IoT Based Smart Notice Board Using Raspberry Pi

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Abstract – Raspberry PI was used in the design of digital notice board. This works on the principle of IoT. We can post notice through a website and the data can be viewed on digital notice board. From a distance, we can update the notice through our website and additionally, registered users receive notifications on their android phone. Notice board is a typical instrument that is used to display important data. Colleges and other societies relay on pin board used for posting announcements. This study focuses on the fundamental concept of an IOT- based digital display using a raspberry pi. The objective of this project which is been proposed is to ensure the updation of data and the output is displaced in any internet connected devices. Notice boards are quite important in our daily lives. Information dissemination in a society without paper can be greatly facilitated by replacing the traditional analogue type notice board with a digital notice board. The admin can do this here, update the notice board through the created website via internet. So data can be sent anywhere and can be displayed in a matter of seconds. The data usually in the format of texts and images. PC is used for storing and send information and Raspberry pi is linked via wifi at the receiving position.

Keywords -Wireless notice board, raspberry pi, authorized user, IOT, digital information distribution. LED, Wireless Fidelity (Wi-Fi)

I. INTRODUCTION

Managing existing noticeboards is manual and very tedious process. Few of the common problem in handling current noticeboard consists of printing documents and then physically going to the location of the board and changing a notice as well as organizing them. Also with every new notice paper pins and clips have to be maintained as well. It takes time and large amount of human labor to well maintain a noticeboard. In this paper, we propose entirely new concept of noticeboards based on Internet of Things (IOT) , that make the process of posting notice very efficient and easy process. To update a board, user has to login to our system and write message. Nowadays individuals benefit more from wireless connection because they engage in social interaction quickly and efficiently. The primary goal of this project is to create a wireless notice board that displays messages send by the user and to create a user-friendly, straightforward system that can receive and present notice in a certain way which will help the user to simply monitor the notice board daily and repeatedly when the user uses the system. It is constructed a local web server, which can be a global server through the internet . Message is displayed on display linked to the Raspberry Pi and led blinks while receiving any important information over internet. A digital notice board is a site where individuals can post messages to advertise goods for sale or to buy , to announce events, or to share information. The raspberry pi can be used to decode or receive SMS messages from any part of the world, by any part of the world we can control and display the data on LCD display. This paper examines a potential wireless notice board using cutting-edge technology . The main goal of the system is to design display tool kit which can be used from an authorized mobile phone. It is a SMS based notice board using the broadly used Raspberry pi to make it easier for a user to display messages on a notice board using their phone. The web page appears and it is implemented by Raspberry Pi which is programmed in python programming language platform. The message or data sent via internet from mobile phone, is received is duly interfaced to the Raspberry Pi. Thus , the raspberry pi receives the message. This message is further displayed in the LCD monitor, which is connected to Raspberry Pi using wireless technology. The displayed messages could be modified depending on the user's preferences. In cases where there are numerous senders, the message will also be displayed according to the priority that will be given to each sender. Mobile phones and related technology are spreading throughout society more and more. Numerous technological advancement in the fields of embedded systems and telecommunication have significantly lowered barriers for the public to use .There are ever more people using cell phones. People prefer using mobile devices to communicate now that landline telephones are becoming archaic. Present day ,One of the most often used devices is remote control. The suggested solution satisfies the requirement for wireless connection between a mobile device and a raspberry pi module, which will be used to show the announcement on the notice board. The message can be sent to the display via a Wi-Fi module. Communication can be done over a wide area. Over the past few years, wireless technology has made enormous development . An indication of the advancement in the sector is the steadily growing use of wireless networks. Administrations ,such as extended exchanges, are made possible by remote actions that would be impossible or absurd to carry out using cables . It enables rapid data sharing to launch and maintain. This paper gives an effective method for displaying messages on Notice Board utilizing Wireless Technology. It likewise gives client validation to maintain a strategic distance from any abuse of framework. The main goal of the proposed system is to create a wireless notice board that displays information sent from the user via mobile phone and to design a straightforward, user-friendly system that can receive and display information or data in a particular way that will make it easy for the user to keep track of the notice board. In our daily lives, notice boards are a crucial technique for gathering information. In the course of our daily lives, notice boards can be found in a variety of locations, including offices, bus stops, train stations, and retail malls. Public information can be posted on

notice boards to draw attention to events, advertise them, or otherwise inform the public.
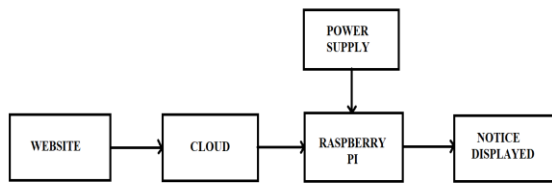
II. PROPOSED SYSTEM

