

Password Protected GSM based Device

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Abstract: These days security is the most basic issue everywhere on the planet, so security of everything has increased significance of late. Here in this paper, endeavouring to recreate the extensive examination identified with the different entryway bolts and door security frameworks that are fundamental in the fields, for example, home, enterprises and vehicle security where potential outcomes of invasion are expanding day by day. Security framework is required for comfort and wellbeing. Conventional lock frameworks utilizing mechanical lock and key instrument are being supplanted by new advanced methods of locking framework. We present the plan and usage of a GSM based wireless security framework which take an exceptionally less power. The framework can response quickly as intruder detect and GSM module will do alert home owner. Suspected exercises are passed on to remote client through SMS utilizing GSM technology.

Keywords: GSM (Global System for Mobile Communications), Microcontroller, SMS, security.

I. INTRODUCTION

Security describes protection of life and property. There are doors to keep people out. Key locks and chains reinforce the mode of security. Doors are being made of metals and not just wood anymore. Influential persons of our society have bullet proof doors to ensure a good measure of security of self and family. The security sector is experiencing diversification as it has never seen before. This has brought about the need to review the reliability of already existing systems and look into the possibility of clearing better systems that are smarter and more secure. Nowadays there is demand for more efficient security systems to avoid access of unauthorized persons. In recent system a unique password is set to open locker or door, which is only known to authorized person. The user uses this password again and again so somebody can hack that password and also if password leaks then it affect security of system. GSM (Global System for Mobile Communication) technology is used to communicate input signal from appliances to output message on device. That means after detection of any intrusion GSM Modem sends the appropriate message to house owner's phone. The signals or data which comes from sensors or other equipment digitize it by GSM module and send it to receiver.

Home security system offers many benefits. GSM based security is very easy to install and has a very less cost.

In this paper the work mainly focuses on the security of home when the user is out from the place. GSM based technology proposed to keep updated owner about house security. In this security system is SMS based and uses GSM technology to send SMS to the owner. Normally the aim of this type of system is to keep secure home from intruders.

Block Diagram:

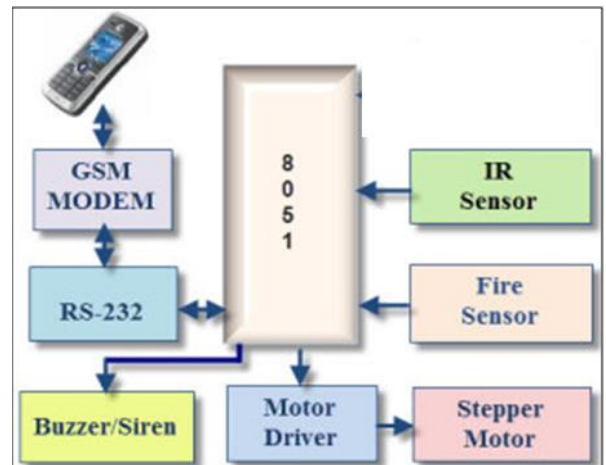


Figure 1: system block diagram

In this work we will be using components like Microcontroller, LCD, GSM modem, stepper motor, IR sensor, Heat sensor, buzzer and motor driver. This project is aimed to design a system to control the electrical devices in industries or homes by using GSM technology. A GSM modem provides the communication interface. It transports device protocols transparently over the network through a serial interface. A GSM modem is a wireless modem that works with a GSM wireless network. This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. The GSM modem performs the task of receiving the message from the mobile. If the password entered is wrong, the system alerts the buzzer immediately. This method helps in providing security and also power is saved up to some extent.

GSM Technology:

GSM Modem:

A GSM modem 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. [11]

What is GSM?

GSM stands for Global System for Mobile Communication. It is a digital cellular technology used for transmitting mobile voice and data services. GSM is the most widely accepted standard in telecommunications and it is implemented globally. GSM is a circuit-switched system that divides each 200 kHz channel into eight 25 kHz time-slots. GSM operates on the mobile communication bands 900 MHz and 1800 MHz in most parts of the world. In the US, GSM operates in the bands 850 MHz and 1900 MHz. GSM makes use of narrowband Time Division Multiple Access (TDMA).

GSM provides basic to advanced voice and data services including roaming service. Roaming is the ability to use your GSM phone number in another GSM network. GSM digitizes and compresses data, then sends it down through a channel with two other streams of user data, each in its own timeslot.

