

WIRELESS NOTICE BOARD USING MICROCONTROLLER WITH GSM MODULE

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Abstract: Notice board is also known as bulletin board or message board, is physical or digital display used for posting and sharing information, announcement and messages. It is mainly used for Communicating important updates, provides information, display reminders, sharing news, and facilitate communication. Notice board could be a primary factor in any establishment or public places like bus stations, railway stations, colleges, and malls etc. In recent days there are many types of notice board are in daily use. Among that Wireless LED notice board plays a important role in noticing the information to peoples by easy. The main uses of LED notice board is public can read the information easily by means this LED. During night condition it is very clear. This paper is about making the wireless notice board to share the information easily by digital. By this design people can be easily understood the information. Here microcontroller is used to display the information what we want and display the information with proper time delay. By using this design human effort will be reduced and cost will be reduced.

1. INTRODUCTION:

Nowadays conveying messages at large using notice boards are widely used ones ranging from schools to organizations, we know the significance of notice boards in public areas like bus stands, railway stations, airports, and banks, etc., Now-a-days LED message scrolling displays are very popular. The problem of this display is to carry a computer for generating and sending message to LED moving display board and day to day changing these boards is a very difficult task and a waste of time. At present, all electronic boards are designed with a wired system, The major drawback of designing these boards is; not flexible and cannot be located anywhere due to messy wire. By using wired electronic system power consumption is high. To overcome this problem GSM mobile phone is used instead of computer for generating and sending message to LED display. A text message is typed in the GSM mobile and sends it by using SMS service of the mobile to LED display. Arduino board with Atmel 328P microcontroller is connected to LED display to send the message. Message can be changed in the LED display (notice board) from anywhere. The display boards are one of the major communicating medium for mass media. Local language

can be added as a variation in this project. This can be achieved by using graphics and other decoding techniques. We can also able to store messages for long time by using SD memory card. By using this system we can change message in the notice board can be changed from anywhere, cost low, hardware requirement less, power consumption low.

1.1. LITERATURE REVIEW:

+ From journal: **IRE Journals- Iconic Research and Engineering Journals | Volume 1| Issue 12| ISSN: 2456-8880**

+ In the above journal they used PIC microcontroller for process.

2. METHODOLOGY:

This system uses GSM module, AT- mega 328p microcontroller, LED Matrix, Shift registers, IC ULN 2803. In this system it is used to display the message by using a GSM module. By using mobile phone, the message send to GSM module GSM Module consists of SIM card, GSM module's sim accept the text message from the mobile phone GSM module sensed it and display it in LED matrix. SMPS is used to power the LED Matrix , LED matrix is driven by LED driver. In this system Shift register is used to shift the data from microcontroller depends upon the program. Mobile phone is used for sending text message to GSM to display. Local language can be displayed in this notice board and it is done by decoding techniques.

3. PROBLEM SOLVEMENT:

In the above literature review, they used PIC microcontroller for process due to using this, program length is too long and it is hard to program and cost high.

4. BLOCK DIAGRAM:

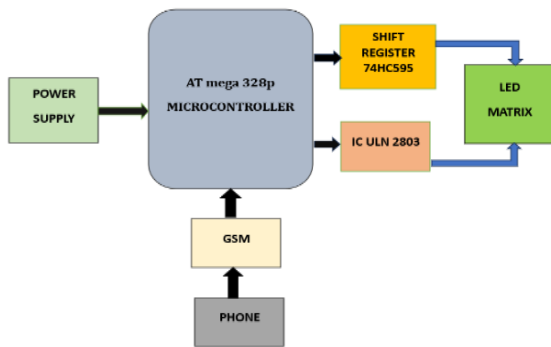


Figure-1: Block diagram

5.2. GSM module:



Figure-3: GSM module

5. HARDWARE DESCRIPTION:

Hardware description specifies components and layouts using in the design. Here SMPS, AT-mega 328p microcontroller, shift registers, LED driver, LED matrix, GSM, mobile phone.

5.1. AT-mega 328p Microcontroller:

ATmega328 is an Advanced Virtual RISC (AVR) microcontroller. It supports 8-bit data processing. ATmega-328 has 32KB internal flash memory. ATmega328 has 1KB Electrically Erasable Programmable ReadOnly Memory (EEPROM). This property shows if the electric supply supplied to the micro-controller is removed, even then it can store the data and can provide results after providing it with the electric supply. Moreover, ATmega-328 has 2KB Static Random Access Memory (SRAM). Other characteristics will be explained later. Features of AT- mega microcontroller is good performance, low power consumption, real timer counter having separate oscillator, 6 PWM pins, programmable Serial USART, programming lock for software security

