IoT based web controlled notice board

Divyashree M[1], Harinag Prasad S[2], Sandeep G T[3], Bhavya S N[4], Poornima S[5]

[1]Assistant Professor, Department of Telecommunication Engineering, MVJCE, Bangalore, Karnataka, India
[2,3,4,5] BE, Department of Telecommunication Engineering, MVJCE, Bangalore, Karnataka, India.

Abstract – *IoT is the network of physical "things" or object that contain embedded technology to interface and sense to move with their internal states or the external setting. Automation is the most often spelled term within the field of electronics. The hunger for automation brought several revolutions within the existing technologies. Notice board could be a primary factor in any establishment orpublicplaces like bus stations, railway stations, colleges, malls etc. Sticking out numerous notices day to day could be a tough method. A separate person is needed to take care of this notice display. This project is regarding advanced wireless notice board. In IoT based Web Controlled Notice Board, Internet is employed to wirelessly send the message from Browser to the liquid crystal display. A local web server is created, this could be a global server over net. At the Raspberry Pi, LCD is used to display message and flask for receiving the message over network. Whenever Raspberry receives any wireless message from Web browser, it displays on the liquid crystal display.*

Key Words: Raspberry Pi 3, HDMI Interface, Web Server, Graphics LCD, Internet of Things.

1. INTRODUCTION

Now a day's individuals like 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 may receive and display notice in a veryspecific 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.

A local web server is created, this can be a global server over internet. Display connected to Raspberry Pi is used to display message and flask for receiving the message over internet. When Raspberry Pi receives any wireless message from Browser it displays on the LCD.

1.1 Objective

The main objective is to design an automatic, self enabled highly reliable electronic notice board. A display connected to a server system should continuously listen for the incoming messages from user, process it and display it on LCD screen. Message displayed should be updated everytime the user sends new information. Only authenticated people should update the data to be displayed on the monitor.

1.2 Internet of Things

The Internet of Things (IoT) belief system can be looked as a exceptionally unique and radically distributed networked system composed of a very large number of identifiable smart objects. These objects can convey and to interface among themselves, with end- users or different elements in the system. Entering the era of Internet of Things, the use of small, shoddy and flexible computer hardware that allow end-user programming become present. One of them, considered in this paper, is the Raspberry Pi, fully customizable and programmable small computer board. Relativeinvestigation of its key components and exhibitions with some of current existing IoT prototype platforms have shown that despite few disadvantages, the Raspberry Pi remainsan modest PCwith its effectively utilization in diverse range of research applications in IoT vision.

2. LITERATURE SURVEY

Dharmendra Kumar Sharma and Vineet Tiwari, **IEEE 2015[1]** introduces a low cost, handheld, wireless electronic notice board by using Atmel's ATmega32 microcontroller and different wireless technologies (Bluetooth and ZigBee) and their performance analysis based on the parameter such as range, BER (bit error rate), RSSI (Received signal strength indicator), signal attenuation and power consumption. The board receives serial information from wireless module receiver and shows it on the graphical liquid display. We have realized a common communication receiver hardware for notice board having compatibility with both wireless modules i.e. Bluetooth and ZigBee. We used KS0108 based 128×64 graphical LCD as display element.

Neeraj Khera and Divya Shukla, IEEE 2016[2] has developed a simple and low cost Android based wireless notice board. They proposed system uses either Bluetooth or Wi-Fi based wireless serial data communication. For this purpose Android based application programs for Bluetooth and Wi-Fi communication between Android based personal digital assistant devices and remote wireless display board are used. At receiver end, a low cost microcontroller board (Arduino Uno) is programmed to receive and display messages inanyof the above communication mode. Using the developed system, two different applications for displaying message sona remote digital notice board and wireless person calling has been implemented. The developed system will therefore aims in wirelessly sharing the information with intended users and also helps in saving the time and the cost for paper and printing hardware.

Aniket Pramanik, Rishikesh and Vikash Nagar, IEEE 2016[3] During this project, a hardware capable of controlling home appliances and displaying notices electronically using an android application has been built. So, the hardware can perform broadly two functions. In order to display notices, a user can use the same application to type a notice and click on the send button to get it displayed. Both the functionality can be used only if sufficientbalanceamount is left in the user's SIM card since each access transactsafixed amount for SMS. The hardware consists of an ARM based microcontroller LPC2148 that communicates to the application through a GSM mobile communication network module which uses a SIM card to receive messages. LPC2148 itself retrieves message and sends signal to switch on/off a device or show a notice.

