

Digital Notice Board using ESP8266 Wi-Fi Module

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Abstract: In the present age the sheets are being overused physically. This procedure is hard to include so as putting a notification on the notice board. This wastes a great deal of things like paper printer ink, labor and furthermore brings the loss of time. In this paper we have proposed a framework through remote transmit sees on a notice board utilizing Wi-Fi. Wi-Fi can pass data for about 100meter separation Wi-Fi information rate has 1 or 2 Mbps. It gets to various points and to help organize interfaces. It likewise makes the framework good with more than one remote innovation our task name is "Computerized Wireless Notice Board". In this remote innovation is utilized to transmit the notice on to the advanced showcase. In this an approved client sends the picture of notice by means of PC utilizing a customer based server over the Wi-Fi organize towards the ESP8266 Wi-Fi module. ESP8266 Wi-Fi module gets the notice and stores it in its memory and afterward show the pictures as per the program. The notice can be adjusted and modified by customer needs.

Keywords: ATmega8 Microcontroller, ESP8266 Wi-Fi Module, ULN 2803 relay driver.

1. Introduction

In this world Mobile Phones and the related innovations are ending up increasingly pervasive. Upgradation in systems administration advancements has supported the improvement and development of extremely thick systems Notice sheets are one of the broadly utilized ones extending from elementary schools to significant associations to pass on messages at huge. A ton of paper is been utilized and which is later squandered by the associations. This thus prompts a great deal of deforestation in this way prompting an Earth-wide temperature boost.

2. My Project

The primary point of this paper is to plan a Wi-Fi driven programmed show Board which can supplant the present utilized programmable electronic showcase furthermore, ordinary notice sheets. It is proposed to configuration to get message in showcase toolbox through Wi-Fi which can be utilized from an approved cell phone. The entire procedure can be portrayed from the transmitter and recipient area. The Wi-Fi module gets a message from the approved cell phone and the message is extricated by the microcontroller from the Wi-Fi module and is shown on the Grid show board. Sequential to

parallel correspondence is utilized for the whole procedure from WIFI module to Microcontroller and from microcontroller to the framework show. What's more, for the affirmation LED show is utilized. This proposed framework in this paper has numerous up and coming applications in instructive establishments and associations, wrong doing counteractive action, traffic the executives, railroads, commercials and so forth. Been easy to understand, long range and quicker methods for passing on data are significant supports for this application. By utilizing this proposed system, we can Improve the security framework and furthermore make attention to the crisis circumstances and stay away from numerous risks.

3. Block diagram

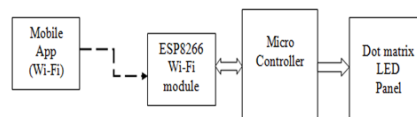


Fig. 1. Block diagram

Digital notice board is ATmega8 microcontroller and a dot matrix led panel which is used for signal detection and it is used to display the information which is sent through ESP8266 Wi-Fi module. This system can be reprogrammed to modify any change in information. It uses ULN2803 Darlington array driver to drive the dot matrix LED panel.

A. ESP8266 wi-fi module

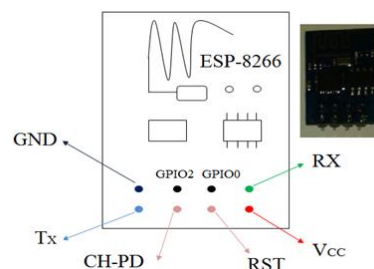


Fig. 2. ESP8266 Wi-Fi module

It is a Wi-Fi microchip module, presented by Espressif Systems, that accompanies both TCP/IP and Microcontroller capability. ESP8266 is very easy to use, includes low cost and builds up a straightforward TCP/IP association by interfacing microcontrollers with Wi-Fi. It has a capacity to facilitating or offloading all Wi-Fi capacity to different processors.

B. Microcontroller (ATmega8)

Atmega8 microcontroller comprises of 28 pins. It is an AVR 8-bit microcontroller. It has propelled RISC design. In a solitary clock cycle it can execute 130 incredible guidelines its self-programmable blaze memory is 8K bytes and has 512 bytes of EEPROM. Its Operating Voltages are 2.7 - 5.5V (ATmega8L) and 4.5 - 5.5V (ATmega8)

