



GSM Based Home Automation

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Abstract: The paper is to develop a system, which uses mobile technology that keep control of the various units of the automobiles, which executes with respect to the signal sent by mobile. Now a day's every system is automated in order to face new challenges in the present day situation. Automated system has less manual operation, so that the flexibility, reliabilities are high and accurate. As a result, automated control solutions are preferred in every industry. Automated systems, particularly in the field of electronics, are performing better. The fact that the worldwide system for mobile communication is an international standard is probably the most useful thing to know about it. GSM is the only type of cellular service available in some parts of the world. GSM was created as a replacement for analogue service. For the use of appliances, a new concept has been developed to manage them remotely using GSM, allowing the user to control the switching of domestic appliances from a distance. The devices may be turned on/off and the status of the devices can be relayed to the specified cellphone number programmed in the microcontroller by sending a simple SMS to the GSM modem at a remote location.

Keywords: Microcontroller , GSM, SMS, Light turn on turn Off

I. INTRODUCTION

This describes a GSM-based Device Control System mobile application for Android smart phones that was created with App Inventor and is aimed at a large market that will benefit the general public. Android has maintained its top position in global market share, according to the International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker. The GSM (Global System for Mobile Communication) network can be found practically anywhere. The Global System for Mobile Communication (GSM) and, in particular, the use of cellular phones, gave rise to the novelty of long-distance communication at a remote place. Paper makes use of this ability to operate instruments and appliances from a distance; consider this scenario: a person driving in his car all of a sudden. Normally, you would drive back and turn off the lights. GSM network is chosen for communication between home appliances and users among cellular technologies because of its vast coverage [8,9], which keeps the entire system online virtually all of the time. Another benefit of using the GSM network for home automation is its robust security infrastructure.

II. SOME IMPORTANT COMPONENT

A. MICROCONTROLLER

The AT89S52 is a CMOS 8-bit microcontroller with 8k bytes of in-system programmable flash memory that is low-power and high-performance. The chip is made with Atmel's high-density non volatile memory technology and uses the industry-standard 80C51 instruction set and pin out. The Atmel AT89S52 is a powerful microcontroller that offers a highly flexible and cost-effective solution for a wide range of applications. The AT89S52 includes the following features as standard: 8K bytes of flash memory, 256 bytes of RAM, 32 I/O lines, a Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock hardware are all included. The AT89S52 has static logic for operating down to zero frequency and two software selectable modes of operation. The RAM contents are saved in power-down mode, but the oscillator is frozen, blocking all other chip functions until the next interrupt or hardware reset. A microcontroller (or MCU, which stands for microcontroller unit) is a single-chip computer. A System on a Chip, or SoC, is the current nomenclature for it.

B. GSM

This is a wireless module that is both small and dependable. The SIM900A is a dual-band GSM/GPRS solution packaged in an SMT module that can be integrated into customer applications. The SIM900A has an industry-standard interface and provides GSM/GPRS 900/1800MHz phone, SMS, data, and fax capability in a tiny form factor with minimal power consumption. SIM900A can fit in practically all space needs in user applications, especially for slender and compact design demands, thanks to its small configuration of 24mmx24mmx3mm.



Fig. GSM

Features:

Dual-Band 900/1800 MHz

GPRS multi-slot class 10/8GPRS mobile station class B

Compliant to GSM phase 2/2+Class 4 (2 W @ 850/ 900 MHz)

Class 1 (1 W @ 1800/1900MHz)

Control via AT commands (GSM 07.07 07.05 and SIMCOM enhanced AT Commands)

Low power consumption: 1.5mA(sleep mode)

Operation temperature: -40°C to +85 °C

C. ARDUINO PRO MINI

The ATmega328-based Arduino Pro Mini is a microcontroller board. It contains 14 digital input/output pins (six of which are PWM outputs), six analogue inputs, an on-board resonator, a reset button, and mounting holes for pin headers. To give USB power and communication to the board, a six pin header can be linked to an FTDI cable or a Spark fun breakout board. The Arduino Pro Mini is designed to be installed in semi-permanent items or exhibitions. The board is shipped without pre-installed headers, allowing for the use of a variety of connections or direct wire soldering. The Arduino Mini is compatible with the pin layout. The Pro Mini is available in two versions.

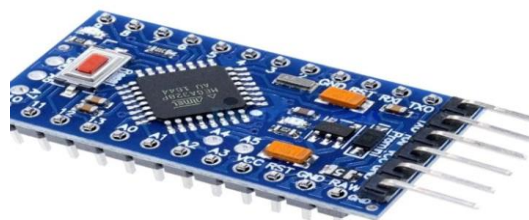


Fig . Arduino Promini

D. LCD Display

"Liquid Crystal Display" is the abbreviation for "liquid crystal display." LCD stands for liquid crystal display, which is a flat panel display technology that is often found in televisions and computer monitors. It's also found in mobile device screens including computers, tablets, and smartphones. LCD screens are not only visually distinct from bulkier CRT monitors, but they also perform differently. An LCD has a backlight that provides light to individual pixels organised in a rectangular grid instead of firing electrons at a glass panel. A red, green, and blue RGB sub-pixel can be switched on or off in each pixel.



Fig. LCD display

III. LITERATURE REVIEW

[1] GSM based Smart home and digital notice board.

