WEB CONTROLLED NOTICE BOARD

[1]P. Kavitha Reddy, [2]P.Lahari ,[3]P.Sindhu,[4]R.Nanitha, A.Shirisha,

[1] Assistant Professor ,[° 4'] Students,
[1]Electronics and Communications,
[I]B V Raju Institute of Technology, Narsapur, India

Abstract: Now a day's individuals like wireless connection because they can interact with people easily and it requires less time. The main objective of this project is to develop a web controlled wireless notice board that display message sent from the user and to design a simple, easy to install, user friendly system, which may receive and display notice in a very specific manner with relevance date and time which will help the user to simply keep the track of notice board each day and every time he uses the system. In this project it has been implemented on MSP430 controlled smart notice board using IOT(Internet of Things). The IOT technology has been adopted in which wifi used as a tool to connect and exchange the data among the different devices.

Index Terms — MSP430G2553, Energia software.

I. INTRODUCTION

Earlier by introducing the concept of bluetooth technology communication becomes faster ana easier. Here an android app is used for enabling bluetooth for sending a message. This work mainly focused on cable replacement and data can send upto the rate of 1Mb per sec. But bluetooth has an limited range (approximately 70m to 100m). But notice boards are playing a very vital role in our day to day life. By replacing conventional analog type notice board with digital notice board we can make information dissemination much easier in a paper less community. Here the admin can control notice board using internet. So information can be send anywhere in the world and that information can be displayed within seconds. Pc is used for sending information and MSP430 is connected to the internet at the receiving side. Here the main objective is to develop a wireless notice board that displays messages sent from the webserver. When a user sends a message, it is received by a wifi module through local web server. A display connected to the server system should continuosly listen for the incoming messages from the user, process it and display it on the LCD screen. The message displayed should be updated every time the user sends new information. Only authenticated people can update the data that need to be displayed on the LCD. Whenever our device get connected to any web server it will generate an ip address and we need to copy the ip address and and paste it in web browser and hit enter and then it will display the web page. On web page we can see the enter text field and now we can enter message in that field and we can send it by clicking on the send button. Once the message is sent, the MSP430 microcontroller will receive it and displays the message on the LCD screen.

1 Block Diagram:
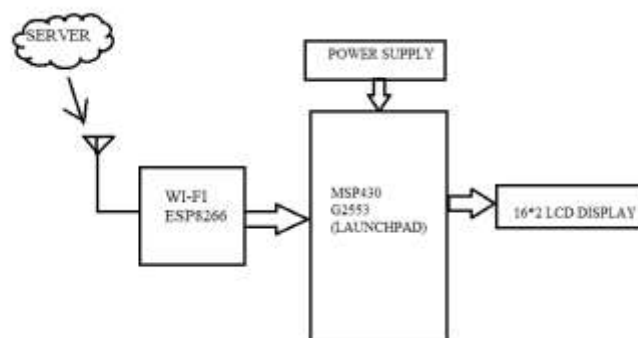
2. Hardware Components:

2.1 **MSP430G2553:**

MSP430G2553 is an ultra-low power consumption microcontroller. It consists of several device featuring different sets of peripherals targeted for various applications. The architecture, combined with five low-power modes, is optimized to achieve extended battery life in several portable measurement applications. The device features a powerful 16-but RISC CPU, 16-bit registers, and constant generators that contribute to maximum code efficiency. The digitally controlled oscillator (DCO) allows wake-up from low-power modes to active mode in less than 1 micro second.

Features:-
- Low Supply-Voltage Range: 1.8 V to 3.6 V
- Ultra-Low Power Consumption
- Five Power-Saving Modes
- Ultra-Fast Wake-up From Standby Mode in Less Than 1 micro seconds
- 16-Bit RISC Architecture, 62.5ns Instruction Cycle Time
- Basic Clock Module Configurations
  - Internal Frequency upto 16MHz with Four Calibrated Frequency
  - Internal Very-Low-Power Low-frequency Oscillator
  - 32 kHz Crystal
  - External Digital Clock Source
- Two 16-Bit Timer_A With Three Capture/Compare Registers
- Upto 24 Capacitive-Touch Enabled I/O Pins
- Universal Serial Communication Interface(USCI)
  - Enhanced UART Supporting Auto Baudrate Detection (LIN)
  - IRDA Encoder and Decoder
  - Synchronous SPI
  - I²C
- On-Chip Comparator for Analog Signal Compare Function
- Brownout Detector
- Serial Onboarding Programming, No External Programming voltage Needed
- On-Chip Emulation Logic With Spy-Bi-Wire Interface
- 10-Bit 200 ksps Analog-to-Digital Converter With Internal Reference

