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# WIRELESS DIGITAL ELECTRONIC NOTICE BOARD USING WI-FI

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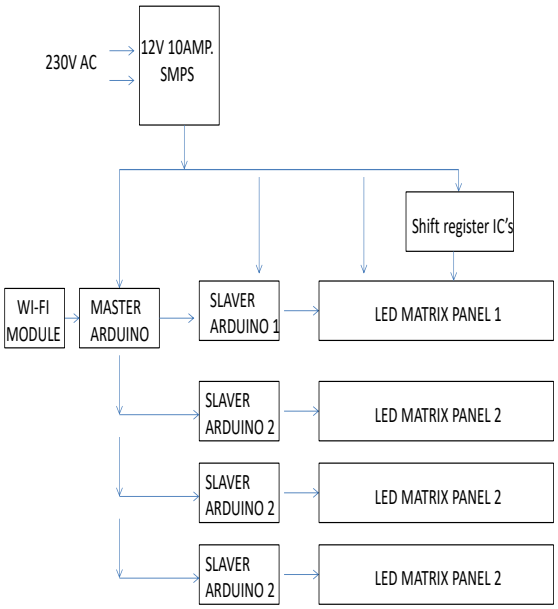
**ABSTRACT**
The main objective of this project is to develop a notice board system using an Arduino board with Wi-Fi being remotely controlled by any Android OS smart phone. As technology is advancing so information is also getting smarter and scrolling. Modern information is gradually shifting from conventional notice board to centralized control system, involving Wi-Fi system. Presently, conventional notice board located in different location makes it difficult for the user to go near them to operate.
In this system we are using Arduino master as main controller and remaining four Arduino as slave. When information is given through Wi-Fi master arduino takes receives data from wi-fi according to coding it feds to slave arduino and display on LED notice board at same time information gradually shifting with controlled by shift register. With help of shift register data moving from one location to next location like this gradually scrolling. In system all slave lines are displaying different data with scrolling received from master.

**KEYWORDS:** Wi-Fi Interface, Arduino, LED, Shift resister, Microcontroller.

## 1. INTRODUCTION

In past years, the Wi-Fi transceiver system has used from a many area in terms of mobile phones,personal computers, laptops are to be commonly used by the rich to something so it can be used.Now a day's people prefer wireless connection because they can interact with people easily and it require less time. The main objective of this project is to develop a wireless notice board that display message sent from the user and to design a simple, easy to install, user friendly system, which can receive and display notice in a particular manner with respect to time which will help the user to easily keep the track of notice board every day and each time he uses the system. Wi-Fi are the wireless technology used. All mobile phones has available in Wi-Fi network, then Wi-Fi network has been used to provide wide area network allows as to communicate with the information into text message through LED display to move the notice board.These services all themselves with one or more network ranges providers will give them a special code number that can receive and monitor the information that their notice board send to them.This many-to-one network of information transmission has become quite popular and many a business has entered into this model with mixed results. This paper aims to propose industrial applications that will utilize the distinct advantages of the Wi-Fi.

## 2. BLOCK DIAGRAM




## 3. BLOCK DISCRIPTION

### 3.1 WI-FI MODULE

Wireless is technology radio waves to provide network connectivity. Wi-fi connection is established using a wireless adapter to create hotspot. Area in vicinity of wireless router that are connected to the network and allow users to access internet services. Wi-fi provides wireless connectivity to devices by emitting frequencies between 2.4GHz-5GHz based on the amount of data on the network.Working-like mobile phones, a Wi-fi network makes use of radio waves to transmit information across a network.The computer should include a wireless adapter that will translate data sent into a radio signal.This same signal will be transmitted, via an antenna, to a decoder known as the router. Once decoded, the data will be sent to the internet through a wired Ethernet connection.As the wireless network works as a two way traffic, the data received from the internet will also pass through the router to be coded into a radio signals that will be received by the computers wireless adapter.

### 3.2 MASTER ARDUINO

Arduino is an open source microcontroller which can be easily programmed, erased and reprogrammed at any instant of time. Based on simple microcontroller boardsit is an open source computing platform that is used for constructing and programming electronic devices. It is also capable of acting as a mini computer just like other microcontrollers by taking inputs and controlling the outputs for a variety of electronics devices. It is also capable of receiving and sending information over the internet with the help of various Arduino shields. Arduino uses a hardware known as the Arduino development board and software for developing the code known as the Arduino IDE (Integrated Development Environment). Built up with the 8-bit Atmel AVR microcontroller's that are manufactured by Atmel or a 32-bit Atmel ARM.The program code written for Arduino is known as a sketch. The software used for developing such sketches for an Arduino is commonly known as the Arduino IDE. This IDE contains the following parts in it:

Text editor: This is where the simplified code can be written using a simplified version of C++ programming language.