Advantages of GSM

- Improved spectrum efficiency
- International roaming
- Low-cost mobile sets and base stations (BSs)
- High-quality speech
- Compatibility with Integrated Services Digital Network (ISDN) and other telephone company services
- Support for newservices

Features of GSM

- Short Message Service which allows you to send and receive 126 character text messages.
- Ability to use same phone in a number of network-related countries.
- Allows data transmission and reception across GSM networks at speeds up to 9,600 bps currently.
- Forwarding of calls to another number. More capacity, ensuring rapid call set-up.
- Handsets also smaller and more robust.

- Place a call on Hold while you access another call.
- Encrypted conversations that cannot be tapped.
- Emergency Calls - In the majority of countries, the global 112 emergency number can be dialed *free*.
- No-static connections. [12]

II. LITERATURE SURVEY

Nikhil Agarwal, G. Subramanya Nayak [1] utilizes secret word secured entryway framework procedure in home computerization framework. The entryway lock is secret word ensured with a LED based resistive screen input board which works by detecting distinction in light power caught by the photo diode which is radiated by encompassing red LEDs and reflected by the finger. The showcase is a 16X2 LCD board. IR Laser sensors are utilized to distinguish any hindrance while observing the windows and entryways around evening time or when away. Flame alert framework utilizes temperature sensor LM35 which senses unexpected extensive increment in temperature and raises alarm. They utilize the accompanying parts in that automation system for example IR sensors, LCD Display, Temperature Sensor, Microcontroller, Relay, Power Supply, GSM Modem.

Visa M. Ibrahim, Asogwa A. Victor, S. Y. Musa [2] builds his security framework for vehicle assurance. In that idea if criminal attempts to loot a vehicle it consequently deactivates the vehicle by separating the start key supply from the vehicle battery. This currently makes it outlandish for anyone to begin the vehicle, not to mention moving with it. In an endeavor of robbery through the vehicle entryways or boot, the framework sends the message to the vehicle proprietor and in the meantime begins the alarm. This plan flew out because of the expanding rate at which packed vehicles are stolen particularly in our nation, yet with this structure this packed vehicle is being checked regardless of where it is packed, given there is GSM network coverage.

Jayashri Bangali, Arvind Shaligram [3] says that Automated home which demonstrates the computerization of daily undertakings with electrical apparatuses utilized in homes and security is a significant angle or highlight in smart home applications. The new and rising idea of smart homes offers an agreeable, advantageous, and safe condition for inhabitants. Ordinary security frameworks keep mortgage holders, and their property, safe from gatecrashers by giving the sign in terms of alarm. However, a smart home security framework offers a lot more advantages. He proposed Two framework in his venture for example one depends on GSM innovation and other uses web camera to identify the gatecrasher. First security framework utilizes a web camera, introduced in house premises, which is worked by programming introduced on the PC and it utilizes Internet for communication. It identifies movement of any interloper before the camera measurement and camera go. The second security framework is SMS based and utilizes GSM innovation to send the SMS to the proprietor. The proposed framework

is aimed at the security of Home against Intruders and Fire. In any of the above cases occurs while the proprietors are out of their home then the device sends SMS to the emergency number which is given to the system.

Aayush Aggarwal, R.C. Joshi [4] designed his WSN and GSM based Remote Home Security System by combining the advantages of Wireless Sensor Networks and GSM technology is presented. It can detect intrusion, fire etc. and inform the user remotely about the incidence with distance playing no barrier. In those security system intruder has detect if they comes under the dimension of WSN.

R.Anandan, Mr.B.Karthik, Dr.T.V.U.Kiran Kumar [5] says that they have tried to increase the standard by combining new design techniques and developed a low cost home and industrial automated security systems. They aim to overcome the flaws made by many other security device as it is most effective in security purpose. It is cheaper and can be maintained easily than any other security device. This device works in two way modes. ie.

- a) Internal mode
- b) External mode

When the internal mode is selected by the user when they are inside the wireless security area, the entire sensor except sensor will be activated and the buzzer connected with the microcontroller will give an alarm and the reason for the insecurity will be displayed in the LCD connected to the microcontroller. When the external mode is selected by the user when they are outside the wireless security area, all the sensor will be active and the security area address which is pre- programmed, along with the problem will be sent as SMS to the specified police station, fire station, security room and also to the user at the time of insecurity, fire accident, unwanted movement of persons etc. which is sensed by the respective sensor.