Figure 1-2. MSP430G2553 Microcontroller

2.2 POWER ADAPTOR

The input to the circuit is applied from a regulated power supply. The ac input i.e., 230V from the mains supply is step down by the transformer to l2V and is feeded to rectifier to convert the AC to DC with help of diodes and capacitor.
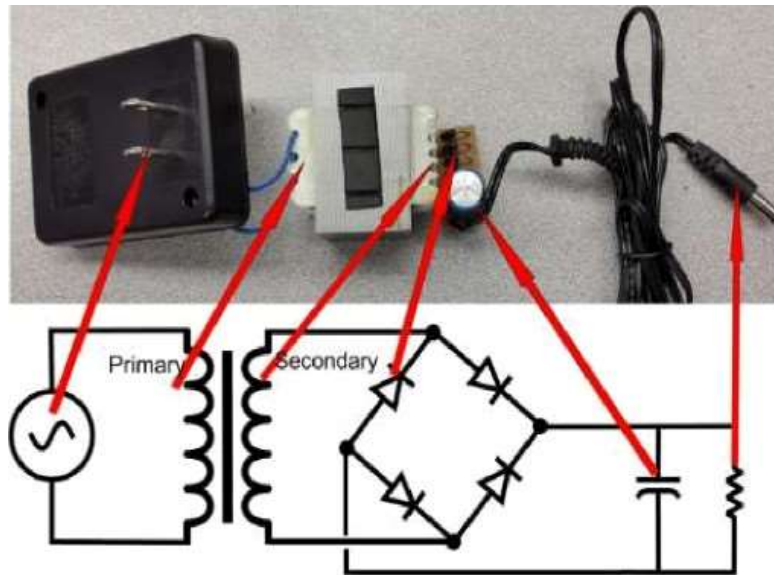
2.3 Transformer :

Usually, DC voltages are required to operate in various electronic equipment and these voltages are 5V, 9V or l2V. But these voltages cannot be obtained directly. Thus the ac input available at the mains supply i.e., 230V is to be brought down into a required voltage level. This is mainly done by a transformer. Thus, a step down transformer is specifically employed to decrease the voltage to a required level.

The output from the transformer is given to the rectifier. It converts A.C. into pulsating D.C. The rectifier may be a full wave or a half wave rectifier. In this project, a bridge rectifier is used because of its huge merits like high stability and full wave rectification.

The Bridge rectifier is a circuit, which is able to convert an ac voltage to dc voltage using both half cycles of the input ac voltage. The Bridge rectifier circuit is as shown in the figure. The circuit has four diodes which are connected to form a bridge. The ac input voltage is applied diagonally to the opposite ends of the bridge. The load resistance is connected between the two other ends of the bridge.

The conducting diodes will be in series with the load resistance RL and hence the load current flows through load resistance RL. For the positive half cycle of the input ac voltage, both diodes D1 and D3 will conduct, whereas diodes D2 and D4 will remain in the OFF state. For the negative half cycle of the input ac voltage, both diodes D2 and D4 will conduct, whereas D1 and D3 will remain OFF. And the conducting diodes D2 and D4 will be in series with the load resistance RL and hence the current flows through load resistance in the same direction as in the previous half cycle. In this way a bi- directional wave is converted into a unidirectional wave.

## 2.4 ESP8266 WIFI MODULE

The ESP8266 Wifi module is a self contained SOC with integrated TCP/IP Protocol stack that can give any microcontroller acces to your Wifi network. It will be capable of either hosting an application or offloading all WI-FI networking functions from another application processor. It employs a 32-bit RISC CPU, 64 KB boot ROM, 64 KB instruction RAM and 96 KB data RAM. External flash memory can be accessed through SPI. ESP8266 module is low cost standalone wireless transceiver that can be used for endpoint IOT developments.

In order to communicate with the ESP8266 module, microcontroller will use set of AT commands. And microcontroller will communicate with ESP8266 module using UART which is having specified Baudrate.There are many third-party manufacturers that can produce different modules based on this chip.

ESP8266 comes with capabilities of

- 2.4 GHz Wi-Fi (802.11 b/g/n, will support WPA/WPA2)

- General-purpose I/O (16 GPIO)

- (I²C) Inter-Integrated circuit serial communication protocol

- Analog-to-Digital converter (10-bit-ADC)

- (SPI) Serial Peripheral Interface Serial communication protocol

- I²S (Inter-IC sound) interfaces with DMA (Direct Memory Access) (will share pins with GPIO)

- UART (on dedicated pins, plus a transmit-only UART)

- (PWM) Pulse-Width Modulation.
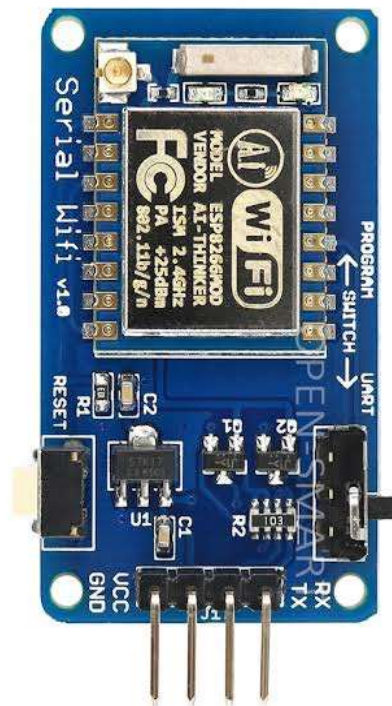
2.4 LCD (LIQUID CRYSTAL DISPLAY)

LCD (Liquid Crystal Display) screen is an electronic display module and find a high range of applications. A 16x2 LCD display is source module and is very commonly used in many devices and circuits. These modules are mainly preferred over seven segments and other multi segment LEDs. The reasons are mainly like LCDs are at low price; easy to program; have no limitations of displaying special and even custom characters (unlike in seven segments), animations and so on.

