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TECHNOLOGY****HUMAN MOTION DETECTION USING PIR SENSOR**

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ABSTRACT

The objective of this project is to develop a motion sensor alarm based working on Passive Infra-Red (PIR) sensor module. There are many sellers that manufacture the PIR sensor modules are all method most the same in function. PIR sensor detects the human movements or the IR level of human. PIR sensors can detect levels of infrared radiation. In our project, microcontroller continuously monitors the output from the sensor module function and turns a buzzer on, when it goes active. The application areas of this project are outdoor lights, Lift lobby, Multi apartment complex, common of staircases, for basement or covered parking area, shopping malls and garden lights. Certain that crystalline materials have the property to generate a surface electric charge when expose and flow of thermal infrared radiation. This phenomenon also known as pyro electricity. The presence of human body creates a sudden changes inside the IR profile of the surrounding that is sensed by the pyro electric sensor. PIR are made of the pyro electric profile sensor. When that microcontroller detects the sensor is triggered, it drives the buzzer. The sensor is working to the retriggering mode, the buzzer remains on as long as the motion is continuously sensed.

KEYWORDS: AT89S51 Microcontroller, Buzzer, KEIL μ Vision, Passive Infra-red Sensor(PIR).

INTRODUCTION:

Human motion detection using a PIR sensor circuit can be used for providing security to the home and shopping malls and others as the PIR sensor used in this system detects the motion of the human around this circuit. By using the help of buzzer, we can identify the motion of human which was detected by the sensor. At that time microcontroller send a signal to the LCD saying that "THIEFT ATTEMPT". And also a high pulse is send to the buzzer and through GSM module to the mobile phone in the form of message. This system can be used at the any place where security is required.

Security is needed by everyone in the society now-a-days to protect their property and confidential information from outside. There are many ways to provide security. We are using one of them. That is, we are providing security that will be controlled by human being. . This is the most common way used by the people for providing security to them.

Functional Requirements :

Power supply (+5v) to the hardware circuit interrupt is given to microcontroller from PIR sensor when it found the motion. A buzzer which is used to produce sound. A PC is also required when we display a message that showing "Motion Detected".

Software Requirements of the project:

- KEIL4 (μ vision IDE)
- Micro Flash

BLOCK DIGRAM:

1. Infrared Transmitter:

We are using the Person detection module with the help of one transmitter and one receiver. We are going to use Infrared transmitter because infrared beams are not visible to the human eyes. Transmitter used is IR LEDs. IR rays are continuously emitted and when cut by the human interference then it act as input to the controller through PIR sensor.

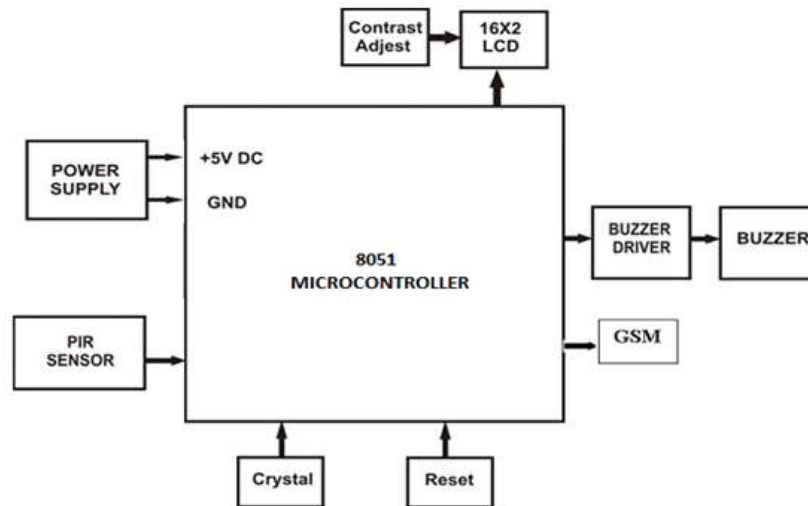


Fig.1 Block Diagram for Human motion detector using PIR sensor

2. Receiver (PIR SENSOR):

We are using a Infrared receiver. It is an active low device it gives low output when it receives the Infrared rays. The PIR sensor is the central part of the system. The system is basically functions based on infrared radiation, which is emitted and cut by the human motions. PIR sensor is widely used in security system to check the motion of human. Infrared (IR) light is electromagnetic radiation with a wavelength of 700nm to 1mm.