III. RESEARCH METHODOLOGY

A. Proposed system

This system construct with 8051 microcontroller which contains a piece of code for a specific action. The action will be taken by the GSM modem i.e. to alert an owner about intruder or danger to house. That device should be installed on the door, as the intruder opens the door the magnet which is situated in the door go away from Relay so LED glows with RED light and the appropriate action will be taken by GSM modem.

In this "Password protected GSM based device" a system is constructed with multiple features. Features included in it are:-

- 1: IR sensor
- 2: heat sensor
- 3: password protected

In each of the feature if any unauthorized access will take place the system will send a text message to the owner. This alert the owner to take required actions

Algorithm

1. Initially, declare the PORT1 to LCD data pins and control pins (RS and E) to P3.0 and P3.2. Also, declare PORT2 to keypad. Also use P0.0 and P0.1 for motor driver.
2. Then, display the message "enter password" on LCD.
3. Now read the four digit password from the user.
4. Compare the entered password with the stored password.
5. If password is correct, then make P0.0 pin HIGH and P0.1 pin LOW to open the door. During this time, display "Door opening" on LCD.
6. After some time, make P0.0 pin LOW and P0.1 pin HIGH to close the door and after this display "Door closing" on LCD.
7. If the password is wrong, then display "Wrong Password" on LCD.
8. After some delay again ask to enter password.

B. Software Design

This Proposed System uses microcontroller 8051, C programming language embedded within it and compile using C-compiler and to burn the program using Flash Magic software. ".HEX" file will be burnt in microcontroller.



Figure 2: Proposed system



Figure 3: Development board

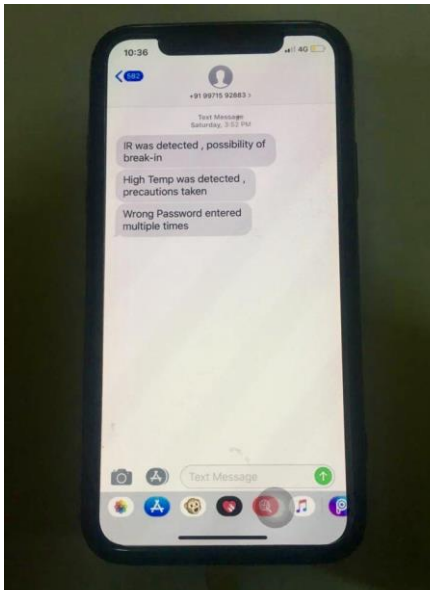


Figure 4: Receiving a message on mobile phone

IV. RESULTS AND DISCUSSION

This framework tried on the most recent innovation accessible in cell phone which gives an appropriate outcome. This system is easy to use and very simple. The model can be introduced with an economical cost. The GSM technology gives a decent response after a message of specific activity is received from microcontroller. SMS received time to house owner is essentially rely upon the signal strength range that you have through mobile tower.

V. CONCLUSION AND FUTURE SCOPE

In the present technologically advanced world, independent frameworks are gaining rapid popularity so the headway in most recent innovation is consistently and quickly made on various most recent programmed door lock security frameworks. The requirement for a propelled entryway lock security framework utilizing new innovations is expanding step by step as security is turning into a significant or major issue for everyone. Because of the ongoing patterns in different techniques for security for home, structures, organizations, vehicles and so on, there is no compelling reason to stress over this security any more, as programmed security frameworks are here to manage it.

This venture is intended for security frameworks whose access is only for respected authorities. Utilizing a microcontroller the password entered is checked with the stored secret word and after that does the relating activities. Here we utilize a 4-digit secret key for better secrecy. The secret phrase based entryway lock model was planned which enables the security access to a room that was structured with least parts count and most

reduced cost possible. The working model was built under different limitations like time and accessibility of materials.

The GSM based home security system has been designed and tested with the mobile network. The user can get alerts anywhere through the GSM technology thus making the system location independent. The communication of home is only through the SMS which has been tested with the mobile networks and is working on any mobile network. The system can be easily connected to the personal computer for further control. We can add fire and LPG sensors so that in case of accident, the doors will automatically open. This project can be used in hospitals. We can add oxygen gas sensor to detect the leakage in oxygen gas cylinders.

Thus, we have concluded that we can secure our residential places as well as industrial places using 8051 microcontroller by just connecting the components to interface and to drive the locking system.

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