

IOT Based Digital Notice Board with Raspberry pi

ABSTRACT

Notice board is necessary thing in any institution or public utility places like bus stations, railway stations, schools, shopping centers, etc. But pasting various notices day to day is a difficult process. A separate person is required to do this task. This project is about advanced wireless notice board. The project is built around ARM controller raspberry-pi which is most important in this system. Display is obtained on LCD monitor display. A Wi-Fi is used for data transfer. At any time we can add as well as remove the text according to our requirement. At transmitter authorized android phone is used for sending notices. At receiving end Wi-Fi is connected to raspberry pi. When an authenticated user sends a notice from the system, it is received by receiver. Wireless is a popular technology that allows an electronic device to transfer data wirelessly over a computer network, including high speed wireless connections. The data is received from authorized user. Then it sends to raspberry pi. This is the model for displaying notices in colleges on digital notice board by sending messages; it is a wireless transmission system which has very less errors and maintenance. The hardware board is replaced by raspberry pi system. The raspberry pi is interfaced with Wi-Fi Module. A LCD MONITOR display is attached to raspberry pi for display. Raspberry system's coding will be done using python language. Many users can access to update notices on the digital notice board by providing them password. We can use a PC with an administrator for monitoring the system. Index Terms: Raspberry pi, Wi-Fi Module, Android Phone, LCD (Liquid Crystal display).

INTRODUCTION

Mobile Phones and the related technologies are becoming more ubiquitous. Various technological areas in the field of Tele-communication as well as Embedded Systems have come very near to the common people. The people having cell phones are on the rise. A day will come, somewhere in the future, when the mobiles are referred to in the same class of Food, clothing and shelter. Improvements in the Networking technologies have fostered growth of very dense networks. Land line telephones have been becoming outdated and people now prefer communicating while on the move. Remote control is the most popular gadget nowadays. Right

from the intense creativity of remotely controlling laser chip makers to the highly destructive remotely ignitable bombs, from the pins to the planes, remote control is occupying an omnipresence state and it is also enhancing its scope and domains. This project satisfies the idea of the wireless communication between a mobile and a Raspberry pi module with the help of which we are going to display the notice on the notice board. We use a Wi-Fi module to send the notice to display on display. Range of communication is large. Wireless technology has been making massive progress across few years. The ever increasing use of wireless networks acts as an indicator of the progress in the area of wireless networks. The demand for wireless technology is growing not only in industrial applications but also for domestic applications. Some gains of wireless technology are: 1) Completes the access technology portfolio: customers commonly use more than one access technology to occupy various parts of their network and during the migration phase of their networks, when upgrading occurs on a scheduled basis. Wireless enables a fully pervasive access technology portfolio to work with existing dials, cables, and DSL technologies. 2) Goes where cable and fiber cannot: the intrinsic nature of wireless means that it does not require wires or lines to accommodate the data, voice, video. As such, system will bring the information across geographical areas that are prohibitive in terms of distance, price, access or time. It also sidesteps the various issues of ILEC collocation. 3) Involves reduced time to revenue: companies can generate revenue in less time through the deployment of wireless solutions than with comparable access technologies because a wireless system can be assembled and brought online in as little as two to three hours. Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the existing technologies. This project makes use of an on board computer, which is commonly termed as Raspberry pi processor. It plays most important role in the project. This onboard computer can efficiently communicate with the input and output modules which are being used. The Raspberry Pi is a credit-card-sized single-board computer invented by the Raspberry Pi Foundation in the UK. The Raspberry Pi has a Broadcom BCM2835 system on a chip (SoC), which includes an ARM1176JZF-S700 MHz processor, Video Core IV GPU, and was originally shipped with 256 megabytes of RAM, later expanded to 512 MB. It does not include a built-in hard disk or solid-state drive, but uses an SD card for long-term storage and booting purpose. Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Android boasts a healthy array of connectivity options, including Wi-Fi,

Bluetooth, and wireless data over a cellular connection (for example, GPRS, EDGE (Enhanced Data rates for GSM Evolution), and 3G). Android provides access to a wide range of useful libraries and tools that can be used to build rich applications. In addition, Android contains a full set of tools that have been built from the ground up alongside the platform providing developers with high productivity and deep insight into their applications. The main controlling device of the whole system is a Raspberry pi processor. Wi-Fi modem and buzzer are interfaced to Raspberry pi processor. The message sent through predefined application from user Android mobile phone is received by the Wi-Fi modem. Wi-Fi modem feeds this information to Raspberry Pi processor which process it and displays it on the LCD display. Also, the Raspberry pi processor horns a buzzer for every new message. To perform this intelligent task, Raspberry pi processor is loaded with an intelligent program written using Linux.

OBJECTIVES

- 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 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.
- IoT and Wi-Fi are the wireless technology used to interfacing with Raspberry pi module.
- The project aims at designing a LCD Monitor based message display controlled from an Android mobile phone. The proposed system makes use of wireless technology to communicate from Android phone to LCD display board. The system has a provision for giving message through text.