Fig .1 Block Diagram

The main advantage of this device will be offering is a Raspberry pi card for receiving commands from web server on mobile phone or pc. This device is a wireless notice board that shows the user's message and was created to be an easy-to use system that can receive and display notice in a specific way. It will make it simple for the user to monitor the notice board every time they utilize the system. In transmission section the information. which we want to display on pc/android phones should be entered in the web form as show in figure.1 The webform is created by using PHP language (Hypertext Preprocessor) and python script ,both the PHP language and python script is used to add functionality to the web form. To display the data that should be entered in Display Text box and in order to display the picture, Click on to choose file then click on change. The data and picture is transferred to the web server. Receiver section contains power supply, Raspberry pi, LCD display and Wifi connection. Then sent data and picture will be displayed in respective Raspberry pi display i.e. Lcd display. If the notice is found to be important then the led connected to the Raspberry pi glows. It takes less time to do changes in the web portal and display the information in any public places.

It is possible to update edit and delete from anywhere in the portal and indications can be updated using a LED.

III. LIST of COMPONENTS AND SPECIFICATIONS

The proposed prototype consists of Raspberry pi, Sd card, led, IOT, Power supply, Lcd display, Web server . The components and their description are as follows

A. Raspberry Pi

The Raspberry Pi serves as a processor. Raspberry Pi is comes along with a portal Projector / LCD display. It is used to show messages and is easily adjustable or modifiable from anywhere in the world.

B. LCD Display

LCD Monitor is used as display. In a project, an LCD is utilized to see the results of the applications. The output of several modules connected to the raspberry pi module can be checked using an LCD in a project. Thus, Lcd is essential to a project in order to observe the results. It is utilized to display the data in the form of texts and images.

C. SD card

SD card for Raspberry Pi is required as it does not come with internal storage. Since all raspberry Pi units have a SD card slot, this is the best, most compact option, and they are compatible with all versions of the Raspberry Pi, unlike flash drives or external hard drives. The SD card is an essential component of the raspberry pi; it serves as the device's initial storage for files and operating systems. Several different USB-connected peripherals should be used to expand storage.

D. Power Supply

The same micro USB power port seen in many smartphones is used by all raspberry pi boards. All that is required to power the Raspberry Pi is a spare USB adaptor . Ideal for use with any Raspberry pi board, the official Raspberry Pi power supply. 1.5m of Micro USB cable is included with this power source . The four USB ports on the board can each supply up to 2.5A of current , which is more than enough to power gadgets.

E. LED

The electroluminescence concept underlies how LED's functions. Passing a current through the diode, minority charge carriers and majority charge carriers recombine at the junction. On recombination, energy is released in the form of photons. When current travels through a light-emitting diode (LED), a semiconductor light source , it emits light.

F. Web server

This is also known as cloud service powered by web portal. With the aid of the web browser , the notice can be accessed on a web page that uses a cloud service. In order to broadcast the message that is put on the web server to numerous different digital display screens (LCDs) over the internet, web platforms are used at the server side.

G.IOT

The Internet of things (IOT) can be defined as the Internet's connection to common place devices like smartphones, Internet TVs , sensors, and actuators. New method of communication between objects and people as well as between objects themselves are made possible by the devices intelligent connections.

IV. PROTOTYPE MODEL

Firstly ,a web form has been developed to display notice on the notice board .When the webform is opened , the username and password is asked that can only be accessed by the authorized user .Then it is directed to other web page where in the user has to enter the text in the Display text and when you click on to choose file, the user can choose any picture from the file. Finally if the user click on to change ,the text and picture will be changed.
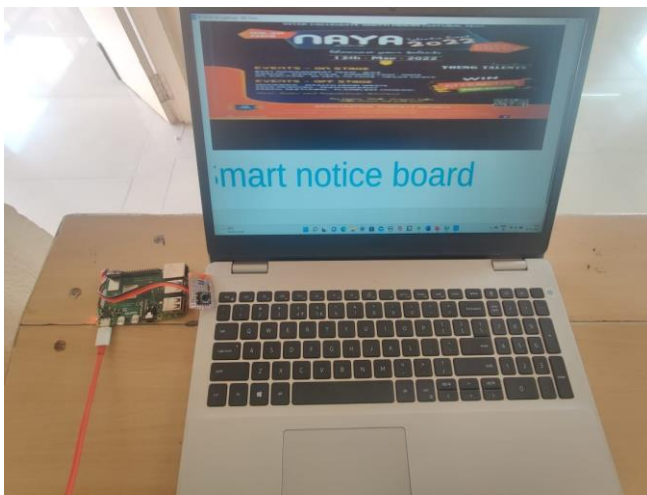
Fig. 2. Prototype Model

If the notice is important then there is a option named important when the user selects that particular option ,the led connected to the raspberry pi glows. The data is stored using IoT technology (i.e.,the data is collected and stored over the internet in the cloud).The data is displayed .Micro USB power input ,it can handle upto 2.5 Amps. Micro C type SD Card slot where the card reader is inserted. Storage should be extended through many types of USB connected peripherals. The raspberry Pi's power input is directly connected to the 5 v power pins. GPIO pins are the standard general purpose pins that can be used for tuning the led in ON or OFF condition.

