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Digital Notice Board using PHP code and Arduino with P10 Board

Y.Jaasv Bellshi[1], D.Asha[2] , K.Muthu Pradeepa[3] , M.Selvalakshmi[4], K.M.Annammal[5]

[1,2,3,4] UG – Computer Science and Engineering, Grace College of Engineering, Thoothukudi,Tamilnadu

[5] Assistant Professor, Computer Science and Engineering, Grace College of Engineering, Thoothukudi,Tamilnadu

ABSTRACT

Now a days notice board has become an important thing in institutes/organization or public places like railway stations, bus stands and hospitals. But to use the paper notices stacked on a notice board is a time taking and expensive process and there is wastage of lot of time, paper and labour. Here this project is dealing with wireless Notice Board. An Android application of smart phones or tablet which is connected to Bluetooth (HC-05) can be used to display the latest information by enhancing the system. A programmed microcontroller (Arduino UNO) is used at the receiver to receive and display messages in the LED display.

Keywords- Arduino, Bluetooth, LED display.

1. INTRODUCTION

In our day-to-day life notice board is authorized as an important information element in any institution or public utility like transportation areas such as bus, railway stations etc. This boards are used to convey information, advertise events, announce events. The notice board is used to display the information in an effective way to the people, but to update the messages instantly is not easy on the notice board. A separate person is required to take care of traditional notice board. Person has to stick the notices or information on notice board. This process requires manpower and also it is time consuming. Even the notices are not able to reach on time as it takes time to circulate amongst people.

Digital Notice board is the way of displaying notices on LED display. These notices change dynamically. Sending the messages with a wireless

electronic display board to the people and students which using modern technologies will help passing the message without any delay with more reliability rather than traditional way of pasting message on the old notice board. Simply we have to send messages from our android phone and these messages will be displayed on the LED screen. Since the messages are send digitally no printing and photocopying cost is required thus saving time, energy and natural resources.

This project is based on IOT (Internet Of Things) concerns to the environment where network connectivity and computing capability elaborates to objects, everyday items are not usually considered as computers. These items are then proficient to generate, exchange and consume data with minimal human involvement. The Internet of Things (IOT) is an arousing topic which contends the entire globe. In this improvised technology depending on daily routine sticky notes seems to be an odd situation. Internet of Things concerns to the environment where network connectivity and computing capability elaborates to objects, everyday items are not usually considered as computers. These items exchange, consume and generate data with minimal human involvement. The technology contains a wide range of network products, systems which take

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advantage in computing capacity, electronics empowerment, and network interconnections to offer new abilities.

Using Bluetooth module we can send message from any distant location within the particular range. The objective of this project is to develop a wireless notice board that display notice in the form of text. The voice calling feature can be added with the proposed system as a further enhancement for using the system.

2. LITERATURE REVIEW

Display Message on Notice Board using GSM. This paper concerns an SMS based notice board. It comprises the widely used GSM module. It displayes message on notice board via user's mobile phone. It is based on microcontroller ATMEGA32. ASIM300 GSM modem with a SIM card is interfaced to the ports of the microcontroller with the help of AT commands. The Sms is received by SIM300 GSM modem at the receiver end, when user sends it via phone.[1]

Wireless electronic display board using gsm technology. Here author deals with SMS an automatic display Board which is SMS driven. It replaces the currently used conventional Notice Boards. Here the design is proposed to display the notices which are send by authorized mobile phone.[2]

Android Based Wireless Notice Board and Printer.(December 2015) This project deals about an advanced Hi-Tech wireless Notice Board. This system displays the latest information through an Android application. While user sends the message from the Android application device, it is received and retrieved by the Bluetooth device at the display unit. The Bluetooth access password will only be known to the user, thus only authorized user can send message to the microcotroller that displays it on the LCD display. It uses an Arduino system (AVR microcotroller) to control the operation. [3]

SMART NOTICE BOARD [2013] [4]This paper discusses on the present technology in association with daily life. It tells the importance of the Smart notice board and how efficiently it can be used in day to day life.

Development of Simple and Low Cost Android Based Wireless Notice Board (2016). This paper deals with the enhancement of the notice board. It is designed to save time and resources. Also it makes the availability of information to the person.[5]

A Protocol for End-to-End Secure Transmission of SMS [2014][6] This paper explain about easy SMS protocol is successfully designed in order to provide end-to-end secure communication via SMS between mobile phone users. This protocol is secure as it is able to prevent different attacks. The protocol manages the transmission of symmetric key to mobile. This protocol is responsible for less communication and computation over -heads and it utilizes bandwidth efficiently.

Transmission Policies for Multi-Segment Short Messages [2015][7] This paper deals with analytical models to investigate two multi-segment XI short message transmission policies. These analytic models were authenticated against by more than 100 millions measured data which was obtained from a 6-month commercial SMS operation. This analytic models are able to speed up network planning for different commercial SMS operation.

GSM Based Wireless Notice Board.(March 2016) Prof. Ravindra Joshi. This paper describes the design and construction of E-notice board using GSM technology. The system consists of four basic units: GSM modem, Raspberry pi board, LCD monitor and Mobile device. The system is placed on Raspberry pi Board. In this technic the notice which is to be displayed is send by the user's mobile phone device to the GSM module. The notice is then displayed on the LCD monitor using Raspberry Pi board. The system is based on real time process and saves lot of resources i.e. human effort. The main purpose of this paper is to develop a wireless e-notice board. This notice board displays message sent from the user. It is simple, easy to install, user friendly system. Wi-Fi provides higher data rates for multimedia access as compared to bluetooth which provides lower data transfer rates. Bluetooth are intended for communication (about 10m), while Wi-Fi is designed for WLAN about 100m.[8] But when using GSM we cannot display message without Network

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connectivity.