Message area: It displays error and also gives a feedback on saving and exporting the code.

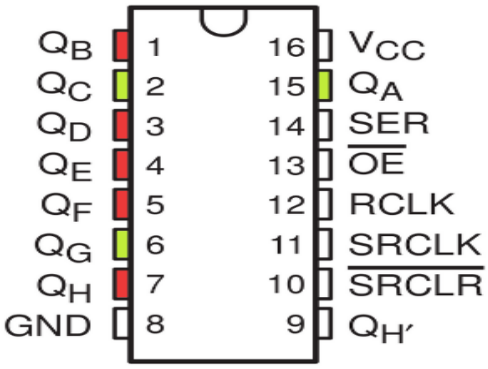
Text: The console displays text output by the Arduino environment including complete error messages and other information.

Console Toolbar: This toolbar contains various buttons like Verify, Upload, New, Open, Save and Serial Monitor. On the bottom right hand corner of the window there displays the Development Board and the Serial Port in use.

### 3.3 USE IN PROJECT

It connect between wi-fi and masters slaves Arduino. The main work is to transmit and receive the data from user.

### 3.4 SHIFT REGISTER




In digital circuits, a shift register is a cascade of flip flops,sharing the same clock, in which the output of each flip flop is connected to data input of the next flip flop in the chain, resulting in circuit that shifts by one position the bit array stored in it, 'shifting in' the data present at its input and 'shifting out' the last bit in the array, at each transition of the clock input.

Shift register can have both parallel and serial inputs and outputs. This are often configured as 'serial-in, parallel-out'.(SIPO) or as 'parallel-in, serial-out'(PISO). There are also types that both have serial and parallel input and types with serial and parallel output. There are also 'Bidirectional' shift register which allow shifting in both directions:L-R or R-L. the serial input and last output of shift register can also be connected to create a 'circular shift register'.

Need to connect the three pins that we will control the shift register:

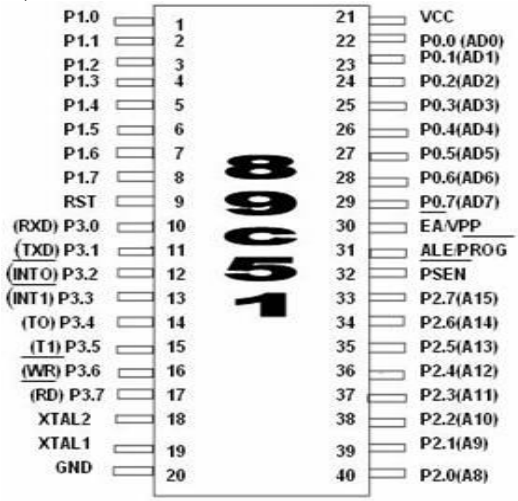
Pin 11 (SRCLK) of the shift register to pin 11 on the Arduino – this will be referred to as the "clock pin"

Pin 12 (RCLK) of the shift register to pin 12 on the Arduino – this will be referred to as the "latch pin"

Pin 14 (SER) of the shift register to pin 13 on the Arduino – this will be referred to as the "data pin"

All three of these pins are used in order to do the bit shifting that was mentioned earlier. Thankfully Arduino provide a helper function specifically for shift registers called **Shift Out**, which will handle pretty much everything for us; but we'll get back to that when reviewing the code!

### 3.5 MICROCONTROLLER (89c51)




The AT 89C51 is alow-power, high- performance CMOS 8 – bit micro computer with 4 Kbytes of Flash Programmable and Erasable Read Only Memory (PEROM). The device is manufacture dusingAtmel'shighdensitynonvolatilememorytechnologyandiscompatiblewiththeindustrystandardMCS-

51instructionsetandpin out.Theon-chipFlashallowstheprogrammemorytobereprogrammedin-system or by a conventional on volatile memory program-mer. By combining a versatile 8- bit CPU with Flash on a monolithic chip, the At mel AT89C51is a powerful micro computer which provides a highly flexible and cost effective solution to many embedded control applications.

### 3.5.1 FEATURES

Compatible with MCS-51 Products
4 Kbytes of In-System Reprogrammable Flash Memory. Endurance 1,000 Write/Erase Cycles
Fully Static Operation: 0 Hz to 24 MHz
Three-Level Program Memory Lock
128 x 8-Bit Internal RAM
32 Programmable I/O Lines
Two 16-Bit Timer/Counters
Six Interrupt Sources
Programmable Serial Channel
Low Power Idle and Power down Modes

### 3.6 LED Matrix Display

LED matrix displays can be used to display almost anything. Most modern LED sign boards uses various types of matrix boards with controllers. In this tutorial we are going to interface a single colour 8×8 LED matrix with Arduino and display a few characters in it.8×8 matrix consists of 64 dots or pixels. There is a LED for each pixel and these LEDs are connected to total of 16 pins. You can identify the pin out and circuit diagram of it using the following figure.