Kruthika Simha, Shreya and Chethan Kumar, IEEE 2017[4] developed a wireless electronic board, that offers the flexibleness to manage data display within a given range on multiple displays. The notice board can show data being transmitted to that from a central dominant unit, employing a serial communication protocol. As technology improves, efficient, financially affordable and extremely productive output becomes an absolute necessity, and this leads us to be more inclined towards using automated control systems. Human intervention, though it offers selection, ability and interactivity, could lead on to errors, as it is a natural and inevitable results of this variability. Hence, automation of a system is an accepted means that to attenuate human error and its impact.

S. Rubin Bose and J. Jasper Prem IJRIER 2017[5] In GSM based LED scrolling display board, GSM modem communicates with the microcontroller through asynchronous serial communication. The microcontroller transmits a set of AT commands to read the message sent by the user. The quick display of message using wireless data transfer in smart notice board. The GSM based system offers flexibility to display faster than the programmable system. This system is easy, robust, to use in normal life by anyone at anyplace with less errors and maintenance. The paper titled as design and implementation of multiple LED notice boards by using ZIGBEE Technology states that the proposed system is handled by numerous transmissions and themessagefeeds on only one receiver. Microcontroller controls multiple LED's to enhance the message pattern. Here the distanceofwireless communication is limited and this method is not suitable for long distance communication.

M. Arun, P. Monika and G. Lavanya IJCAT 2017[6] The Raspberry Pi2 system acts as the central server of the proposed system and also the Notice boards are accessible only by logging in with the proper credentials within the raspberry pi server. Raspberry Pi2 acts as the server for this e-Notice board system. It's connected to internet employing a correct IP Address, so a certified user of this system can login from anyplace. Raspberry Pi is connected to the intranet network additionally. The display system in school area one will be having an Arduino board with an Ethernet Shield and a LCD Display hooked up with it. With the help of the Ethernet shield the display node is connected to the computer network. In school area two, the Arduino is connected with a Wi-Fi shield and a LCD Display and this node is also connected to the intranet through Wi-Fi. These devices will also have a valid IP address assigned towards them.

3. IMPLEMENTATION

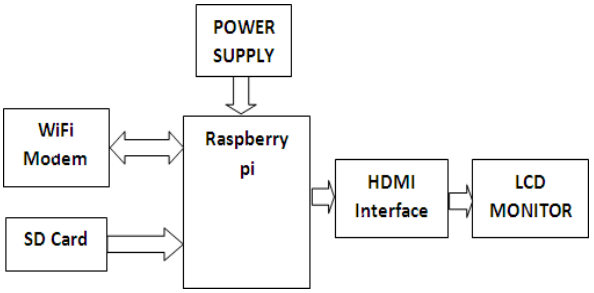


Fig-1 Block Diagram of IoT based Web Controlled Notice Board

3.1 Methodology

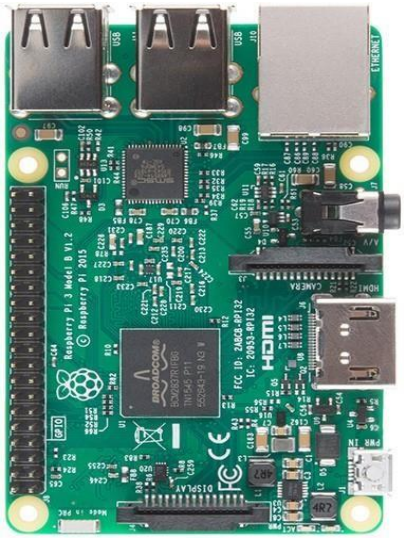
- Client: Authorized user.
- Server: Raspberry pi.
- Raspberry pi interfaces with router using a Wi-Fi adapter.
- Users enters SSID (router name) a password of router.
- Routers allot IP address to raspberry pi.
- TCP server is made on raspberry pi which listens for incoming calls.
- A TCP client is made on PC which interfaces with TCP server.
- When a connection is established the client sends message to server the message sent to by the client is stored in a text file on raspberry pi and hard disk (SD card).
- The text file is prepared by another program which displays the text on LCD screen connected on HDMI interface.

