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## E-Notice Board Display Using IOT

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### ABSTRACT

Electronic notice boards could be a primary factor in any public places and organization. Sticking out different notices day-to-day could be a tough method. A separate person is needed to take care of this notice board display. This paper is regarding an IOT based E-Notice Board, in these internet is employed to work wirelessly sending the messages from the IOT-Cloud platform through the thing speak webserver to display in Notice Board. A web server is created, this could be work as a global server over using the net. P10 LED display is used to display the messages. The development will be simple in designing the portable circuit and it will be in low cost. As the Electronic Notice Board is wireless, minimizes the hassles of wires as well as it is very easy to operate and consume less power. Keywords: Arduino UNO, Node MCU, Cloud Platform, P10 LED Display.

### INTRODUCTION

Over the past few years, wireless technology has a tremendous progress in every sector. As a means of communication, notice board can be widely used in schools, colleges, universities, hospitals to major organizations. E-Notice boards tackle the global problem of deforestation by conveying messages at large without the use of paper. The notice boards we usually see are fixed and to convey a message it needs involvement of some additional people to do tasks like printing it in paper, distributing those papers and attaching them in the board. So, it requires more effort as well as in case of emergency manual notice board is time consuming and it also takes more space where we hang the notice. To minimize the complexity, a E-notice board display is proposed which can instantly display any message or alert sent by a user without having assist of any additional people. In this project, E-Notice Board display technology is used to make the notice board portable and this important task is getting done by P10 LED. The Node MCU is programmed to receive the message coming from Mobile through the IOT cloud platform and display it.

### II. LITERATURE SURVEY

Notice boards are commonly used in variety of institutions which we come across in a daily basis. In the present generation the advertisement notice boards are being managed manually. This process is difficult to involved in order to put a notice on the notice board. This waste a lot of things like paper printer ink, manpower and also brings the loss of time. In this paper we have proposed a system through wireless transmit notices on a notice board using Wi-fi. Wi-fi can pass information for about 100meter distance Wi-fi data rate has 1 or 2 Mbps. It accesses numerous point and to support network interfaces. It also makes the system compatible with more than one wireless technology. This paper describes the Wi-fi based LCD display.

LED display system is aimed at the colleges and universities for displaying day-to-day information continuously or at regular intervals during the working hours. Being GSM based system, it offers flexibility to display flash news or announcements faster than the programmable system. The LED display system mainly consists of a receiver and a display board which can be programmed from an Arduino. It receives the message through serial port and display the desired information after necessary code conversion. It can serve as an electronic notice board and display the important notices without any delay thus avoiding the latency. The LED display is easy to expand and it allows the user to add more displays at any time and at any location depending on the requirement. The main objective of this project is to display the message on the notice board from anywhere and anytime that even provides users as broad cast alerts. The E- Notice board will be that the user should be able

to notify that the user is needed whenever necessary rather than displaying it with paper every time. Our main objective is the replacement of the public notice boards (like the college notice boards) be replaced by this type notice board system in order to save time and paper. To display "Desired Notice" or any other Announcement from department. We interface E-notice board with phone. With the help of mobile phones data is send to the microcontroller.

### III. PROPOSED SYSTEM

In the Proposed system, E- Notice board display will be that the user should be able to notify the person needed whenever necessary rather than displaying it with paper every time. Digital notice board help to keep everyone updated on upcoming events, opportunities meeting, holidays as well as today plan of lecture and also share the emergency news with the students and teacher without hard work and wasting of time.

#### A. Block Diagram

The block diagram of the proposed system along with all components used as shown in fig.4

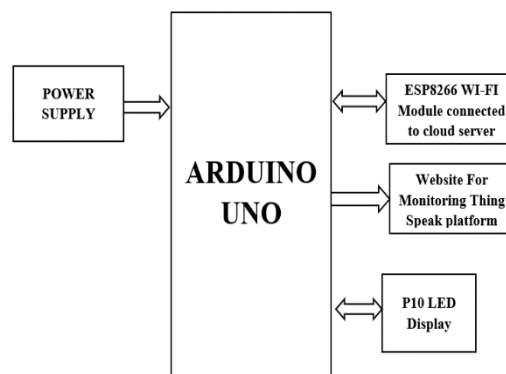


Fig .4 Block Diagram of Proposed system.

#### B. Working of the Prototype:

The working process of this project is Firstly, initializing the Node MCU as well as webserver and app by supplying power to the display will show an unset IP address. By creating a personal hotspot, the Node MCU will receive the established connection and showing an IP address in the display. However, often using multiple access from different persons from different connection of phones, laptops and other devices this must be connected to same personal hotspot to show the convey message. After doing this, there is also an web server that is used for making the connection between a Node MCU and a phone. After connecting the phone with the following IP address, phone will be directly connected to the wi-fi module. By using this IOT-Cloud Platform, we can write a notice and it will directly go to the Node MCU. Whenever, Node MCU receive a notice, the notice message will be shown in the display. If there is a problem between connecting an mobile and following ip address which means no matching for both IP address showing in the Node MCU and the cloud platform the message will not be shown in the display. In that case, the procedure must be restarted to assemble the whole process to work again with principle.

#### C. Hardware Components

##### Arduino UNO:

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, and ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB to-serial converter "Uno" means "One" in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward.

The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards. The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter.