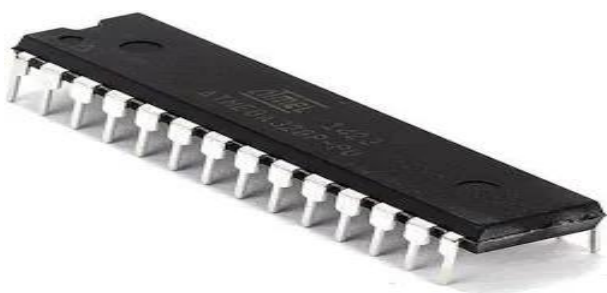


Figure-2: AT-mega microcontroller

This is a plug and play GSM Modem with a simple to serial interface. It is used to send SMS, make and to receive calls, and it will do other GSM operations by controlling it through simple AT commands from micro controllers and computers. It uses the highly popular SIM800 module for all its operations. It comes with a standard RS232 interface which can be used to easily interface the modem to micro controllers and computers. The modem consists of all the required external circuitry required to start experimenting with the SIM800 module like the power regulation, external antenna, SIM Holder, etc.

5.3. SMPS:



Figure-4: SMPS

SMPS stands for Switch Mode Power Supply. It is an electronic power supply that uses switching electronics to convert electrical power efficiently. By using SMPS output efficiency is good, low heat generation, high reliability, high flexibility in design. It converts 230v AC input into pure DC voltage in output. It uses rectifier, filter, power electronic devices, out filter inside it.

5.4. P10 Single colour LED:



Figure-5: P10 single colour LED

The P10 single colour is a high brightness, lower power consumption, long life time display module. Designed for semi-outdoor use. Its brightness is 3500nits to 4500nits, its Max Power Consumption:20W. It consists of IP65 Waterproof, 1W Pixel Configuration.

5.5. LED Driver:



Figure-6: LED Driver

LED driver is a electronic device that regulates and control the power supply to LED , ensuring optimal performance, efficiency longevity. Current from the microcontroller is at low mA current it is not sufficient to LED, so in between them LED driver is used to increase current level.

5.6. Shift register:

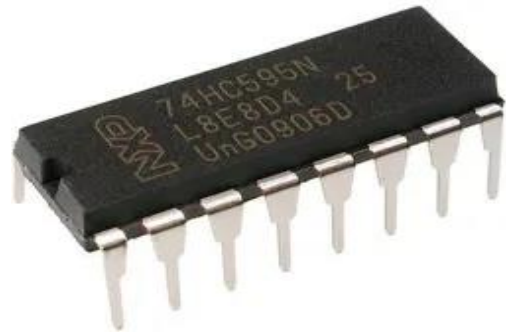


Figure-7: Shift register

The 74HC595N is an 8bit serial in, parallel out (SIPO). It is used for storing data and shifting data. It is uses D flip flop for process. By using this shift register words from program is shifted and displayed in LED.

6. CIRCUIT DIAGRAM:

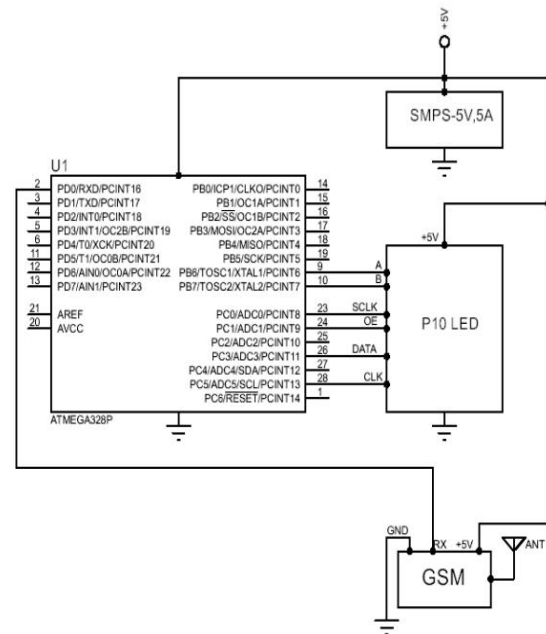


Figure-8: Circuit diagram

7. RESULTS AND DISCUSSION:

In this system, we use mobile phone, by using mobile we can text the message from mobile. GSM module consist of receiver, it consists of SIM card, it receives the message from transmitter SIM , then the message got displayed.

7.1 Hardware diagram:



Figure-9: Hardware diagram

7.2. Before execution:



Figure-10: Before execution (No message)

7.3. After execution:



Figure-11: After execution (“ WELCOME”)

8. FUTURE SCOPE:

Temperature display during periods where in no message buffers are empty is one such theoretical improvement that is well possible. Another very interesting and significant improvement would be to accommodate multiple receiver MODEMS at different positions in the geographical area carrying duplicate SIM cards. Multilingual display can be another added variation in the project We can able to store messages for long time by using SD memory card.

9. CONCLUSION:

The display boards are one of the major communicating medium for mass media. Local language can be added as a variation in this project. This can be achieved by using graphics and other decoding techniques. Also we realize that this project saves time, energy and hence environment. Cost of printing and photocopying is also reduced as information can be given to a large number of people from our fingertips. Thus we can conclude that this project is just a start, an idea to make use of GSM in communications to a next level.

10. REFERENCES:

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