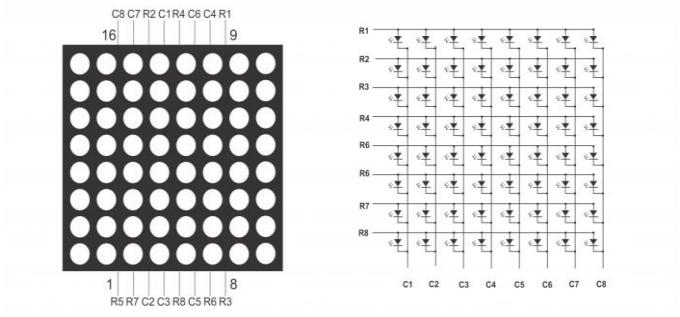



**Fig3.6.1. 8X8 Matrix Pinout**

C1 – C8 – Column pins
R1 – R8 – Row pins

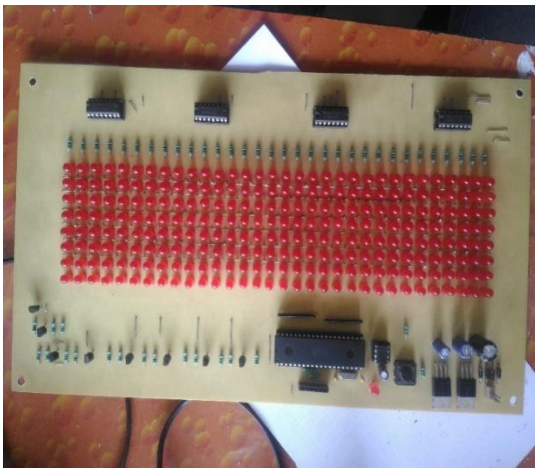
All anodes of same row is connected to one pin and all cathodes of same column are connected to another pin. We have 8 row pins and 8 column pins. If a positive voltage is applied to R1 pin and negative to C1, we can see that the first pixel turns on. If we apply negative to C2 then the second pixel turns on. Like this we can turn each pixel by hanging the supply pins. However we have 64 supply combinations, and doing it manually is practically impossible. This is why Arduino is interfaced with the 8×8 matrix.

## 4. PROGRAM

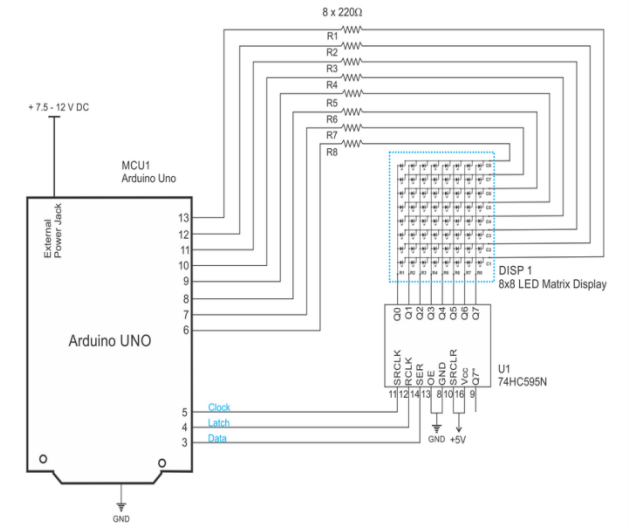
```
        ds=1;
/*  data = 0x7C;   delay();
        ds=0;
  data = 0x12;   delay();

  data = 0x11;   delay();

  data = 0x12;   delay();

  data = 0x7C;   delay();

  data = 0x80;   delay();                              */
 //================================
```

This program for one letter.As compare to this program other letters we can achieve.

## 5. PROJECT PHOTO



## 6. CIRCUIT DIAGRAM




In the diagram every column pin is connected to Arduino pin through a 220Ω resistor. All the row pins are connected to one of the output pin of the shift register. The characters are displayed using the multiplexing techniques. Shift register is connected to Arduino as usual by data, latch and clock pins.

## 7. CONCLUSION

By Using the concept of thistechnology in the field of wireless communication we can make our communication more efficient and faster, with greater efficiency we can display the messages and with less errors and better efficiency. Time can be consumed & to paper wastage is reduced This method can be used very efficiently in establishments like High-tech restaurants where in give the order and offer discounts can be displayed at all branches in same time, in colleges the students and staffs can be informed simultaneously the information no time. It can be set up at public transport places like railways, bus station, and airport and also at road side for traffic control and in emergency situations like hospitals temples,etc…. it is cost is low and very easily to handling method. It is fully involved in using of papers in displaying of notices is avoided and the information can be updated by the every second. It also makes the system compatible with more than one wireless technology. This project describes the Wi-fi based LED display.

## ACKNOWLEDGEMENT

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