Voice Based Digital Notice Board Using WI-FI

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***Abstract*- The main objective of this work is to develop a notice board system using an Arduino board with Wi-Fi being remotely controlled by any Android OS smart phone. As technology is advancing so information is also getting smarter and scrolling. Modern information is gradually shifting from conventional notice board to centralized control system, involving Wi-Fi system. Presently, conventional notice board located in different location makes it difficult for the user to go near them to operate. In this system we are using Arduino master as main controller and remaining four Arduino as slave. When information is given through Wi-Fi master Arduino takes receives data from wi-fi according to coding it feds to slave Arduino and display on LED notice board at same time information gradually shifting with controlled by shift register. With help of shift register data moving from one location to next location like this gradually scrolling. In system all slave lines are displaying different data with scrolling received from master.**

***Index terms*- Power Supply, Transformer, Bridge Rectifier, Filter, IC Voltage Regulators, Arm7 Based Microcontroller, Dot Matrix**

INTRODUCTION

¬In past years, the Wi-Fi transceiver system has used from a many area in terms of mobile phones, personal computers, laptops are to be commonly used by the rich to something so it can be used. Now a day's people prefer 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 can receive and display notice in a particular manner with respect to time which will help the user to easily keep the track of notice board every day and each time he uses the system. Wi-Fi is the wireless technology used. All mobile phones has available in Wi-Fi network, then Wi-Fi network has been used to provide wide area network allows as to communicate with the information into text message through LED display to move the notice board. These services all themselves with one or more network ranges providers will give them a special code number that can receive and monitor the information that their notice board send to them. This many-to-one network of information transmission has become quite popular and many a business has entered into this model with mixed results. This paper aims to propose industrial applications that will utilize the distinct advantages of the Wi-Fi.

Notice boards are commonly used in variety of institutions which we come across in a daily basis. In generation the advertisement notice boards are being managed manually. This process is difficult to involve in order putting a notices on the notice board. This waste a lot of things like paper printer ink, manpower and also brings the loss of time. In this paper we have proposed a system through wireless transmit notices on a notice board using Wi-fi. Wi-fi can pass information for about 100meter distance Wi-fi data rate has 1 or 2 Mbps. It accesses numerous points and to support network interfaces. It also makes the system compatible with more than one wireless technology

Notice Boards are a common occurrence in variety of institutions which we come across on a daily basis. In the current scenario the notice/ advertisement boards are being managed manually. There is a long process involved in order to put up notices on the notice

board. This wastes a lot of resources like paper, printer ink, man power and also brings about loss of time. In this paper we have proposed a system which will enable people to wirelessly transmit notices on a notice board using Zigbee. In this paper we have proposed a system by which only authorized people can access the notice board using a graphical user interface. We can also make the system compatible with more than one wireless technology.

POWER SUPPLY

The power supply circuits built using filters, rectifiers, and then voltage regulators. Starting with an ac voltage, a steady dc voltage is obtained by rectifying the ac voltage, then filtering to a dc level, and finally, regulating to obtain a desired fixed dc voltage. The regulation is usually obtained from an IC voltage regulator unit, which takes a dc voltage and provides a somewhat lower dc voltage, which remains the same even if the input dc voltage varies, or the output load connected to the dc voltage changes. The block diagram of power supply is shown in fig 1 below.

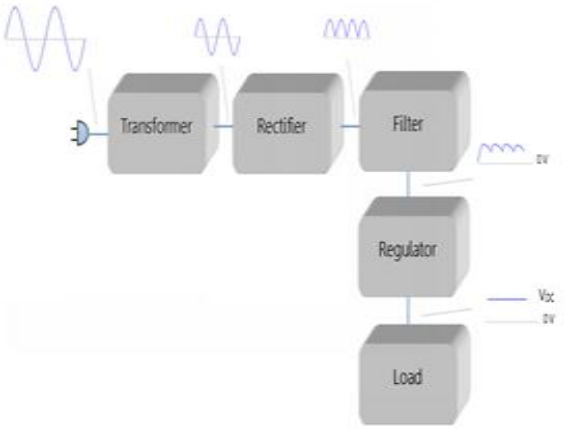

Fig 1. Block Diagram of Power Supply

TRANSFORMER

A transformer is a device which transforms high voltage AC into low voltage AC or vice versa. Our goal is to convert high voltage AC into low voltage DC. So there is absolutely no reason to use step-up transformer. The transformer that is used in power supply is step-down transformer, which steps down the input AC voltage. The magnitude by which transformer steps down the voltage depends on the turn's ratio of primary and secondary winding. Observe the magnitude of sinusoidal signal before the transformer block. Its magnitude is quite high as compared to that of the signal after the transformer block diagram. This indicates that that the signal was stepped down by the transformer. There arises an obvious question as to why transformer is used in this system.

