

BLUETOOTH BASED COLLEGE NOTICE BOARD USING LCD

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ABSTRACT

In this world Mobile Phones and the related technologies are becoming more and more prevalent. Various technical arenas in the field of Telecommunication and Embedded Systems are becoming omnipresent in the people. Notice boards are one of the widely used ones ranging from primary schools to major organizations to convey messages at large. A lot of paper has been used and which is later wasted by the organizations. This in turn leads to a lot of deforestation thus leading to global warming. Small innovative steps in making use of technology for regular purposes would have an adverse effect on the environmental issues which we are presently concerned about. The BLUETOOTH module receives a message from the mobile phone and the message is extracted by the microcontroller from the BLUETOOTH module and is displayed on the 16x2 LCD display. This proposed system in this project has many upcoming applications in educational institutions and organizations, crime prevention, traffic management, railways, advertisements etc. Been user friendly, long

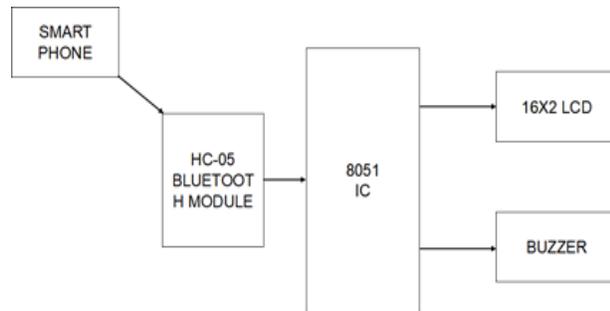
range and faster means of conveying information are major bolsters for this application.

INTRODUCTION

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This system consists of 8051 Microcontroller (IC AT89C51), 16X2 LCD, Bluetooth Module (HC05 FC-114), Buzzer and Smart Phone. The Bluetooth Terminal application in the mobile phone is connected with the Bluetooth module HC05 and receives messages from the user. These

messages sent by smart phone are decoded by 8051 and this data is sent to LCD display while the buzzer is on until the message is displayed.



AT89C51 MICROCONTROLLER

Microcontroller is a general-purpose device, which integrates a number of the components of a microprocessor system on to single chip. It has inbuilt CPU, memory and peripherals to make it as a mini computer. A microcontroller combines on to the same microchip:

- The CPU cores
- Memory (both ROM and RAM)
- Some parallel digital I/O.

Microcontrollers will combine other devices such as:

- A timer module to allow the microcontroller to perform tasks for certain time periods.
- A serial I/O port to allow data to flow between the controller and other devices such as a PIC or another microcontroller.

- An ADC to allow the microcontroller to accept analogue input data for processing.

Microcontrollers are:

- Smaller in size
- Consumes less power
- Inexpensive

Micro controller is a stand-alone unit, which can perform functions on its own without any requirement for additional hardware like I/O ports and external memory.

The heart of the microcontroller is the CPU core. In the past, this has traditionally been based on a 8-bit microprocessor unit. For example, Motorola uses a basic 6800 microprocessor core in their 6805/6808 microcontroller devices.

In the recent years, microcontrollers have been developed around specifically designed CPU cores, for example the microchip PIC range of microcontrollers.

AT89C51 is the 40 pins, 8-bit Microcontroller manufactured by Atmel group. It is the flash type reprogrammable memory. Advantage of this flash memory is we can erase the program with in few minutes. It has 4kb on chip ROM and 128 bytes internal RAM and 32 I/O pin as arranged as port 0 to port 3 each has 8-bit bin. Port 0 contain 8 data line(D0-D7) as well as low order address line (A0-A7).

Port 2 contain higher order address line (A8-A15). Port 3 contains special purpose register such as serial input receiver register SBUF, interrupt INT0, INT1 and timers T0, T1 many of the pins have multi functions which can be used as general purpose I/O pins (or) Special purpose function can be decided by the programmer itself.

HARDWARE COMPONENTS

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 potential transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the secondary of the potential transformer will be connected to the precision rectifier, which is constructed with the help of op-amp. The advantages of using precision rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.

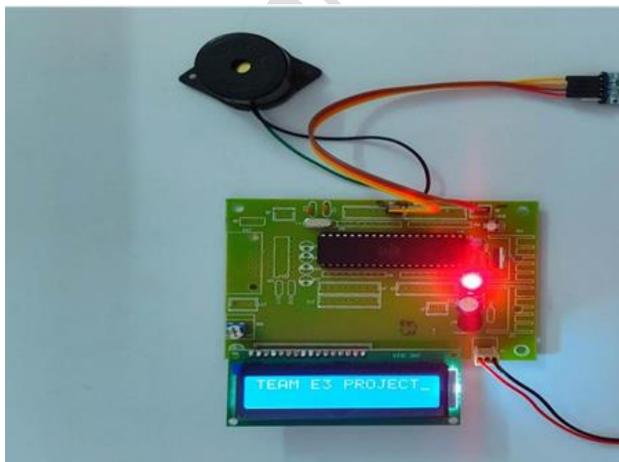
Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. Although the internal construction of the IC is somewhat different from that described for discrete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

HC-05 Bluetooth Module is an easy-to-use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Its communication is via serial communication which makes an easy way to interface with controller. It has range up to <100m which depends upon transmitter and receiver, atmosphere, geographic conditions.

It is IEEE 802.15.1 standardized protocol, through which one can build wireless Personal Area Network (PAN). It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over air. It uses serial communication to communicate with devices. It communicates with microcontroller using serial port (USART).

RESULT

The result of the system is nothing but a very simple display of the message on the LCD screen. The output helps us to analyze that the result which was intended to achieve is successfully. The output displayed on the screen is the message send using module HC05 terminal. The sample message that will be displayed on the screen as seen in fig . Smart phone uses Bluetooth terminal which is used to control the input message which is to be displayed. The signal is sent to the Bluetooth module HC-05 via smart phone. This module then transmits the data to 8051 microcontroller; the microcontroller has an IC which is coded using Keil μ Vision software. This code runs the LCD and Buzzer. While the message is being transmitted the buzzer is turned on and is turned off once the message is sent completely.



CONCLUSION

Our project “Bluetooth based College Notice board with LCD Display” is intended to display and scroll a message given by the user. This system has a Bluetooth interfaced to the micro controller. The micro controller is programmed in such a way that the message written in the program will display and scrolled on the LCD scrolling board.

FUTURE SCOPE

The main aim of our project is to display various notices which we have achieved using the Bluetooth technology but as Bluetooth has a limited range, the application is limited to a particular geographical area. This project can be extended using RS485, and, wireless technology like Zigbee can be used to increase the range in future.

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