PIR Sensor & GSM Based Security System

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Abstract - ***Security is one of the main concerns of the present day. Security not only from the rising crime but also from the day to day accidents. the present world of technological advancement proper measure should be taken to maintain the security and the comfort of home, banks and offices. by using proper security system billion of rupees spend on department like fire brigade, police, railway etc. can be brought in control. This thesis is based on the GSM base and microcontroller. Microcontroller control or fetch the information from the GSM network. In this controller we use our mobile sim and after collection of information make the noise or ring by the speaker. PIR sensor sense the human body and give to microcontroller. when the human absent then no alarm and when the human enter then start alarm. by the purpose of security this phenomena is done. this security is use in our home, industries, vehicles, railway, offices, police station etc.***

Keywords: PIR sensor, GSM (global system for mobile communication), microcontroller, sms (short message service), security.

I. INTODUCTION

In today's age of digital technology and intelligent systems, security automation has become one of the fastest developing application-based technologies in the world. The idea of comfortable living in home, vehicles, offices, banks, fire brigade, railway etc. has since changed for the past decade as digital, vision and wireless technologies are integrated into it. Intelligent office in simple terms can be described as industries that are fully automated in terms of carrying out a predetermined task, providing feedback to the users, and responding accordingly to situations. In other words, it simply allows many aspects of the home system such as temperature and lighting control, network and communications, entertainment system, emergency response and security monitoring systems to be automated and controlled, both near and at a distance.

Automated security systems play an important role of providing an extra layer of security through user authentication to prevent break-ins at entry points and also to track illegal intrusions or unsolicited activities within the vicinity of the home (indoors and outdoors). There has been much research done in the design of various types of automated security systems. Pir Sensor-based systems that relay on contact or movement sensors or contact-based systems such as fingerprint and palm print scan or keypad activation that require substantial amount of contact with an input device.

This project involved developing a system which uses technology that keeps control of the many uses of the vehicles, personal offices; police thane, fire brigade, house, metro train, railway, industries, etc. pir sensor, sense infrared signal send by the gsm. Microcontroller collect the signal from the gsm network and used sim in controller, receive network and make call through speaker after sensing by the of pir sensor. when the owner absent from the offices, and when human body (thicker) enter in the offices then make a call from the sim by the speaker and massage reached to the owner.

This project consists of three basic modules along with a GSM modem. The GSM modem is used to send the message to the authorized authorities in case of emergency. the first module consist of locked key paid which can be used to lock the secrete place. If more than three attempts are made, then made emergency signal will be sounded. The second module consist of an array of PIR sensors to detect the presence of a person in the house. lastly, the third module is the fire detection module which consist of LPG gas sensors and temperature sensors.

II. 8051 MICROCONTROLLER

The Intel 8051 microcontroller is one of the most popular general purpose microcontrollers in use today. The Intel 8051 is an 8-bit microcontroller which means that most available

Operations are limited to 8 bits. There are 3 basic "sizes" of the 8051: Short, Standard, and Extended. The Short and Standard chips are often available in DIP (dual in-line package) form, but the Extended 8051 models often have a different form factor, and are not "drop-in compatible".

All these things are called 8051 because they can all be programmed using 8051 assembly language, and they all share certain features (although the different models all have their own special features).

8051 have some points, these are:

- 64 KB on chip program memory.
- 128 bytes on chip data memory (RAM).
- 4 register banks.
- 128 user defined software flags.
- 8-bit data bus

- 16-bit address bus
- 32 general purpose registers each of 8 bits
- 16 bit timers (usually 2, but may have more, or less).
- 3 internal and 2 external interrupts.
- Bit as well as byte addressable RAM area of 16 bytes.
- Four 8-bit ports, (short models have two 8-bit ports).
- 16-bit program counter and data pointer.

8051 PIN DIAGRAM

The 8051 microcontroller consists of 40 pins. These pins are well represented by the pin-diagram below. A further detailed description of these pins and their functions is given in the following section.