Design and Implementation of Digital Notice Board Using Power Line Communication.[9] In this paper the authors explains one application for automating the conventional practices of displaying notices on notice board and circulating them manually by replacing them with digital notice board. The address is assigned to each receiver and it response based on their appropriate commands. It uses centralized database thus frequent updating possible. To send the data to node this system uses existing power line.

Limitations:

1) Limited number of Character.
2) Unable to display Audio and Video.
3) Need Power Line Communication.

3. METHODOLOGY

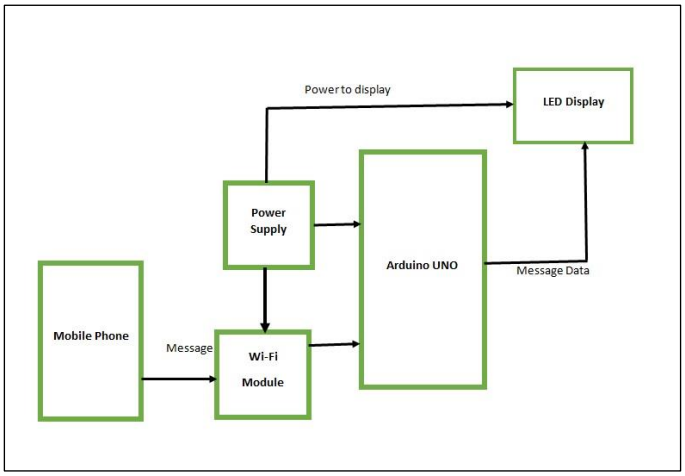
We are using IoT technology to display messages on the screen. Message is sent from user's android mobile phone to Bluetooth Module from remote location within the range of 10 meters. User can send any text message containing characters and digits. Message is received at Bluetooth Module HC-05 and processed using Arduino.

Now message is stored in Arduino and displayed on LCD display. Every unit is connected to power supply which is a prerequisite for operation.

System Architecture:

1)Aurdino UNO:

Arduino UNO (United Nation Organization) is an open source microcontroller board. It is based on the ATmega328P (datasheet) microcontroller. The Uno is programmed using the Arduino Software (IDE) .It is equipeed with a set of digital and analog input/output pins such as, it contains 14 digital input/output pins and 6 analog inputs. Also it has a USB connection, a 16 MHz ceramic resonator, a power jack and an ICSP (In-Circuit Serial Programming) header and a reset button. It contains everything needed to support the microcontroller. We have to connect it to a computer with a USB cable or power it with a AC-to-DC adapter or it requires a battery to get started. Arduino UNO is used at the receiver to receive and display messages in the LCD display.



2) Bluetooth Module HC-05:

Here we are using Bluetooth HC-05 module for receiving messages. Bluetooth HC-05 is an easy to use Bluetooth SPP (Serial Port Protocol) module. It is mainly designed for transparent wireless serial connection setup. We can use the HC-05 Bluetooth Module in a Master or Slave configuration, making it a great solution for wireless communication. The HC-05 is a very cool module which can add two-way (full-duplex) wireless functionality to your projects. It uses CSR Blue core 04-External single chip Bluetooth system with CMOS technology and with AFH.

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3) 16x2 LCD Display:
In this project we are using 16x2 LCD display for displaying notices. An LCD (Liquid Crystal Display) screen is an electronic display module. It has a wide range of applications. A 16x2 LCD display is used in various circuits and devices. There are two lines on 16x2 LCD display and each of this line can hold 16 characters. It is a very basic module and each character in this display is displayed in 5x7 pixel matrix. The 16 x 2 LCD display is able to display 224 different characters and symbols.

4) Power Supply:
Power supply is used to supply electric power to Arduino, Bluetooth module and LCD Display. Bluetooth requires 5v,LCD display requires 5v,Aurdino UNO 7v.

4. Module description:

1) Add Notice:
In this module user is going to add the notices While adding notice User has to enter the notice, its title and also priority. Priority is mainly use to send notices for display.

2) Delete Notice:
User can delete the notice using this module. Notices will be deleted by searching the title.

3) Send Notice:
When user send the notice it will be displayed on the LCD display using this module.

5. CONCLUSION
Now the world is moving towards automation, so in this world if we want to do some changes in the previously used system there is need of using the new techniques. Since the technology is getting advanced features of digital notice board are also enhanced. Display board systems are moving from traditional notice boards to digital display as the technology is advancing day by day. This paper evaluates the working of Digital Notice Board. This technology overcomes the drawback of Traditional Notice Board, which saves time and manpower. Instead of paper it uses LCD display for conveying notices hence , it is beneficial for environment as it reduces use of paper.

FUTURE SCOPE
Notices can be displayed in the form of word document, power point, video clips by uploading them directly. This can be done by using a suitable operating system, program files, drivers, players for making them more eye-catching. Such notices can be displayed by using a webpage and giving an access to authorized users. The limit of character can be increased in future as per our requirement. Also the notices can be scheduled. The best way is the use of an INTERNET. We can use IP address to achieve this. The IP will enable the user to upload any notice and from anywhere in the world. Moreover we can use cloud to dump the past notices and keep record of them.

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