Real Time Digital Display Notice Board on Multiple Screens

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Abstract-- **The old traditional notice board system provide a scope for digitization with replacement using faster and efficient digital notice board system that is paperless and reduces physical efforts of maintenance and operations. This project propose an real time digital display notice board on multiple screens for college level and can act as seed model for smart universities in India. In this scheme notice is send by authentic user through website and displayed different-different message or images on different- different LCD monitor screens at time. The propose approach uses PHP language for website design and my php admin server is used for development of database. Whenever Raspberry receives any wireless message or Images from Web browser, it displays on the LCD monitor. A small micro-computer Raspberry Pi is used for display purpose on monitor by projecting a web browser. The entire system is modular and secure authentication level. The system provides individual department as well as college level notice feed.**

Keywords- Raspberry-Pi, Wireless Communication, LCD, Web Browser.

I. INTRODUCTION

Wireless Communication is the fastest growing and most vibrant technological areas in the communication field. Wireless Communication is a method of transmitting information from one point to other, without using any connection like wires, cables or any physical medium.

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. But day to day changing these boards is a very difficult task and a waste of time. The major drawback of designing these boards is; not flexible and cannot be located anywhere due to messy wire. To overcome this problem, a wireless board is designed to display the latest information. The main concept of this project is to design a wireless notice board that displays various notices sent from the mobile phone. It is very easy to operate and consumes less power.

The Digital Notice Board comprises of two major units. The first unit is a simple user's mobile handset. The second unit is the control unit. For instance, this system ca n be achieved with the help of LCD monitor. The control unit comprises of a display, the Raspberry Pi board. Whenever any information or message have to be displayed the user can send the message via user's mobile phone to the control unit. This smart notice board can be used in many applications including educational institutions, banks, public places like bus and railway stations. Previously the System had been done using a microcontroller, a 16×4 LCD display and a GSM module. It enabled the user to display a notice by using SMS. No doubt it was a good System ,but it failed to display the notice in an attractive manner, the number of characters were limited, also the display was too small and couldn't be implemented for an actual use. Sometimes also there occurred some network problems, leading to slowing down of its process. This provided a luxury to interface a big LED or LCD screen as a display component of the System. Moreover this also reduced the process time. Now the process of authentication was also enabled and only authorized user were allowed to display the notice. Further for displaying the notices in the form of image and for a better speed of operation, the control unit was replaced by a Raspberry Pi Board which was like a mini computer. Now the user was not only able to display a notice by using a SMS but also by an Android Application with all facilities of accessing the notice board with a strong authentication system. Further the use of internet was also introduced and now the user was all set to display the notices using a webpage from anywhere in the world. Our System deals with the displaying of notices on multiple LCD monitor screens by using pi boards. This System also takes care of security concerns also the System mechanism takes care about the records of previously displayed notices. Moreover it helps to display a large size files without any android application. Raspberry Pi is the heart of system, so the focus is to use maximum of its features in a very effective manner.

II. LITERATURE SURVEY

Digital Notice Board using Raspberry Pi [1] In paper author's proposed system is to ensure that information

sent from remote place is displayed on digital screen. Authorized user send notice using android application or website. At transmitter side user can upload different formats of notice like .pdf, .jpg, .txt on the website or android application. The notice sent from the input unit is hosted on the web server via internet or Wi-Fi. Web server also called as web portal b9ased on cloud service. At receiver side wi-fi is connected through raspberry pi. Web platform is enables the notice which is posted on the web server to be broadcasted to multiple different digital display screen via internet. This system provides a user friendly interface and fast data transmission between user and LCD screen using raspberry pi.[1]

Web controlled Notice Board Using Raspberry Pi[2]

In paper author have shown that notice is sent from mobile which is then sent to notice board through web server. Internet is used for wireless data transmission. At the input side Raspberry pi model B is use as transmitter. Using raspberry-pi we can make notices at any time and transmit over internet at receiving end after establishing connection between the transmitter (raspberry-pi) and receiver (LCD screen) by providing IP address, then we are able to send the notices remotely from anywhere in the world.[2]

Electronic Notice Board With Multiple Output Display[3] This paper author main aim is at iterating the results of a project focused on developing a wireless electronic notice board, which offers the flexibility to control information display within a given range on multiple displays. The notice board will display information being transmitted to it from a central controlling unit, using a serial communication protocol.