Fig.2 A PIR sensor

3. LCD:

LCD is used for display that data. The LCD we are used is 16x2 i.e. 16 characters in 1 line, total 2lines are there. We required to used a better resolution LCD but due to the demo project requirement 16x2 LCD is sufficient. This LCD has a 8-bit parallel interface. It is possible to use all the 8 bits pulse 3 control signals or 4 bits pulse to be control signals and it requires +5V to operate.

3.1 MICROCONTROLLER AND LCD INTERFACE:

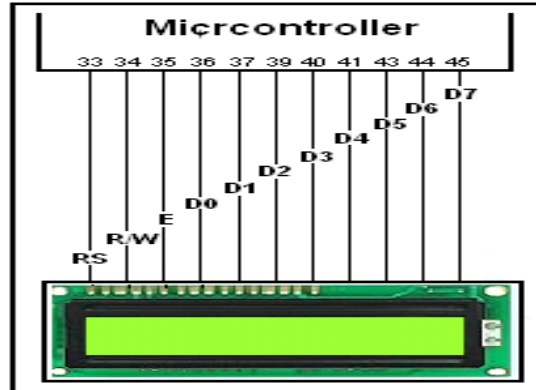


Fig.3 Interfacing of LCD to Microcontroller

3.2 WORKING AND LOGIC FOR LCD:

LCD's added quite easily to the application and use the three digital output pins for control. The interface is a parallel bus. It can allow simple and fast reading or writing of the data to and from the LCD. The pins LCD are wired as given in table:

Table No.1 LCD Pin Description

Pins	Description
1	Ground, (VSS)
2	+5 V power supply, (VCC)
3	Power supply to control contrast voltage, (VEE)
4	"R/S" _Instruction/Register Select
5	"R/W" _Read/Write LCD Registers
6	"E" Enable Clock
7 – 14	The 8 bit Data Bus (I/O Pins)

GSM ARCHITECTURE:

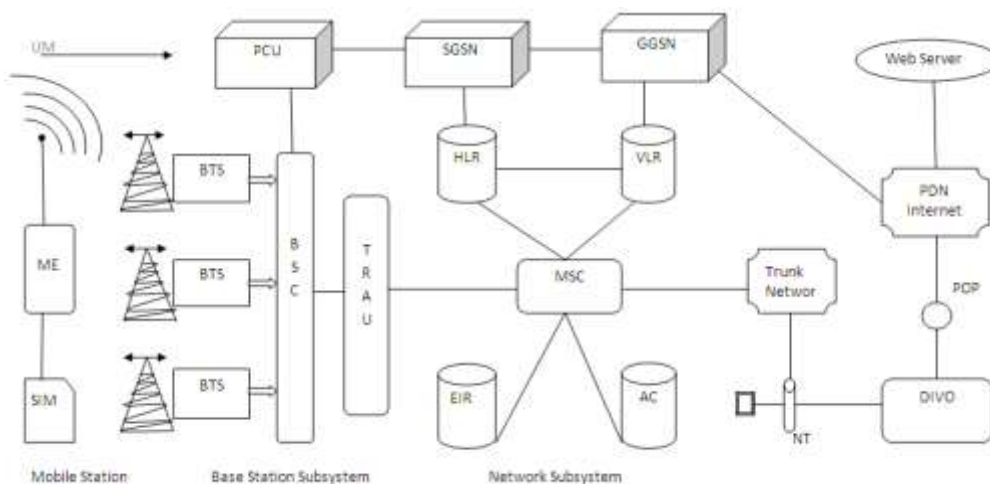


Fig.4 GSM Architecture

4.1 Mobile Station (MS): The mobile station (MS) consists of the mobile equipment and a Subscriber Identity the Module (SIM) card. The most useful common mobile equipment is the mobile phone. By inserting the SIM card into the cellular phone, the user is able to receive calls to that phone, make calls from that phone, or receive other users services of phone. These mobile equipment's uniquely identifies the International Mobile Equipment Identity (IMEI).