3.2 Proposed Plan of work

This will be a moving message display, which mightbeutilized as the digital notice board, and moreover a Wi-Fi transceiver, that will be that the most recent innovation utilized for communication between the mobile and also the embedded devices. System can work like once the user desires to display or update the notice board, that isunimaginablyuseful to show the circulars, day by day occasions, plans are to be shown. At

that point the WI-FI will receive the message in notice board system, the Raspberry Pi chip has been inside the system is programmed in such a way that when the coding is written in embedded system Language receives any message it will browse the message form serial port through WI-FI transceiver, if the message is writing in any PC then it will begin displaying the information within the display system. The messages are displayed on the liquid crystal display. This system is to cut back the time wastage and update with any time is to terribly simply. The serial WI-FI has been utilized it can be used to transmit an information from serial port communication. It implies that to display the information from to a tiny bit at a time to get the notice load up then stores it, messages are then shows it in the LCD module.

3.3 Raspberry Pi 3 Model B



3.3.1 Technical Specification

- 40pin extended GPIO.
- 4 x USB 2 ports.
- 4 pole Stereo yield and Composite video port.
- Full size HDMI output.
- CSI camera port for associating the Raspberry Pi camera.
- DSI display port for connecting the Raspberry Pi touch screen display.
- Micro SD port for loading your operating system and storing data.
- Upgraded switched Micro USB power source (now supports up to 2.5 Amps).
- The same form factor as the Pi 2 Model B, - the only difference is the location of the onboard LEDs.

3.3.2 Wi-Fi module

Wi-Fi is superior financially savvy WLAN USB module which interface the raspberry-pi minimal effort PC to Wi-Fi neighborhood. Wi-Fi utilizes the most recent 802.11n remote innovation and can bolster information rates up to 150Mb/s, Compared with the more seasoned 54Mb/s 11g items. It additionally profits by a higher remote LAN transfer speed, making information transmission more productive.

3.3.3 HDMI Port

The Raspberry Pi has a HDMI port which you can connect straightforwardly to a screen or TV with a HDMI link. This is the most effortless arrangement; some modern monitors and TVs have HDMI ports, and some don't, yet there are different choices.

3.3.4 Power Supply

This project utilizes a controlled 5V, 500Ma power supply,7805 three terminal voltage controllers is utilized for voltage regulation. Bridge type full wave rectifier is utilized to rectify the ac output of secondary of 230/12V step down transformer.

3.4 LCD Display

We utilize screen as display. LCD is utilized in a project to visualize the output of application. LCDcanlikewisebeutilized as a part of a task to check the yield of various modules interfaced with the raspberry pi module. LAN assumes an indispensable part in a task to see a yield. For normal utilize, you'll need to connect the Raspberry Pi to a visual display a screen or a TV.

4. FUTURE SCOPE

Electronic Notice Board is one of the application where WIFI and Raspberry pi can be utilized successfully. It canlikewisebe utilized as a part of Malls and Highways for Advertisement reason. A moving showcase with variable speed can likewise be utilized as a part of place of staticdisplay.

5. CONCLUSION

Remote activities allow administrations, for example, long-go interchanges, that are inconceivable or illogical to executewith the utilization of wires. It gives quick exchange of data and are less expensive to introduce and keep up. This paper gives an effective method for showing messages on Notice Board utilizing Wireless Technology. It likewise gives client validation to maintain a strategic distance from any abuse of proposed framework.

REFERENCES

[1] Dharmendra Kumar Sharma and Vineet Tiwari, "Small and medium range wireless electronic notice board using Bluetooth and ZigBee" IEEE 2015.

[2] Neeraj Khera and Divya Shukla "Development of simple and low cost Android based wireless notice board" IEEE 2016.

[3] Aniket Pramanik, Rishikesh and Vikash Nagar "GSM based Smart home and digital notice board" IEEE 2016.

[4] Kruthika Simha, Shreya and Chethan Kumar "Electronic notice board with multiple output display" IEEE 2017

[5] S. Rubin Bose and J. Jasper Prem "Design and Implementation of Digital Notice BoardUsing IoT" IJRIER 2017.

[6] M. Arun, P. Monika and G. Lavanya "Raspberry Pi Controlled Smart e-Notice Board using Arduino" IJCAT 2017