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Wireless digital circular system

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ABSTRACT*- In this proposed system the idea of wireless Digital Circular System Using GSM Technology has been presented. So our main aim is to reduce paper work and time. In this paper we are trying to implement our system in such a way that it can display message from authorized user sends to GSM module which is located on the class rooms.So in short, the GSM module which is located at class room projectors receives the message from authorized user and displayed on screen. So spreading of important message or notice will be takes place within very short span of time.The transmitter side is the principal room, and he can send the messages whatever he wants to inform to this college staff or student using pc or mobile and the transmitted message is received through the GSM modem.Then the received message is displayed on the projector screen and also message receiver voice and buzzer alert is implemented in this system.*

I. INTRODUCTION

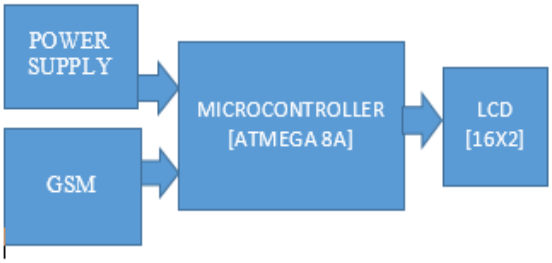
It is based on the use of new technologies to improve circular system on colleges.

GSM – a digital mobile telephony system, which is globally accessed by more than 212 countries and territories. Global system for mobile communication is completely optimized for full duplex voice telephony. Initially developed for the replacement of first generation (1G) technology, now GSM is available with lots of salient features with the constant up gradation of third generation

(3G) technology. Now-a-days advertisement is going digital. The big shops and the shopping centers use digital displays now. Also, in trains and buses the information like platform number, ticket information is displayed in digital projector boards. People are now adapted to the idea of the world at its finger-tips. The use mobile phones have increased drastically over years. Control and communication has become important in all the parts of the world. This gave us the idea to use mobile phones to receive message and then display it on an projector screen. The GSM technology is used. GSM stands for Global System for Mobile Communication. Due to this international roaming capability of GSM, we can send message to receiver from any part of the world. It is has the system for SMS Short Message Service. This project is a remote notice board with a GSM modem at the receivers end. So if the user wants to display any message, he can send the information by SMS and thus update the Projector display accordingly.

II. RELATED WORK

This section describes appropriate related works on the development of Circular system. In the existing system LCD display is used. This LCD is very small size not clearance from long view. Always this kit should on condition so power consumption is high. No password protection is implemented.

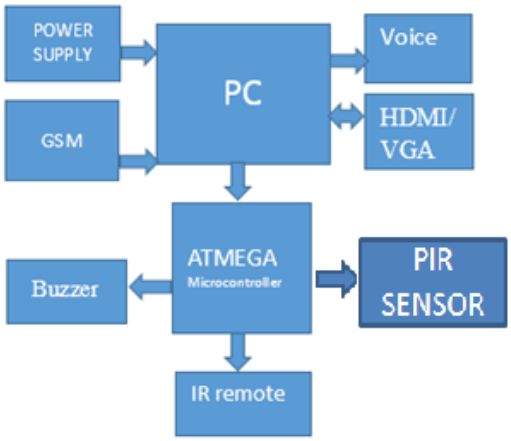


EXISTING BLOCK DIAGRAM

III. PROPOSED SYSTEM

In this proposed system the message send from authorized user to GSM module which is located on the Class rooms. In this project we implemented the display in Projector so all can notice easily in class itself. So this GSM module receives the message and displayed through projector. We implanted sound alert system whenever the message receive. Password protection is implanted so only concern person message only displayed other unwanted message are not displayed.

Max232 shift the level of signal which converts the signal between the microcontroller and GSM module. After the conversion of signal this message will be displayed on notice board.



PROPOSED BLOCK DIAGRAM

IV. HARDWARE REQUIREMENT

1.GSM: (global system for mobile communication) is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone.

When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities.

2. POWER SUPPLY:

Power Supply is an important part of a circuit. It provides required supply to different blocks of the circuit from input 230V AC. The main blocks include transformer, rectifier circuit, filter circuit, and regulator circuit. For our project we require + 5 Volt and +12 Volts supply. +5 Volts is given to Micro-controller board.+12 Volts are used for GSM MODEM.

3. BUZZER:

Buzzer is controlled by the microcontroller using single pin. In this project we are using Buzzer as output device. When SMS is received then Buzzer turns ON for some time. Buzzer is connected to microcontroller port pin, somicrocontroller will give high or low to switch on/off buzzer. In this system it is used to define the arrival of the SMS in the form of sound.

4.MICRO CONTROLLER- ATMEGA8:

The ATmega8 provides the following features: 8 Kbytes of In-System Programmable Flash withRead-While-Write capabilities, 512 bytes of EEPROM, 1 Kbyte of SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible Timer/Counters with compare modes, internal and external interrupts, a

serial programmable USART, a byte oriented Two wire Serial Interface, a 6-channel ADC (eight channels in TQFP and QFN/MLF packages) with 10-bit accuracy, a programmable Watchdog Timer with Internal Oscillator, an SPI serial port, and five software selectable power saving modes. The Idle mode stops the CPU while allowing the SRAM, Timer/Counters, SPI port, and interrupt system to continue functioning. The Power down mode saves the register contents but freezes the Oscillator, disabling all other chip functions until the next Interrupt or Hardware Reset. In Power-save mode, the asynchronous timer continues to run, allowing the user to maintain a timer base while the rest of the device is sleeping. The ADC Noise Reduction mode stops the CPU and all I/O modules except asynchronous timer and ADC, to minimize switching noise during ADC conversions.