4.2 Base Station Subsystem (BSS): The Base Station Subsystem consists of the part Base Transceiver Station (BTS) and the Base Station Controller (BSC). The Base Transceiver Station has the radio transceiver that defines the cell and handles the Radio link protocols with that Mobile Station. In the large urban area, there will be potentially large number of BTS deployed. The Base Station Controller handles the radio resources for one or more of BTS. It handles Radio channel.

4.3 Network Subsystem: The central component part of that Network Subsystem is the Mobile services Switching Center (MSC). It behave like the normal switching node of the PSTN /ISDN, and in addition to that provides all that functionality needed to handle the mobile subscriber, such as the registration, authentication, location updating, handovers, and the call routing to the roaming subscriber. These services are provided in conjunction with that several functional entities, which together form that Network Subsystem. The MSC provides the connection to that public fixed network (PSTN or ISDN), and provide signaling between functional blocks uses the ITUT Signaling System Number 7 (SS7).

5. PCB DESIGN SOFTWARE:

DIPTRACE COMPLETE PCB DESIGN SYSTEM:

- ✓ PCB Layout-PCB design with easy to use manual routing tools and auto router.
- ✓ Schematic - creates schematic and exports net list to PCB.
- ✓ COM Edit- pattern editor.
- ✓ SchemEdit - component editor. Draw parts and attach patterns to them.