A 16x2 LCD means it can show 16 characters per line and there are 2 such lines. In this LCD each character will be displayed in 5x7 pixel matrix. This LCD contains two registers, namely, Command and Data.

The command register keep the command instructions given to the LCD. A command is an instruction given to LCD to perform a high task like initializing it, clearing its screen, setting a cursor position, controlling display etc. The data register will stores the data to be displayed on the LCD. The data is the ASCII value of the character to be reveal on the LCD.

### 3. Parameters and Characteristics:

3.1.1 Applications:

•   Educational institutions and Organisations.
•   Managing traffic.
•   Advertisement conference hall, railway stations, any public utility places.

3.1.2. Future Scope

16x2 LCD display can be replaced by other LCDs which can display more characters according to the need. Along with the notice messages, date and time breaking news can also be flashed timely. Currently only one message can be displayed at a time and we can overcome this by using many. And in future the message can be sending in the form of image, pdf. And the project can also be extended by adding voice module.

4. Flow chart:
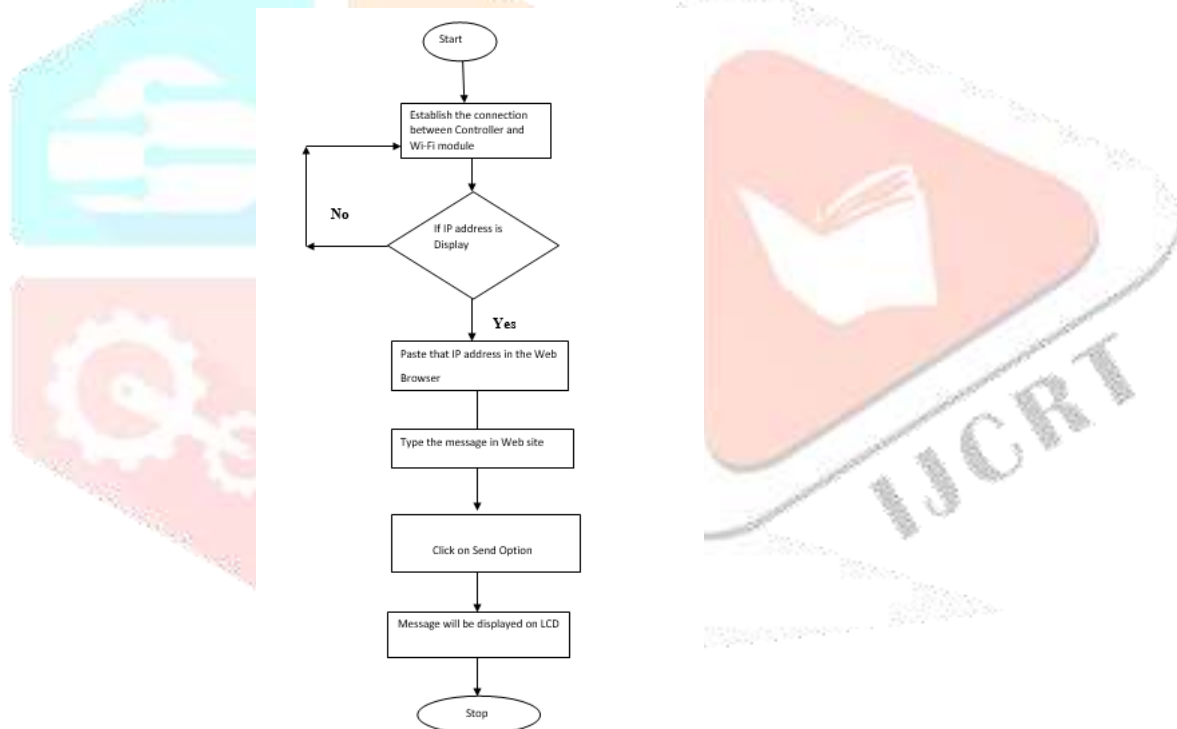
5. Advantages:

1.   Multiple users are authorized and allowed to update notices on the electronic notice board.

2.   It will prevents unauthorised access of notice board. Difficult wires are no needed to display the information on the LCD as it is wireless.

3.   No printing & photocopying cost. Thus it saves time, energy and also environment

4.   Easy to operate and it consumes less power. This circuit is easy to handy.

5. Result:

The developed device will provide communication in very specific manner with relevant date and time on our day-to-day life. By this information can be sent anyway in the world and can be displayed within seconds.

7.Conclusion

Here, by introducing the concept of smart wireless notification board which will make the communication more efficient & faster and with great efficiency we can display the message with less errors and maintainance.

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