to display audio and video.
- Limited number of characters.

### 4.3 Design and Implementation of Digital Notice Board Using Power Line Communication:

Author: R.Pudumai Nayagi, R.Seethalakshmi.

The paper suggests one such application for automating an educational institution by converting manual notice boards or circulars by digital notice boards. With a consolidated database, frequent updating is easily realizable. The system uses existing power lines to send the data to a node or to broadcast to various power line nodes. The address is allocated to each receiver and its response is based on their relevant commands.

Limitations:

- Limited number of character.
- Unable to display audio and video.
- Need power line communication.

### 4.4 Android Controlled Notice Board:

Author: SaloniSahare, RajatKadwe and SheetalGarg

This project is an electronic notice board that is runs by an android device and displays message on it. Traditionally, any information or notice had to be stick on notice board. This becomes routine and needs daily maintenance. The project minimizes the drawback by introducing an electronic display notice board that is connected to an Android device through Wi-Fi network. The receiver device receives the message from the Android device that is sent to an ARM7 controller. The ARM7 controller displays the message on an LED screen.

Limitations:

- It requires continuous power for the Pi and display.
- It needs the continuous internet connection to check the updates in the notices page and display it.

### 4.5 Smart Electronic Notice Board Using Wi-Fi:

Author: Prof. S. Arulmurugan, S. Anitha, A. Priyanga, S. Sangeetha Priya

Notice boards are regularly used in variety of institutions which we come across in daily life. In the present generation the advertisement notice boards are being handled manually. This process is difficult to imply in order to put a notice on the notice board. In this paper we have proposed a system that transmits notices on a notice board using Wi-Fi module. Wi-Fi can pass information about 100 meter distance Wi-Fi data rate has 1 or 2 Mbps. It can access numerous points and also to support network interfaces. It also makes the system consistent with more than one wireless technology.

Limitations:

- The display unit must have the network to receive the information wirelessly.
- As there is no password, anyone can send the information to display.

## 5. APPLICATIONS

- This project is used in school, colleges and universities to display student's results, events and important notices.

- Also used in hotels to display welcome message and costs of all items etc.
- In Banks these are used to display special offers, new plans and various services of them.
- In Airports these are used to display the arrival and departure timings of planes and special messages.
- In Railway stations these are used to show platform numbers, arrival and departure timings of trains and special attention messages.
- The applications of wireless digital notice board mainly involve public places like bus stands, railway stations, airports, shopping malls, and parks to display the message wirelessly.

## 6. RESULTS AND DISCUSSION

The proposed system was successfully tested to denote its effectiveness and achievability. It basically reduces the paperwork, manpower and time for any individual. In this paper personal computer and android application are used as a transmitter and Wi-Fi module is used as a receiver. The sender and the receiver are interfaced through a wireless Network Display that is connected at the receiver end. After establishing the connection the data can be displayed on the LED screen. The result will be displayed as follows:


**Fig-6:** Webpage


**Fig-7** Output

## 7. CONCLUSION

Wireless operations allow many services, such as long-term communications, that are impossible to implement the use of wires. It provides fast and quick transfer of message and is very cheaper to install and maintain them. This paper gives us an efficient way of displaying information or message on notice board using wireless technology. It also provides user authentication in order to avoid any misuse of given system. It totally avoids the use paper in displaying of notices and the information can be updated by the every second. This project mainly represents the Wi-Fi based LED display. This paper is developed by using Arduino Microcontroller, IOT and LED matrix and results obtained successfully.

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