

GSM Based Digital Notice Board

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Abstract— Paper consumption is the superlative reason for forest degradation and notice is an indispensable requirement for public places, organization to connect/ communicate with people in one way or both. Since there are many easy configurable, low power consuming wireless technologies (like Wi-Fi, Bluetooth, RF, Zigbee, GSM) are available, a wireless electronic notice board system can be easily realized by using any of them replacing the need of paper notice board. Since the world is stepping towards digitization the need for wireless digital notice board is found. Wireless Electronic notice board is a perfect replacement of paper notice board providing easy maintenance, portability and access.

Index Terms - Android, Electronic notice board, GSM modem, Microcontroller, Voltage regulator.

INTRODUCTION

Notice Board is primary thing in any institution / organization or public utility places like bus stations, railway stations and parks. But sticking various notices day-to-day is a difficult process. A separate person is required to take care of this notices display. This project deals about an advanced hi-tech wireless notice board.

This work can be used regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers, Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. As everyone in this competitive world prefers to make the things easy and simple to handle, this project sets an example to some extent.

This work is built around the ATMEGA8L micro controller from Atmel. Micro controller provides all the functionality of the display and wireless control. It also takes care of creating different display effects for given text. Display is obtained on LED Matrix Display Array on a printed circuit board. A GSM/CDMA Mobile Can is used to enter the required text or notice. The scrolling speed of the text also can be changed according to user requirement. After entering the text the SMS is sent to the no which is connected to the LED display. At any time the user can add or remove or alter the text according to his requirement. At the receiving end the GSM modem which is connected to the Max 232 receives the message and is connected to the microcontroller ATMEGA8L. The message which is already stored in the EEPROM is displayed on the LED matrix display array.

Wireless technology has been making tremendous progress over the past few years. The ever increasing use of wireless networks serves as an indicator of the progress in the area of wireless networks. The demand for wireless technology is increasing not only in industrial applications but also for domestic purposes.

I. ATMEGA8L MICROCONTROLLER

Microprocessors and microcontrollers are widely used in embedded systems products. Microcontroller is a programmable device. A microcontroller has a CPU in addition to a fixed amount of RAM, ROM, I/O ports and a timer embedded all on a single chip. The fixed amount of on-chip ROM, RAM and number of I/O ports in microcontrollers makes them ideal for many applications in which cost and space are critical

The AVR core combines a rich instruction set with 32 general purpose working registers. All the 32 registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving through puts up to ten times faster than conventional CISC microcontrollers.

II. LED DISPLAY

LED display is use to display the text which is send to the user. With the help of microcontroller whatever the text send by the user serially communicate with the display by the interfacing of the microcontroller and displaying system with serial communication.

II. UART

A universal asynchronous receiver/transmitter (UART), is a computer hardware device for asynchronous serial communication in which the data format and transmission speeds are configurable. A dual UART, or DUART, combines two UARTs into a single chip.

III. GLOBAL SYSTEM FOR COMMUNICATION

Global System for Mobile (GSM) is a second generation cellular standard developed to cater voice services and data delivery using digital modulation. It is a globally accepted standard for digital cellular communication. Throughout the evolution of cellular telecommunications, various systems have been developed without the benefit of standardized specification. This presented many problems directly related to compatibility, especially with the development of digital radio technology. The GSM standard is intended to address these problems.

IV. BLOCK DIAGRAM OF THE SYSTEM

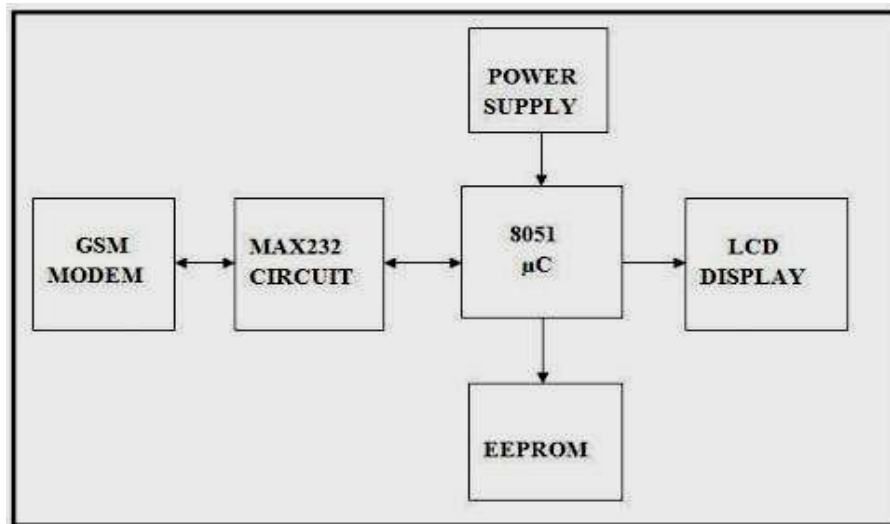


Fig. 1 -Block Diagram of the System

The input to the circuit is applied from the regulated power supply. The a.c. input i.e. 230V from the mains supply is step down by the transformer to 12V and is fed to a rectifier. The output obtained from the rectifier is a pulsating d.c voltage. So in order to get a pure d.c voltage, the output voltage from the rectifier is fed to a filter to remove any a.c components present even after rectification. Now, this voltage is given to a voltage regulator to obtain a pure constant dc voltage.

This work can be used regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

V. SOFTWARE USED

a) KEIL Software

Keil compiler is a software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. Keil compiler also supports C language code.

b) Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter. "Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB.

VI. RESULT

In this "GSM Based Digital Notice Board" the notice is access by the mobile and the return message will be received by the mobile. From the received message sender knows that whatever the message send by the sender is successfully display on the notice board. What type of message is send or received by the mobile are shown in below figure.



Fig. 2: Snapshot of the Mobile

The expected notice board are shown in below figure.



Fig.3 : GSM Based Digital Notice Board

IX . CONCLUSION

In this work a low cost, offices/industry usable, portable wireless notice board successfully developed. The graphical LCD displays transmitted character and it is functionally satisfied the definition of notice board. The developed notice board is may be a prototype or implemented system, made considering the minimum system requirement and this work have interminable possibilities for further up-gradation like using a larger color display with long range GSM wireless node connection to enhance the range of operation. In this work by introducing the concept of wireless technology in the field of communication they can make their communication more efficient and faster, with greater efficiency it can display the messages and with less errors and maintenance.

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