**Fig.1 Arduino UNO Board**

### **Node MCU:**

An ESP8266 Wi-Fi module is a SOC microchip mainly used for the development of end-point IoT (Internet of things) applications. It is referred to as a standalone wireless transceiver, available at a very low price. It is used to enable the internet connection to various applications of embedded systems. Especially systems designed the ESP8266 Wi-Fi module to support both the TCP/IP capability and the microcontroller access to any Wi-Fi network. It provides the solutions to meet the requirements of industries of IoT such as cost, power, performance, and design. It can work as either a slave or a standalone application. If the ESP8266 Wi-Fi runs as a slave to a microcontroller host, then it can be used as a Wi-Fi adaptor to any type of microcontroller using UART or SPI. If the module is used as a standalone application, then it provides the functions of the microcontroller and Wi-Fi network. The ESP8266 Wi-Fi module is highly integrated with RF balun, power modules, the RF transmitter and receiver, analog transmitter and receiver, amplifiers, filters, digital baseband, power modules, external circuitry, and other necessary components. The ESP8266 Wi-Fi module is a microchip shown in the figure below. A set of AT commands are needed by the microcontroller to communicate with the Fig 4.12 shows ESP8266 Wi-Fi-module.



**Fig.2. Node MCU Module**

### **P10- LED Display:**

P10 32x16 (Total 512 LEDs) LED Display module is the easiest way to put together any size of Outdoor or Indoor LED display sign board. This panel is having total 512 high brightness red led's mounted on a high quality plastic housing designed for best display results. Any number of such panels can be combined in different fashions in order to realize LED sign board/ Graphics Board of any size.



**Fig.3. P10 LED Display**

**D.SOFTWARE COMPONENTS**

**ARDUINO IDE:**

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programmed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

**Thing Speak Cloud Platform:**

Thing Speak is IOT Cloud Platform Where you can send sensor data to the cloud. You can also analyze and visualize your data with other software. thing speak service is operated by math works. In order to sign up for thing speak ,you must create a new Math works Account or login into your existing Math works Account. It includes a web service (REST API) that lets you collect and store data in the cloud and develop IOT applications. It works with Arduino, Raspberry pi and MAT LAB(Premade libraries and APIs exists). But it should work with all kind of programming languages, since it uses a REST API and HTTP.

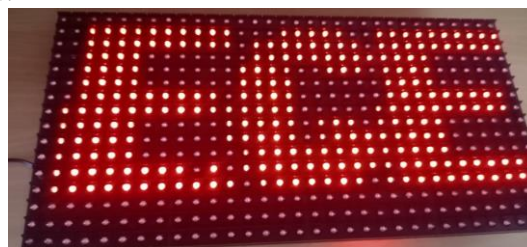
**IV.RESULTS**

Assemble the circuit on the board as shown in Fig.6.1. After assembling the circuit on the board, check it for proper connections before switching on the power supply. When power supply is given to circuit then the required parameters will get displayed in the P10 LED with the help of Node MCU. These ESP8266 module are connected successfully to the Arduino.



**Fig.4. Circuit Board of E-Notice Board**

Initially when power supply is ON and the wi-fi Connectivity should be in the position will be in ON mode, then the device is detected the message we are sending through the cloud server will be displayed on the notice board.



**Fig.5. Displaying message on P10 LED**

In this Project, we were using the thing speak website as a cloud platform, as in these a channel ID were created. After creating a channel ID then the two API keys will form.

Two API Keys will be generate one will be Write and the other will be Read. From the Fig, it is the messages we can read what message is displaying on the notice board.

```
{ "channel":
{"id":2019808,"name":"IOT","description":"College
timetable and notice board display with auto SMS
using GSM
","latitude":"0.0","longitude":"0.0","field1":"IOT",
"created_at":"2023-01-
30T04:31:40Z","updated_at":"2023-02-
02T07:31:58Z","last_entry_id":27},"feeds":
[{"created_at":"2023-02-
02T07:30:00Z","entry_id":1,"field1":"0"},
{"created_at":"2023-02-
02T07:31:31Z","entry_id":2,"field1":"0"},
{"created_at":"2023-02-
02T07:32:26Z","entry_id":3,"field1":"Welcome to AITS
COLLEGE"}, {"created_at":"2023-02-
02T07:33:33Z","entry_id":4,"field1":"Tomorrow is
Sunday celebration in our college"},
{"created_at":"2023-02-
02T07:57:48Z","entry_id":5,"field1":"SIREESHA batch
12, 20AK5A0406 ECE department in Annamacharya
institute of technology and science, tirupati"},
{"created_at":"2023-02-
02T08:08:38Z","entry_id":6,"field1":"ha"},
{"created_at":"2023-02-
02T08:10:22Z","entry_id":7,"field1":"batch 12 team
legends of annamacharya institute of technology and
science, tirupati"}, {"created_at":"2023-02-
02T08:33:00Z","entry_id":8,"field1":"batch 12"},
{"created_at":"2023-02-
02T08:35:32Z","entry_id":9,"field1":"devisri
madam"}, {"created_at":"2023-02-
02T08:40:09Z","entry_id":10,"field1":"aits"},
{"created_at":"2023-02-
02T08:44:06Z","entry_id":11,"field1":"aits"}
```

Fig.6. Updating messages in Thing speak server

## V.CONCLUSION

Now, our World is moving towards digitalization, so if we want to change in the earlier used system we have to use new techniques. Wireless technology provides fast transmission over long range data transmission. So in this project Wireless Electronic Notice board has been successfully designed and tested. The toolkit accepts the message stores it, validates it and then display it in the LED screen. there is facility for displaying Two message at a time. The major constraint incorporated is use of security code for start displaying message. IOT System is the collaboration of software & hardware through which most of the complicity reduce, even system size & cost also reduced. The IOT based digital notice board system that we have created has been in practical uses in various companies like in construction companies and research areas, railways colleges. This system can avoid paper work, reduced human effort usage in definite purpose areas. Now a days every advertisement is going to be digital. The big shops and shopping centres are using the digital moving displays now. This project can be used mainly for police or army to display something crucial within a matter of seconds. So keeping in mind we are designing a new display system which we can access remotely, thus utilizing digital technology.

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