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The idea uses a GSM SIM900 module to create a digital notice board and a home automation system. The goal of this project is to give users an easy, quick, and dependable way to post vital alerts in an LCD by allowing them to transmit a message to be displayed on the screen. The message can be sent to the GSM SIM900 module via an android application created for this project. . A home automation system has also been built, in which household appliances such as lights, fans, and other devices may be turned on or off using the same android application developed for this project. Home appliances may be managed and notices can be displayed on an LCD display using the Android application from anywhere in the world. It makes use of a microcontroller for system control and GSM technology for communication. A 32-bit ARM-based microcontroller LPC2148, a GSM SIM900 module, an LCD, a motor, and an Android application for user interface with the hardware are all included in the project. The device may be used everywhere, regardless of where it is deployed, as long as mobile network connectivity is available. This allows the device to make better use of resources and hence enhance efficiency when compared to their separate modes of generation.

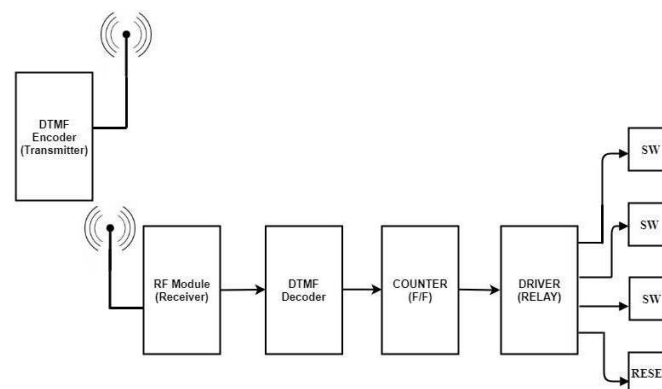
[2]. Smart GSM based Home Automation System. Published in: 2013 IEEE Conference on Systems, Process & Control (ICSPC)

This study looks into the possibilities of 'Full Home Control,' which is the goal of Home Automation Systems in the not-too-distant future. In this paper, the analysis and implementation of home automation technology employing a Global System for Mobile Communication (GSM) modem to manage household appliances such as lights, climate control, and security systems via SMS text messages are described. The proposed research focuses on the GSM protocol's capability, which allows the user to operate the target system from a distance using frequency bandwidths. The smart GSM-based home automation system was developed using the notion of serial communication and AT-commands. Homeowners will be able to receive feedback on the status of any household appliances they control remotely, whether they are turned on or off. With the integration of GSM, the PIC16F887 microcontroller offers the smart automated house system with the appropriate baud rate of 9600 bps. With a maximum of four loads, the planned prototype of GSM-based home automation system was developed and tested.

IV. EXISTING SYSTEM

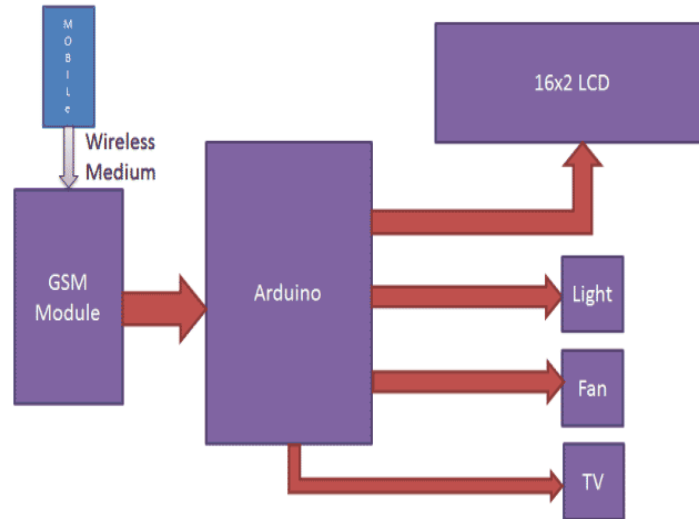
Every system has been automated in order to meet the new challenges that have arisen in the current circumstances. Automated systems require fewer manual procedures, resulting in more flexibility, reliability, and accuracy. As a result, automated control systems are preferred in every industry.. GSM is the only type of cellular service available in some parts of the world. GSM was created as a digital system employing TDMA technology, rather than analogue services. The project's purpose is to create a system that uses mobile technology to keep track of the various units of household appliances and acts in response to the signal received by the phone.

FIG. EXISTING SYSTEM



**V .METHODOLOGY:**

The Arduino is utilised to control the entire procedure in this project. We've used GSM wireless communication to operate home appliances in this case. For regulating AC home appliances, we transmit commands like "#A .light on," "#A light off," and so on. After receiving commands via GSM, Arduino sends signals to relays, which use a relay driver to turn on or off home appliances. . In this case, we've utilised the prefix "#A." in the command string. This prefix signifies that the main command will follow, and the end of the text indicates that the message has ended. We used three zero-watt bulbs to demonstrate fan, light, and television in this project.



**Fig. Block Diagram of System
VI. RESULT**

Figure shows the overview of project circuit. We inserted a SIM card inside a GSM. After inserting SIM card we perform this project to control the devices. It was working properly. We use three devices to perform working of this project ie, TV, Light, Fan etc. All the devices wre working properly with GSM and manually also.



FIG. RESULT OF PROJECT



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