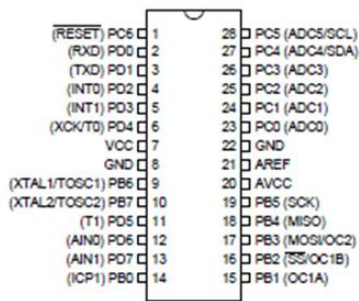


Fig. 3. ATmega8 microcontroller

- Pin - 1 is the RST (Reset) Pin and applying a low dimension motion for a period longer than the base heartbeat length will create a RESET.
- Pin 2 and Pin 3 are utilized in USART for sequential correspondence
- Pin 4 and Pin 5 are utilized as an outside intrude. One of them will enact when an interfere with banner piece of the status register is set and the other will initiate as long as the barge in condition succeeds.
- Pin 9 and Pin 10 are utilized as a clock counters oscillators just as an outer oscillator where the gem is related legitimately with the two pins. Pin 10 is utilized for low-recurrence gem oscillator or gem oscillator. In the event that the inside balanced RC oscillator is utilized as the CLK source and the offbeat clock is permitted, these pins can be used as a clock oscillator Pin.
- Pin 19 is utilized as a Master CLK o/p, slave CLK I/p for the SPI-channel.
- Pin 18 is utilized as Master CLK I/p, slave CLK o/p.
- Pin 17 is utilized as Master information o/p, slave information I/p for the SPI-channel. It is utilized as an I/p when enabled by a slave and is bidirectional when permitted by the ace. This Pin can likewise be used as an o/p contrast and match o/p, which helps as an outer o/p for the clock/counter.
- Pin 16 is utilized as a slave decision I/p. It can likewise be utilized as a clock or counter1 nearly by

masterminding the PB2-Pin as an o/p.

- Pin 15 can be utilized as an outside o/p of the clock or counter think about match A.
- Pin 23 to Pins28 have utilized for ADC (advanced estimation of simple information) channels. Pin 27 can likewise be utilized as a sequential interface CLK and Pin 28 can be utilized as a sequential interface information
- Pin 12 and Pin 13 are utilized as an Analog Comparator I/ps.
- Pin 6 and Pin 11 are utilized as clock/counter sources.

C. ULN 2803 relay driver

ULN2803 is a hand-off driver that accompanies a high-voltage and high-ebb and flow Darlington transistor cluster. So as to get higher current capacity, the Darlington sets are associated in a parallel setup. The segment is consolidated with eight NPN Darlington sets, including high-voltage yields with normal cathode brace diodes that are legitimately identified with exchanging inductive burdens. Each Darlington pair includes a tolerable measure of authority current rating for example around 500 mA. We can see ULN2003 which is practically like this IC yet accompanies 16 sticks and can deal with 7 transfers at any given moment.

ULN2803 Pinout

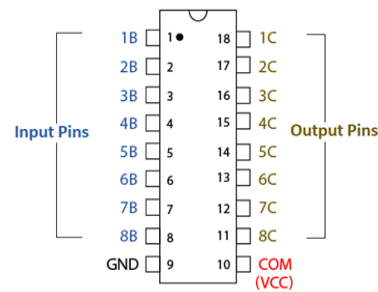


Fig. 4. ULN2803 relay driver

D. LED dot matrix display

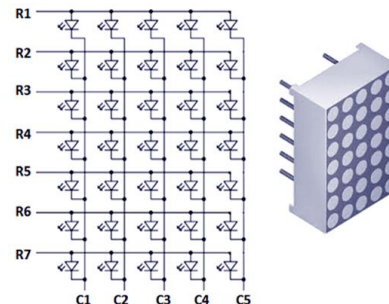


Fig. 5. LED Dot Matrix Display

Dissimilar to 7 segment display we can utilize spot network showcases to produce alpha, numeric, or custom character yield. This is s a brisk prologue to the fundamentals of utilizing monochrome LED speck grid shows with microcontrollers. In the framework the positive terminals (anodes) of the LEDs are

associated with the lines and negative terminals (cathodes) are associated with the sections. This is in some cases indicated in the maker's information sheet show as Cathode Column, Anode Row (CCAR). In the framework on the privilege the associations are turned around – anode section, cathode push (ACCR).

4. Principle behind the Circuit

The main component of the circuit is ATmega8 microcontroller, ESP8266 Wi-Fi module and LED dot matrix panel. ATmega8 microcontroller is used for detection of signal which transmitted from ESP8266 Wi-Fi module. The signals which are received using ATmega8 microcontroller is driven by ULN2803 relay driver and the driven signals is displayed in the dot matrix LED display.

5. Result and Analysis

- The dot matrix LED panel is a high power load. To drive this load here we used ULN 2803 relay driver and it is functioning as expected.
- The signals sent to the led display can be changed using the mobile phone application.
- The information is displayed in the led screen.
- The communication medium between the mobile application and microcontroller is ESP8266 Wi-Fi module.

6. Conclusion

Digital notice board using Wi-Fi can be successfully designed and can be applicable in schools, colleges, hospitals, bus stands, airports, railway station etc as per to save man power, papers which in turn saves the trees and also to save time. It is a cost effective project which can be built using easily available equipment and can be used in smart life. This can be easily reprogrammed by mobile application. The display of information in this project also increases its effectiveness.

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