In Standby mode, the crystal/resonator Oscillator is running while the rest of the device is sleeping. This allows very fast start-up combined with low-power consumption.

The ATmega8 is supported with a full suite of program and system development tools, including C compilers, macro assemblers, program simulators, and evaluation kits.

5. LEVEL CONVERTER MAX 232:

RS-232 INTERFACE: For GSM modem which works on the RS-232 voltage levels, logic 1 varies from -3 to -15 volts and logic 0 from +3 to +15 volts. The microcontroller which works on TTL logic levels, logic 1 is +5 volts and logic 0 is 0 volts. Therefore to interface the two we use a MAX 232 driver IC manufactured by Maxim. In order tomake MODEM serial port compatible with microcontroller serial port the RS232 converter is used.

V. SOFTWARE TECHNIQUES

1. Code Vision AVR The AVR is a modified Harvard architecture8-bitRISC single chip microcontroller which was developed by Atmel in 1996. The AVR was one of the first microcontroller families to use on-chip flash memory for program storage, as opposed to one-time programmable ROM, EPROM, or EEPROM used by other microcontrollers at the time.

Program memory: Program instructions are stored in non-volatileflash memory. Although the MCUs are 8-bit, each instruction takes one or two 16-bit words.

The size of the program memory is usually indicated in the naming of the device itself

(e.g., the ATmega64x line has 64 kB of flash while the ATmega32x line has 32 kB).

There is no provision for off-chip program memory; all code executed by the AVR core must reside in the on-chip flash. However, this limitation does not apply to the AT94 FPSLIC AVR/FPGA chips.

2. EMBEDDED C:

Embedded C is used for microcontroller programming. There is a large and growing – international demand for programmers with 'embedded' skills, and many desktop developers are starting to move into this important area. Because most embedded projects have severe cost constraints.

3. VISUAL BASIC:

Visual Basic (VB) is an event driven programming language and associated development environment from Microsoft for its COM programming model. Visual Basic was derived from BASIC and enables the rapid application development (RAD) of graphical user interface (GUI) applications. Visual Basic allows many additional components to be added to the toolbox. The Microsoft component is used to add a serial communication facility. Here we have used VB to display the message from the PC.

4. AT COMMANDS:

AT commands are instructions used to control a modem. AT is the abbreviation of AT tension. Every command line starts with "AT" or "at". That's why modem commands are called AT commands. Many of the commands that are used to control wired dial-up modems, such as ATD (Dial), ATA (Answer), ATH (Hook control) and ATO (Return to online data state), are also supported by GSM/GPRS modems and mobile phones. Besides this common AT command set, GSM/GPRS modems and mobile phones support an AT command set that is specific to the GSM technology, which includes SMS-related commands like AT+CMGS (Send SMS message), AT+CMSS (Send SMS message from storage), AT+CMGL (List SMS messages) and AT+CMGR (Read SMS messages).

5. PROGRAMMING INTERFACES:

There are many means to load program code into an AVR chip. The methods to program AVR chips varies from AVR family to family**.**

6. ISP:

The In-system programming (ISP) programming method is functionally performed through SPI, plus some twiddling of the Reset line. As long as the SPI pins of the AVR aren't connected to anything disruptive, the AVR chip can stay soldered on a PCB while reprogramming. All that's

needed is a 6-pin connector and programming adapter. This is the most common way to develop with an AVR.

The Atmel AVR ISP mkII device connects to a computer's USB port and performs in-system programming using Atmel's software.

7. PROGRAM EXECUTION:

Atmel's AVRs have a two stage, single level pipeline design. This means the next machine instruction is fetched as the current one is executing. Most instructions take just one or two clock cycles, making AVRs relatively fast among the eight-bit microcontrollers.

The AVR family of processors were designed with the efficient execution of compiledC code in mind and has several built-in pointers for the task.

RESULTS AND DISCUSSION

Using this proposed method, delivery of messages from main station to destination easily. The person who is sending message can send it to various class rooms and also to single class room. Messages are to be typed on a mobile or computer which could be displayed on a display unit through GSM modem. We are not using any written format this will reduce man power. Thus the information could reach the receiver quickly at right time. There is no delay in transmission of information.

CONCLUSION

By introducing the concept of wireless technology in the field of communication we can make our communication more efficient and faster, with greater efficiency we can display the messages and with less errors and maintenance.

This project is used to mainly display the message in separate class rooms and even group of class rooms. We are designing a new display system which we can access remotely, thus utilizing GSM technology. For every message received, the system will check for the source number and if the source number is correct the controller will display the message.Cost of printing and photocopying is also reduced as information can be given to a large number of people from our fingertips. Thus we can conclude that this project is just a start, an idea to make use of GSM in communications to a next level.

FUTURE SCOPE

A commercial model can be able to display more than one message at a time.

In our system we are sending messages via GSM network and displaying on a Projector by utilizing AT commands. The same principle can be applied to control electrical appliances at a distant location.

Multilingual display can be another added variation in the project we can able to store messages for long time by using sd memory card.

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