IOT Based Wireless Notice Board

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Abstract- *The main objective of this project is to develop a notice board system using a microcontroller with Wi-Fi being remotely controlled by any Android 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. This project deals with an innovative rather an interesting manner of intimating the message to the people using a wireless electronic display board which is synchronized using the WI-FI technology. This will help us in passing any message almost immediately without any delay just by sending a SMS which is better and more reliable than the old traditional way of passing the message on notice board. This proposed technology can be used in colleges, many public places, malls or big buildings to enhance the security system and also make awareness of the emergency situations and avoid many dangers. Using WI-FI module and display the message onto the display board.*

Keywords- IOT, Android App, Arduino, WI-FI

I. INTRODUCTION

Internet of things (IOT) is a connecting a physical smart devices and providing a information and also connecting a human to human relationships. Notice Board plays a vital role in today's world. It is commonly used in places like schools, colleges, railway stations and other variety of institutions. In earlier days people used the paper as the medium to convey any message. The paper material which is made up of trees and it is mandatory to save trees by providing new technologies rather than conventional methods. Printing papers requires more manpower and it is time consuming. This conventional method is very costly. Therefore to overcome this, we employ new technique which is very useful for today's world.

So in this project, the development of simple and low cost Smart Notice Board is presented. This proposed system uses Wi-Fi based wireless serial data communication. For this purpose, Android based application programs for Wi-Fi communication between Android based personal digital assistant devices and wireless display board are used. At receiver end, a low cost microcontroller board (Arduino Uno) is programmed to receive and display messages in the above communication mode.

The main aim of the project is to design a Internet of Things based notice board which displays the message sent from the user mobile app and to design a simple, easy and user friendly system, which can receive and display notice in a particular manner with date and time which will help the user to easily keep the track of notice board every day and each time the target user uses the system.

II. SYSTEM DESCRIPTION

The system is low-cost wireless Android based notice board system which is developed to send and display the required information quickly to the intended user by using Wi-Fi transceiver module interfaced with an Arduino UNO microcontroller board. The communication mode i.e. Wi-Fi module is selected for data communication using the corresponding transceiver module with microcontroller. The smart board is powered by Arduino with an AC power supply. Arduino is further connected with the ESP8266 Wifi module which enables the wireless connectivity of the smart board. The LED display is connected with the Wifi module which carries out serial communication with mobile devices and transfers the data through over the network.

The system block diagram is shown in fig. 1

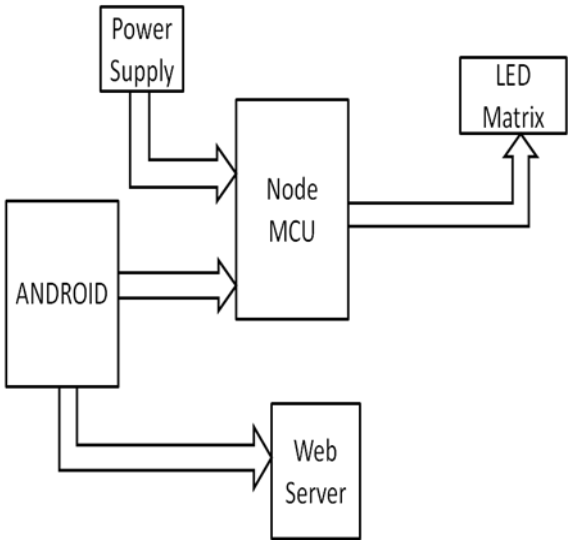

Fig. 1 Block Diagram

Once the user sends the notice to the smart board, the same notice will be saved on the server side of the website, which can be accessed for checking and maintaining the records of the notices being displayed.

HARDWARE:

1) POWER SUPPLY:

Fig.2 Power Supply

RESISTORS: A resistor is a two-terminal electronic component designed to oppose an electric current by producing a voltage drop between its terminals in proportion to the current, that is, in accordance with Ohm's law:
V= IR

CAPACITORS: A capacitor or condenser is a passive electronic component consisting of a pair of conductors separated by a dielectric. When a voltage potential difference exists between the conductors, an electric field is present in the dielectric. This field stores energy and produces a mechanical force between the plates.

VOLTAGE REGULATOR: The MC78XX/LM78XX/MC78XXA series of three terminal positive regulators are available in the TO-220/D-PAK package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.
DIODE: Diodes are used to convert AC into DC these are used as half wave rectifier or full wave rectifier.

2) NODE MCU:

Fig. 3 NODE MCU

The ESP8266 is a low-cost Wi-Fi chip with full TCP/IP stack and MCU (microcontroller unit) capability produced by Shanghai-based Chinese manufacturer, Express if Systems. The ESP8285 is an ESP8266 with 1 MB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi.ESP8266 (presently ESP8266EX) is a chip with which manufacturers are making wirelessly networkable modules. More specifically, ESP8266 is a system-on-chip (SOC) with capabilities for 2.4 GHz W0i-Fi (802.11 b/g/n, supporting WPA/WPA2), general-purpose input/output (16 GPIO), Inter-Integrated Circuit (I^2C), analog-to-digital conversion (10-bit ADC), Serial Peripheral Interface (SPI), I^2S interfaces with DMA (sharing pins with GPIO), UART (on dedicated pins, plus a transmit-only UART can be enabled on GPIO2), and pulse-width modulation (PWM).

3) LED MATRIX:

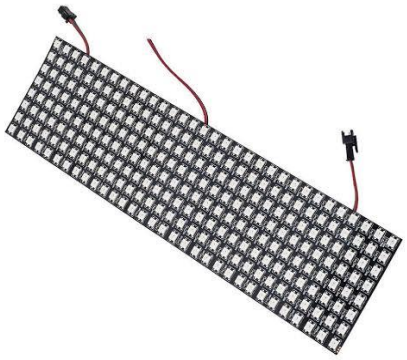

Fig. 4 LED Matrix

LED Matrix is required for notice display. It is an 8x32 LED matrix (8 rows, 32 columns) means total number of LED is 256. The distance between two points is 10 mm then it is called as P10 LED matrix. P10 LED matrix contains shift registers, ICs and data transfer serial in parallel out.

III. CONCLUSION

Hence we will be concluding that, by introducing the concept of IOT Based Wireless Notice Board can make our communication more efficient and faster with the greater efficiency we can display the messages. It fully avoids wastage of papers in displaying of notices and information can be updated by every second.

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