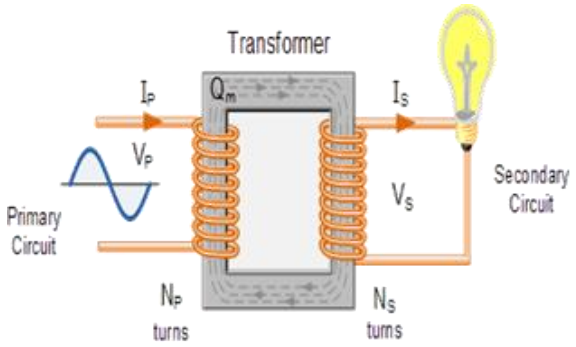

Fig 2. Transformer

BRIDGE RECTIFIER

Bridge rectifier is used to maintain the proper DC polarity at the input to the circuit, irrespective of telephone line polarity. It comprises of four diodes connected to form a bridge. It uses the entire AC wave (both positive and negative sections). 1.4V is used up in the bridge rectifier because each diode uses 0.7V when conducting and there are always two diodes conducting, as shown in fig 3

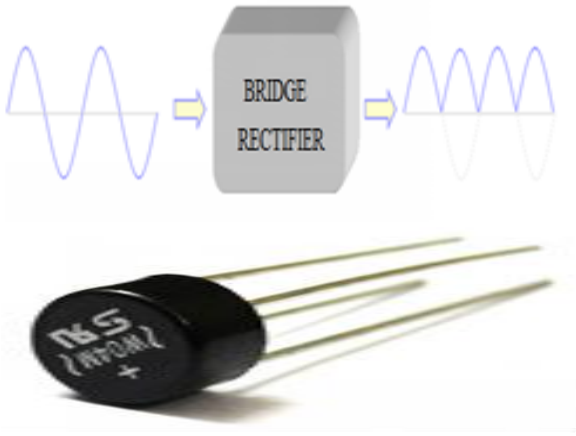

Fig 3. Bridge rectifier IC

FILTER

The output after being processed by full wave rectifier is not a pure DC. The output is a pulsating

DC. The output contains large fluctuations in voltages. This is quite apparent from the block of full wave rectifier shown above. The power supply that we intend to design must not have any variation in output voltage. The voltage that we get from full wave rectifier fluctuates between 0 V and Vpeak, and hence it contains AC components. These AC components need to be filtered out so as to obtain DC voltage. This is where filters come into picture. Filters, as the name suggests, filters out any AC component present and provides DC as the output. However, the output from the filter is still not a pure DC but filters remove the AC component in the voltage to a considerable extent. This increases the average DC value of the output voltage. Now a question must arise as to how we can make a filter and which components are required to make a filter. Although it not the goal of this section to study filters in detail, it must suffice to know that filters used in power supplies can be made simply by using capacitors. We leave the design of capacitive filter to some other section. Typical input and output voltage of filters used in power supply is shown in fig 4.

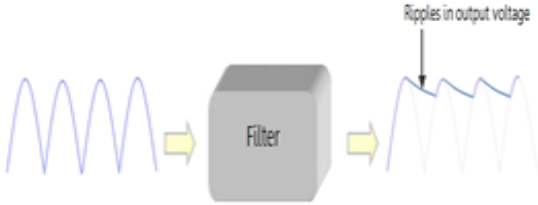

Fig 4. Block Diagram of Filter

As shown in the figure above, the output voltage from the filter contains voltage ripples. This output is not a pure DC, however considerable amount of AC component is filtered out by the filter. The effectiveness of the filter to remove the AC component is indicated by the ripple factor. Smaller the ripple factor, better the filter.

IC VOLTAGE REGULATORS

Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. Although the internal construction of the IC is somewhat different from that described for discrete voltage regulator circuits, the external operation is much the same. Fig 5 shows voltage regulator IC. The units provide regulation of either a fixed positive voltage, a fixed negative voltage, or an adjustably set voltage.

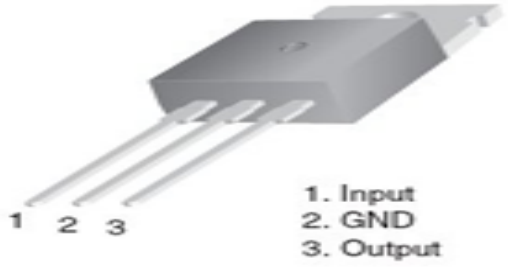

Fig 5. Voltage Regulator IC

ARM 7 BASED MICROCONTROLLERS (LPC2148)

Increasingly, embedded systems developers and system-on-chip designers select specific microprocessor cores and a family of tools, libraries, and off-the-shelf components to quickly develop new microprocessor-based products and applications. ARM is one of the major options available for embedded system developer. Over the last few years, the ARM architecture has become the most pervasive 32-bitarchitecture in the world, with wide range of ICs available from various IC manufacturers. ARM processors are embedded in products ranging from cell/mobile phones to automotive braking systems. A worldwide community of ARM partners and third-party vendors has developed among semiconductor and product design companies including hardware engineers, system designers, and software developers. ARM7 is one of the widely used micro-controller family in embedded system application. This section is humble effort for explaining basic features of ARM-7.