III. PROBLEM STATEMENT

In early days GSM technology is used for displaying information. Here GSM module which is located at digital notice board is used to receive information from the authorized user and displayed. In this work, the only text message is transferred. Here an android application is used for enabling Bluetooth for sending a message. This work mainly focused on cable replacement and data can send up to the rate of 1 Mb per sec. Bluetooth has a limited range (approximately 70m to 100 m).In order to increase the range of communication Zigbee based notice boards are introduced. But here data rate is only about 250 kb per sec. Wi-Fi-based digital notice boards are currently used in many places like schools, colleges, railway stations, Airports etc. Here Raspberry pi which acts as a receiver and it connected with local Wi-Fi networks. When a person wants to send information to the raspberry pi, the person first connected to corresponding Wi-Fi. So sender and receiver must be within the Wi-Fi range. The maximum possible range of Wi-Fi is about 100 meter. Due to this range, information exchange must be done within the boundaries.

IV. PROPOSED SYSTEM

The main function of the proposed system is to develop a

Digital notice board that display message sent from the user through internet and to design a simple, user friendly system, which can receive and display notice in a particular manner with respect to date and time which will help the user to easily keep the track of notice board every day and each time he uses the system. The system is shown in fig(1) consists of two sections called as sender and receiver. The sender is responsible for sending valuable information through the wireless network. In order to access Digital notice board, the sender must enter into the corresponding web address. For preventing unauthorized access web address we provide security authentications like username and password. If the username and password entered are invalid then the user can't access the digital notice board. When the user enters the correct password and user name web address will opened and get space for the information transmission. The user can access this web address either using a personal computer or mobile phone.
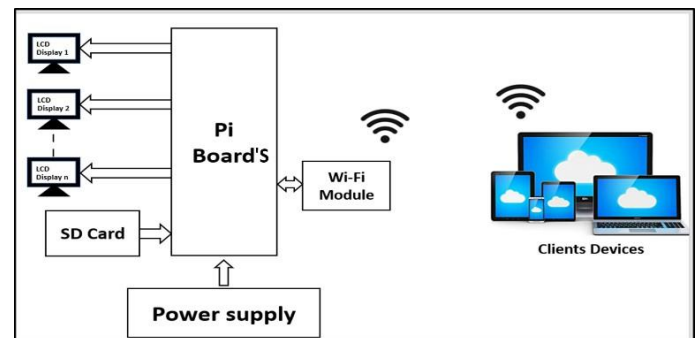
Fig(1). Block Diagram

In the receiver section, Raspberry Pi is connected on Wi-Fi for accessing the internet. The Raspberry Pi is a low cost, credit- card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high- definition video, to making spreadsheets, word-processing. Raspberry Pi is activated by supply power around 5v. Upon receiving messages it will display on the monitor. So in order to interface the multiple LCD monitors with Raspberry Pi boards, HTML interface is used. The received text messages are displayed on the multiple screens like a scrolling manner. Similarly received images will display on the multiple screen. To achieve this monitor screen is spat into two sections. Each section displays each page. After a certain delay, the next pages will be displayed. All these messages are displayed sequentially after a short delay.

In addition to this, One raspberry pi board used to display text and image on LCD1 monitor and for different message display on LCD2 monitor using another Raspberry pi board likewise n number of raspberry pi boards used to connect n number of LCD monitor to send

different-different message on different- different LCD monitor screens at time. Also provide Deleting and modification option at the web link. If the sender wants to delete some image or text file, client can simply delete it by clicking the corresponding link in the web page and also delete or modify text messages whenever clients want.

A. Hardware

The following list of hardware is required in proposed approach.