A website is created using PHP language in which the login page is visible with the credential column(i.e., user name and password).This can be activated by the control person of the notice board .Then there is an editing page which is used to edit the notice .There will also rectangular block for typing the information which can be saved and accessed through the file menu .This menu also helps in inserting the picture to display in the notice board.

There is an another option named important in the editing page which can be chosen and accessed for any urgent notice . This also lightens the LED specifically for the important notices. These data saved are then stored in the cloud of the Raspberry Pi, then displayed in LCD display.

The major part of the Raspberry Pi is its Power Supply. It is dependent of the Wi-Fi connection. The Raspberry pi is connected to the monitor by the means of Wi-Fi .An application VNC viewer is the display of the notice board and pictures can also be displayed. Below the picture the text is displayed dynamically in the screen. IP address of raspberry pi found out by using the angry IP scanner ,copy the IP address of raspberry pi then enter in the VNC viewer then the notice will displayed.
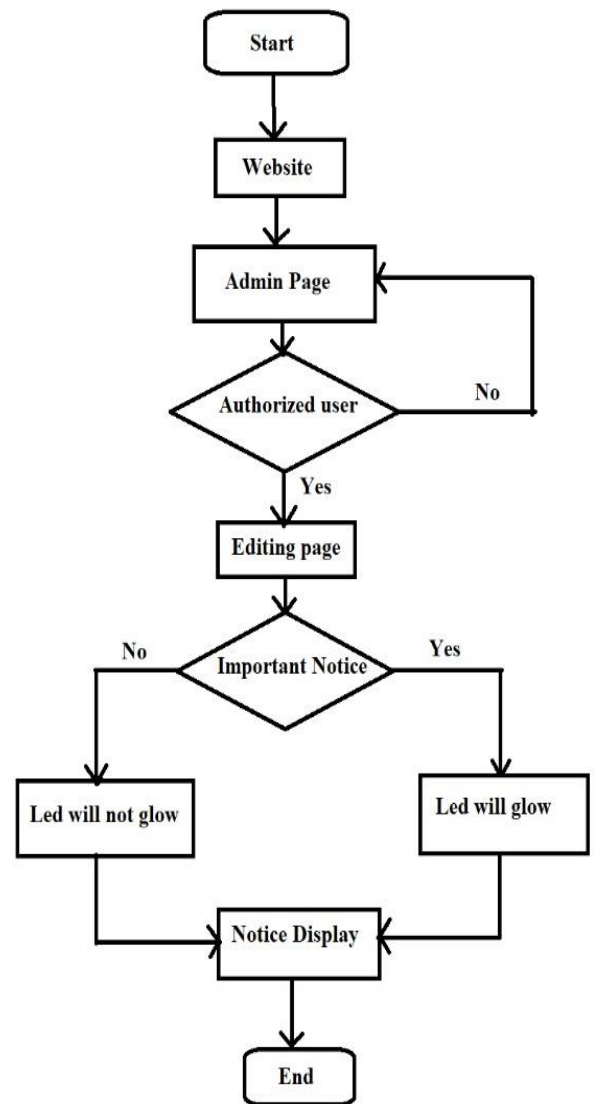
V. FLOWCHART

Fig.3. Flow Chart Of Proposed System

VI. RESULTS AND DISCUSSIONS

The result of the system is nothing but a very simple display of the message on the LCD screen. The output helps us to analyse result which was intended to achieve successfully. The output displayed on the screen is the message which is sent by the user. The sample message will be displayed on the screen. Most of the requirements have been fulfilled up to the mark and the requirements can be completed with a short extension. Here all the facilities are made and tested. Currently the system works for limited number of administered to work.We think that is technology may be used commercially and at locations like colleges, bank, railroad stations, etc. Last we draw the conclusion that, since this project is commonly based on wireless technology, further development and research can make it more applicable for real time applications.The display turns on and starts to show the most recent message when the notice board is hooked into an electrical socket.

VI. CONCLUSION

One of the most crucial mediums for disseminating information to the largest possible audience is the display board. Evolution of manual notice board from traditional handwritten display to digital display as a result of technological developments .It basically uses wireless connection of raspberry pi. This paper provides a an effective method of wireless technology-based approach for displaying notices on notice boards . When there is a power outage or the raspberry pi is accidentally recycled, the device immediately starts up and displays the screen without requiring any configuration.

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