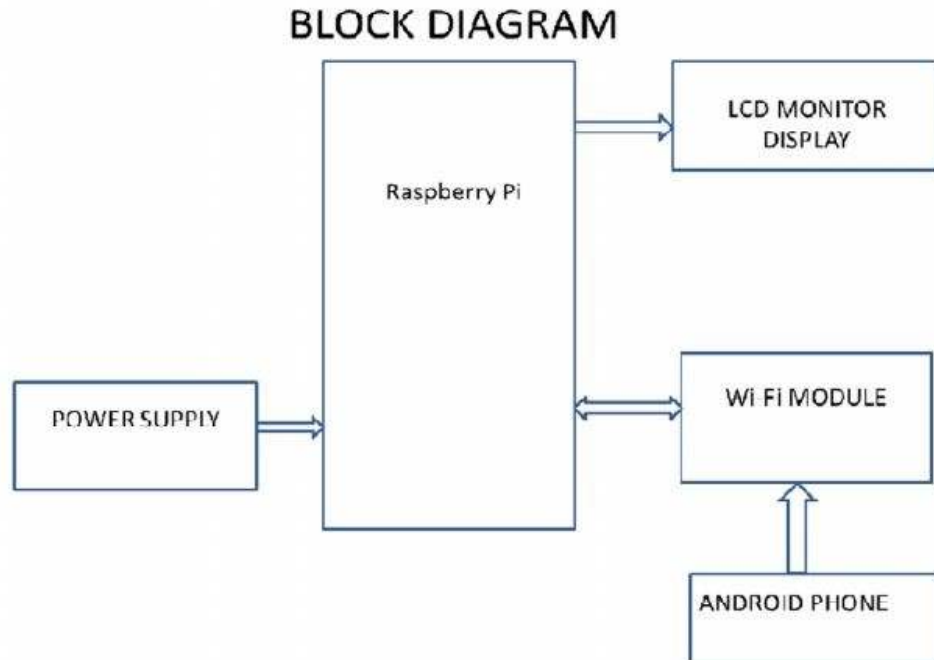


Fig. 1 Block Diagram of Android Controlled Digital Notice Board

RASPBERRY

PI The Raspberry pi is a series of credit card-sized single-board computers developed in the UK by the Raspberry pi Foundation with the intention of promoting the teaching of basic computer science in schools and third world countries. The original Raspberry pi and Raspberry pi 2 are manufactured in several board configurations through licensed manufacturing agreements with Newark element 14 (Premier Farnell), RS Raspberry pi logo Components and Egoman. These companies sell the Raspberry Pi online. The hardware is the same across all manufacturers. The original Raspberry pi is based on the Broadcom BCM2835 system on a chip (SoC), which includes an ARM1176JZF-S 700 MHz processor ,Video Core IV GPU, and was originally shipped with 256 megabytes of RAM, later upgraded (models B and B+) to 512 MB. The system has Secure Digital (SD) (models A and B) or MicroSD (models A+ and B+) sockets for boot media and persistent storage. In 2014, the Raspberry pi Foundation launched the Compute Module, which packages a BCM2835 with 512 MB RAM and an eMMC flash chip into a module for use as a part of embedded systems. The Foundation provides Debian and Arch Linux ARM distributions for download. Tools are available for Python as the main programming

language, with support for BBC BASIC (via the RISC OS image or the Brandy Basic clone for Linux), C, C++, Java, Perl and Ruby. In early February 2015, the next-generation Raspberry Pi, Raspberry Pi 2, was released. The new computer board is initially available only in one configuration (model B) and features a Broadcom BCM2836 SoC, with a quad-core ARM Cortex-A7 CPU and a Video Core IV dual-core GPU; 1 GB of RAM with remaining specifications being similar to those of the previous generation model B+.

PROCESSOR

The SoC used in the first generation Raspberry Pi is somewhat equivalent to the chip used in older smartphones (such as iPhone / 3G / 3GS). The Raspberry Pi is based on the Broadcom BCM2835 system on a chip (SoC), which includes an 700 MHz ARM1176JZF-S processor, Video Core IV GPU, and RAM. It has a Level 1 cache of 16 KB and a Level 2 cache of 128 KB. The Level 2 cache is used primarily by the GPU. The SoC is stacked underneath the RAM chip, so only its edge is visible.

Advantage

- It has remote application achieved by any smart phone or tablets.
- 2. This project reduces Human work for maintaining the Notice Board.
- 3. It also saves the printing as well as paper costs.
- 4. Because of Wi-Fi access password will only be known to the user such as Principal, HOD or Head Person, It is Confidential and reliable.
- 5. Due to the use of Wi-Fi system which is the fastest usage of internet, it will give high performance and it will be cost effective.