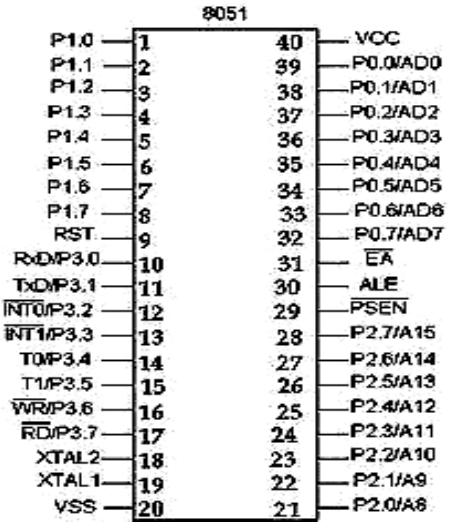

Figure Pin Diagram Of 8051

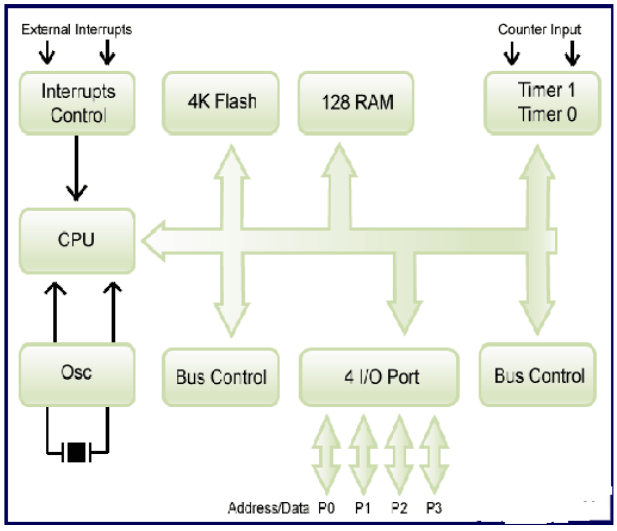

Figure Internal Block Diagram Of 8051 Microcontroller.

Circuit Diagram

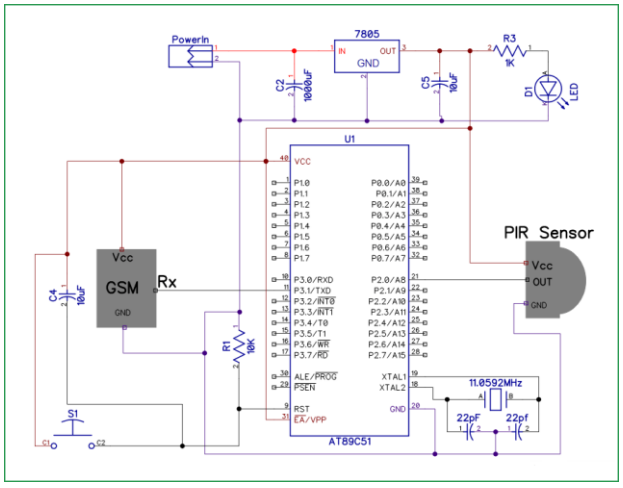

Figure: Pir sensor & gsm based security system.

PIR Sensor

PIR sensors are used to detect living being movement. PIR is a Passive Infrared sensor, which detect infrared rays. All living being with a temperature above absolute zero emits heat energy in the form of radiation. These radiations are infrared ray. Human eye cannot see these rays because these rays are radiated at infrared wavelength. When any living being comes in range of PIR sensor, it detects heat of that living being and generates an output. PIR sensor module does not send any rays for detection; its only detects heat (Infrared). You can know more about PIR sensor

Characteristics of the Project

•The proposed system characteristics involve remote controlling of appliances, intrusion detection, system security and auto-configuration such that system automatically adjusts the system settings on running hardware support check. The system has useful features such as displaying of battery level, charging status and signal strength of the mobile thus making system reliable.

• This system has many advantages such as remote controlling of home appliances, availability and ease of users. The user can get alerts anywhere through the GSM technology thus making the system location independent. The system contains low cost components easily available which cuts down the overall system cost.

• The case of deployment is due to wireless mode of communication.

• GSM technology provides the benefit that the system is accessible in remote areas as well.

• The system reliability increases due to the useful features such as battery level checking, charging status and signal strength indicating the system about threats.

• The system integration is simple and is also scalable and extensible.

However, the system functionality is based on GSM technology so the technological constraints must be kept in mind.

III. APPLICATIONS

Anti-Theft Reporting

• When someone break in Home-Guard uses GSM network to report automatically to 5 preset numbers: short message for control centre, short message for 3 pre-stored mobile phone, and 1 voice call. The owner can monitor or talk to the thief.

• It has 8 security region codes and 1 fire/ smoke code to distinguish security system region. We can choose some certain regions to arm or disarm.

Emergency Reporting

Under emergency situation, the house member can press SOS key on the RF remote or on wireless Door/ Window sensor. Home-Guard also uses GSM network to report to 5 pre-stored numbers: short message for control centre, short message for 3 pre-stored mobile phone, and 1 voice call for monitoring or talking.

IV. CONCLUSION AND FUTURE WORK

In this paper low cost, secure, ubiquitously accessible, auto-configurable, remotely controlled solution for automation of homes, offices, fire brigade, and railway has been introduced. The approach discussed in the paper is novel and has achieved the target to control home, offices appliances remotely using the SMS-based system satisfying user needs and requirements.

GSM technology capable solution has proved to be controlled remotely, provide metro, office security and is cost-effective as compared to the previously existing systems.

Hence we can conclude that the required goals and objectives of our project have been achieved.

The basic level of home, auto bike, secret region appliance control and remote monitoring has been implemented. The system is extensible and more levels can be further developed using automatic motion/glass breaking detectors so the solution can be integrated with these and other detection systems.

In future the system will be small box combining the PC and GSM modem. The hardware will be self contained and cannot be prone to electric failure. This appliance will have its own encapsulated UPS and charging system.

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