ARM is a family of instruction set architectures for computer processors based on a reduced instruction set computing (RISC) architecture developed by British company ARM Holdings. A RISC-based computer design approach means ARM processors require significantly fewer transistors than typical processors in average computers. This approach reduces costs, heat and power use. These are desirable traits for light, portable, battery-powered devices—including smart phones, laptops, tablet and notepad computers), and other embedded systems. A simpler design facilitates more efficient multi-core

CPUs and higher core counts at lower cost, providing higher processing power and improved energy efficiency for servers and supercomputers.

DOT MATRIX

Dot Matrices In our search to improve the versatility of our design, we began to look for more simplistic ideas that would allow us to have more control over the system. Dot matrices with strictly LED's spaced evenly in rows and columns seemed to be the most organized, uniform way of presenting the lighting. Due to the low variety of such products on the market, we decided to order four matrices of 64 dots in order to test a rough design and learn more about the function and characteristics we will be working with. The model that was purchased can be seen in the fig 6.

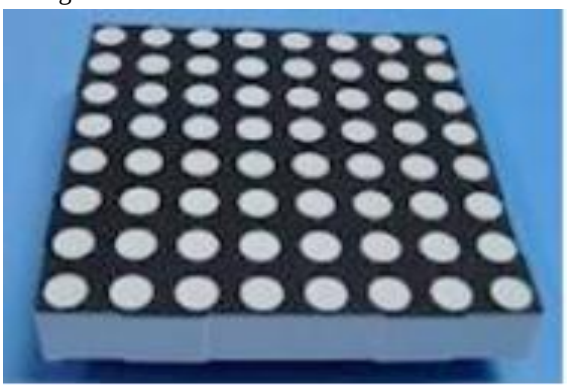

Fig 6. Dot Matrix

Though this model is the ideal component, as it is very small and compact, not many alternatives were found that would give us the freedom and efficiency that these matrices presented us. Also, the pins on the matrix fit perfectly into a breadboard, which makes for easy prototyping. We also explored the way that colors are presented to a viewer with a dot matrix as well. Many systems use dichromatic principles, meaning each dot contains a red and green LED. Thus, mixing the two colors presents the user more possible color combinations. We liked the idea of red, green and blue LED's being present in each dot. With three colors to combine, we would have much more wavelength options, and the blue LED adds an effect that would work well as a background against the brighter red or green graphics that well be displayed

PROPOSED WORK

This will be a moving message display, which can be used as the digital notice board, and also a Wi-Fi transceiver, which is the latest technology used for communication between the mobile and the embedded devices. In order to comparing the FCM with FCFM, our implementation allows the user to choose initializing the weights using feature vectors or randomly. The process of initializing the weights using feature vectors assigns the first Kinit (user given) feature vectors to prototypes then computes the weights by Equation.

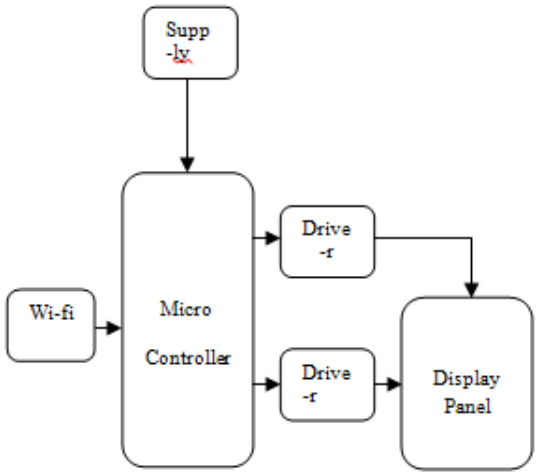

Fig 7. Block diagram of Proposed Work

Fig 7 shows block diagram of proposed work. System will work like when the user wants to display or update the notice board, which is very useful to display the circulars, daily events, schedules are to be displayed. Then the WI-FI connected ARM cortex to the Display system will receive the LED 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 read the message form serial port Through WI-FI transceiver, if the message is typing in any personal computer then it will be start displaying the information in the display system. The messages are displayed on the LED display. This system is to reduce the time wastage and update with any time is to very easily. The serial WI-FI has been used it can be transmit an information from serial port communication.

It means to display the information from bit by bit to receive the notice board then stores it, messages and then displays it in the LED module. To use in ARM cortex it can be implement in RISC process. It can be

implementing to less instruction seta can be manipulating the data so this is a high level transmission of data.

RESULT AND DISCUSSION

LED Display (light-emitting diode display) is a screen display technology that uses a panel of LEDs as the light source

Fig.8. Hardware Setup

V. CONCLUSION

In the field of wireless communication we can make our communication more efficient and faster, with greater efficiency we can display the messages and with less errors and better efficiency. Time can be consumed and to paper wastage is reduced This method can be used very efficiently in establishments like High-tech restaurants where in give the order and offer discounts can be displayed at all branches in same time, in colleges the students and staffs can be informed simultaneously the information no time. It can be set up at public transport places like railways, bus station, and airport and also at road side for traffic control and in emergency situations like hospitals temples, etc. it is cost is low and very easily to handling method. This work describes the Wi-fi based LED display.

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