Raspberry pi

Raspberry pi board shown in fig(2) has very excellent power system management to support external USB. It also has very good Wireless connectivity and Bluetooth connectivity. To use this system completely adaptor of 2.5A should be used
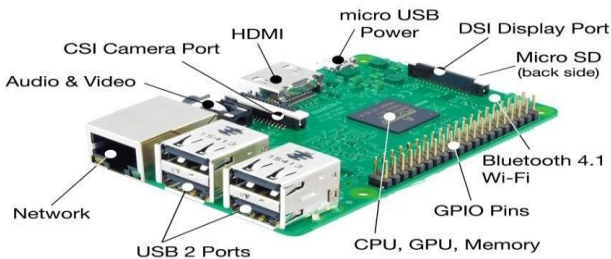
Fig(2). Raspberry Pi Board

The following Table (I) is the technical specification of the Raspberry Pi

Table(I). Specification of Raspberry Pi

Power supply	5 V DC
RAM	1GB LPDDR2 (900 MHz)
GPIO	40-pin header
Operating range	Temp: -40 to 80º C
Operating Current	2.5A
Networking	10/100 Ethernet, 2.4GHz 802.11n wireless
Ports	HDMI, 3.5mm analogue audio-video jack, 4× USB 2.0, Ethernet, Camera Serial Interface (CSI), Display Serial Interface (DSI)
Storage	microSD

SD Card

A SD CARD is shown in fig(3). It is necessary for installing of OS and storing of data received from the receiver. An SD card is an ultra-small flash memory card designed to provide high capacity memory in small size. SD card are used in many small portable devices such as digital video cam recorder, handheld computer, audio players and mobile phones.


Fig(3). SD Card

SD memory cards are now available in capacities between 16. Megabytes and 1 Gigabyte. An SD card typically measures 32 x 24 x 2.1 mm and weighs approximately 2 grams.

Liquid Crystal Display (LCD) Monitor

A liquid-crystal display is shown in fig(4) ,is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

well as a lightweight version of Chromium as of the latest version.
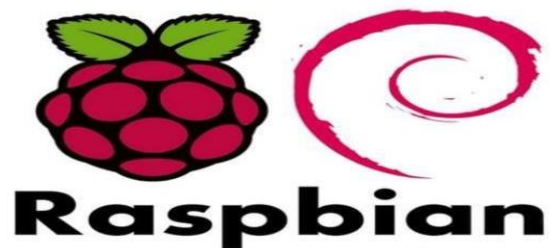
Fig(6).Raspbian logo

Python Language

Python is functional, imperative, object-oriented, reflective, expounded, high level, general-purpose programming language. Python is highly extensive.
Python language uses dynamic typing, and the combination of the reference counting and a cycle-detecting garbage collector for memory management. Python is an easily readable language. Its formatting is perception uncluttered, and it uses the English keywords where other languages use punctuations. Python language allows the programmers to define their own types using

classes, which are mostly used for object-oriented programming language.

B. Software

Fig(4). LCD Monitor

HTML For Web interface

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

V. RESULT AND DISCUSS

The following list of software is required in proposed approach.

Raspbian OS

Raspbian is a Debian-based computer operating system for Raspberry Pi. There are several versions of Raspbian including Raspbian Stretch and Raspbian Jessie. The operating system is still under active development. Raspbian is highly optimized for the Raspberry Pi line's low-performance ARM CPUs

The following fig(6) is show the logo of Raspbian. The distribution is shipped with a copy of computer algebra program Mathematica and a version of Minecraft called Minecraft Pi as

Algorithm:

Step 1: start the system.

Step 2: Enter the URL ID and password in client devices and make hotspot configuration.

Step 3: Authorized client type the desired message and also add the desired image and submit it.

Step 4: Then finally ,the different-different Notice Displayed on Multiple LCD screens.

Step 5:This data is automatically stores is SD card.

Fig(7). Backend

Fig(8). Frontend

VI. CONCLUSION

With the day to day advancement in technology the Notice Boards are also evolving from a hand-written system to a digital display and further to a Wireless Display System. The project reflects a Digital Notice Boards System with the raspberry pi, which displays the desired notices in the form of a text or an image on the multiple LCD screens through a SMS .Multiple notices can be displayed simultaneously in parallel with an image. Use of a password scheme before the message and for starting the notice board display has also enhanced the security concerns.

VII. ACKNOWNLEDGMENT

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