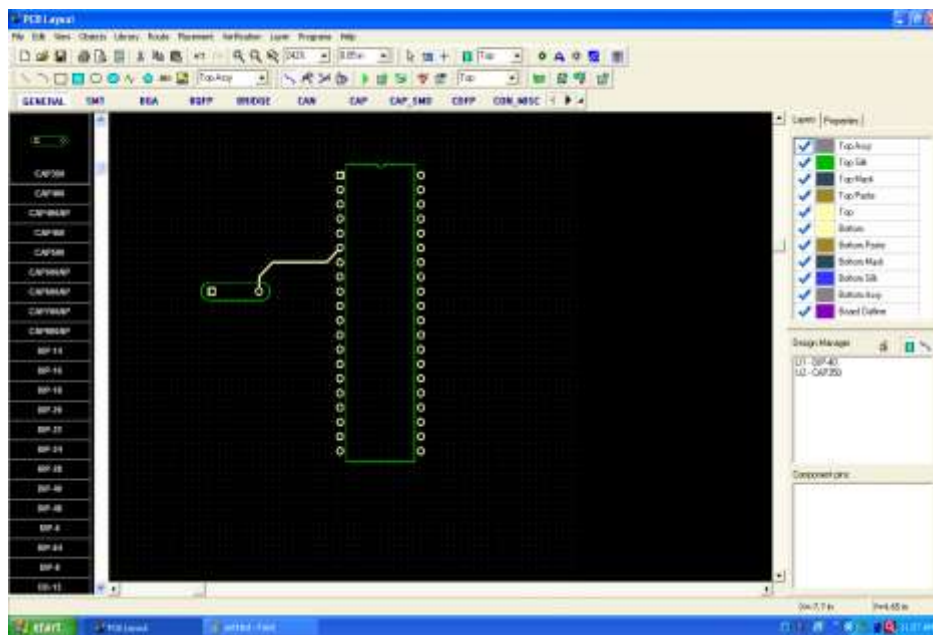


Fig.5FRONT END

RESULTS AND DISCUSSION

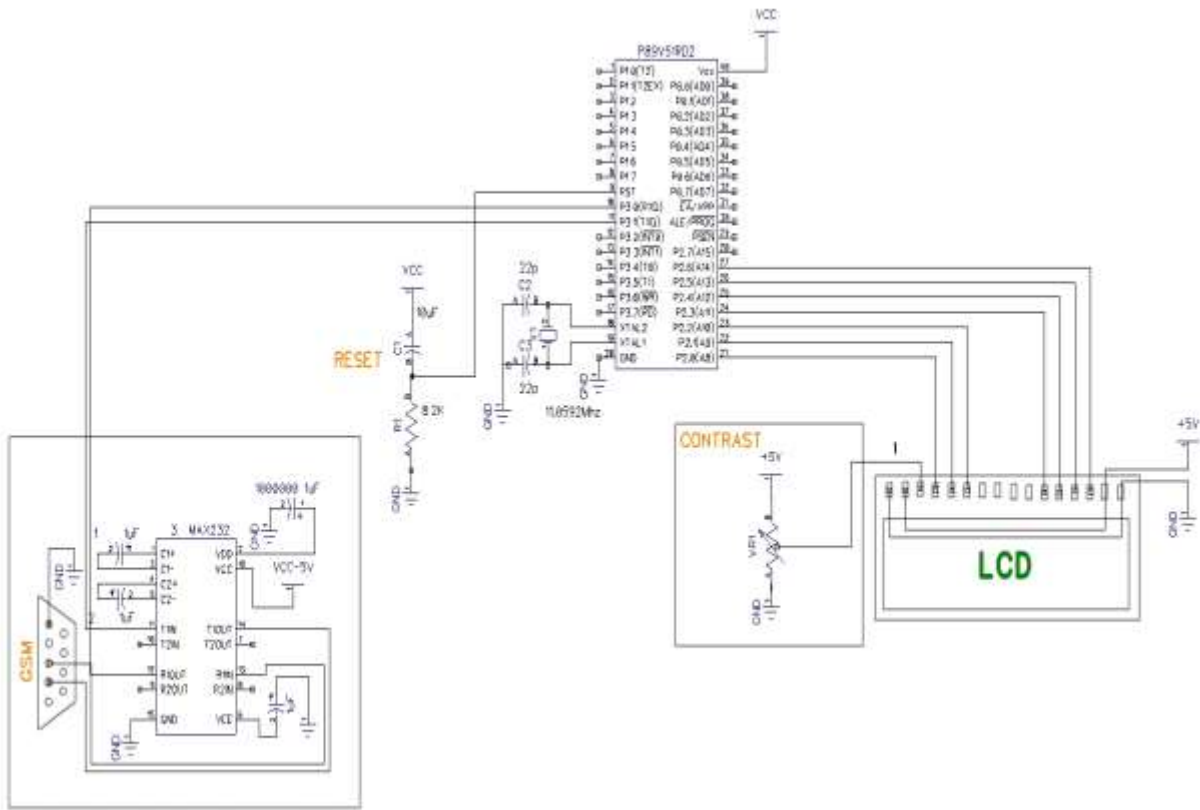


Fig.5Crcuit diagram

Future Scope:

- 1) Voice announcement system can be added to indicate device conditions. We able to add voice announcement system along with a buzzer so if there area hazardous parameters detected then that respective voice message will be announced.
- 2) We can add fingerprint sensor instead of using password based door operating. So entry will be allowed for the specific person using their fingerprints.
- 3) We can monitor and control the more parameters and the devices. We can develop other related different modules like fire sensor, wind sensor.

CONCLUSION

The detection of human movements is done by developing the embedded system. This embedded system can be used for different applications such as the home security system and home automations system with slight modifications in the software source code according to that requirements. As this system is the software driven, no hardware modifications are needed. This concept not only use for this project work but also suitable for future requirements with the flexibility to an adapt and extends, as it needs change. This project is developed around AT89S51 microcontroller. The data collected from sensor and processing is done in software. This system can also be applicable to various loads such as pressure, force etc, by increasing the number of ports of the microcontroller. This can developed without wires because of that we can place different sensors in the different places. This work can be used to reduce the electricity power consumption. This fragment should obviously state the foremost and various conclusions of their exploration about their significance and consequence.

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