GSM Based Home Security System Using PIR   Sensor

A Project and Thesis submitted in partial fulfillment of the requirements for the Award of Degree of Bachelor of Science in Electrical and Electronic Engineering

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Certification

This is to certify that this project and thesis entitled "**Global system mobile communication (GSM) Based Home Security System Using PIR (passive infrared) Sensor**" is done by the following students under my direct supervision and this work has been carried out by them in the laboratories of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering. The presentation of the work was held on 30 January 2018.

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Dedicated to

Our Parents

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List of Abbreviations

GSM   Global System for Mobile communication

PIR   Passive Infra-Red

SMS   Short Message Service

USB   Universal Serial Bus

PWM   Pulse Width Modulation

LED   Light Emitting Diodes

SRAM   Static Random Access Memory

EEPROM   Electrically Erasable Programmable Read Only Memory

TTL   Transistor-Transistor Logic

AREF   Analogue Reference

AVR   Automatic Voltage Regulator

RISC   Reduced Instruction Set Computer

ALU   Arithmetic Logic Unit

PDA   Personal Digital Assistant

ABS   Acrylonitrile Butadiene Styrene

IDE   Integrated Development Environment

ACKNOWLEDGEMENT

First of all, we give thanks to Allah or God. Then we would like to take this opportunity to express our appreciation and gratitude to our project and thesis supervisor **Dr. M. Shamsul Alam, Dean of Department of EEE** for being dedicated in supporting, motivating and guiding us through this project. This project can't be done without his useful advice and helps. Also thank you very much for giving us opportunity to choose this project. Apart from that, we would like to thank our entire friends for sharing knowledge; information and helping us in making this project a success. Also thanks for lending us some tools and equipment. To our beloved family, we want to give them our deepest love and gratitude for being very supportive and also for their insPassive Infrared ation and encouragement during our studies in this University.

ABSTRACT

Home safety systems are an necessary characteristic of present day residential and workplace installations. Home security systems will be accessible, dependable and functional. The present day complex domestic security gadget has many protection facets, penetration. Some safety measures can be adjusted by way. In this task we have designed a regularly occurring but very fantastic home protection that describes the feature of the challenge as a function to name the house owner his mobile cellphone number. The PASSIVE INFRARED sensor detects the difference and determines the speed by means of the level of heat emitted by means of infrared or adjacent objects. If it detects motion, greater of the PASSIVE INFRARED sensor output. A common PASSIVE INFRARED sensorvary is about 6 meters or about 30 feet. PASSIVE INFRARED sensor detects any movement, high sensor output. This is detected by Arduino. Aduniono than communicates with GPM modules to name preprogrammed cell numbers through serial communication. This device is in general used to detect fireplace in buying facilities and multi-level residences and to function consumer operations required for configuration. This product will detect the hearth within a quick time (maximum 5 seconds) and the records will be dispatched by using SMS by SMS and will be tested by using sending the print message and high sound through LEDs to the most important panel. The foremost benefit of choosing this product is to avoid all the wire in the major panel and in the slave zones. This cable discount is completed the use of the RS-485 Network Concept, which will minimize the price of 50% of the project cost. Another gain is to configure the gadget settings of the essential panel, the keyboard will be created through the LCD display and the area tackle FIRE detected on the LCD show will be displayed.

CHAPTER 1

INTRODUCTION

1.1   INTRODUCTION TO EMBEDDED SYSTEM

An embedded pc is a computer that is an component of a large system; Helps to put into effect device performance. Embedded computer systems encompass cars, aircraft, home appliances, military motors and equipment, clinical devices, robots, cell conversation systems, etc. Sophisticated embedded computers have been the use of products and systems for over 20 years. Architecture is used here in a vast sense: each software program and hardware. The predominant decision can create or spoil a project. To keep away from high-priced problems after the layout process, it is vital to restore the software program and hardware structure at layout level. It is typically mutually viewed to have an effect on the architectural decision have an impact on of both events on hardware and implementation software. Motivation for purposes embedded computing. It is vital to reflect inconsideration on utility facets when designing embedded structures and it is vital to recognize at least one application place for first-rate lookup on embedded computing. In short, the integration of embedded computing research clusters and the implementation of simple research tasks entails the understanding of hardware and software diagram methods to beautify understanding and create technology. Security is a large task everywhere, because home-grown homes, industrial complexes and industries are growing due to unsafe and dangerous security measures. Different regular technologies are accessible to keep the home's elements safe from the killers, but the most common smart home safety gadget in the wi-fi GOBAL SYESTEM MOBILE COMMUNICATION conversation area works. This gadget always gives housing safety monitoring, natural giant, and deliberate, unwilling, offensive and protection problems to

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1.2 PROBLEM STATEMENT

Home Automation Con L'uscita dell'X-10 del 1975, understanding who is a Prototype diy communion each and every light, a signal in La Piapetan arriva a volta. one hundred twenty x 10 Decimal Digital Radio Frequency (RF) per Transmeterre University and the Enterprise Enterprise Enterprise Antire program program. For a controller and manage I can use a new manipulate system. For advertising, if you are inserted for an exchange at a particular time, if you can sign in, you can signal in one. Tuttavia, I used to be launched by using a free "room" or bi banda radio, specifically an X10, particularly the X10 is a completely thoroughly affidabile. I am a senior operator of Senior Seren Percy E, Alkony CC, Senior D. Circuit, which is 220 degree, a hundred Volt Kappa Division Division Defense, Florida State Unity, General, X 10 Year Society and Technologies Unit, Smartphone Portrait does not use any device or any other Central Device Although there are no gadgets in it. In, Fresh, Sono Dispensibility Exchange X10 bdnews24.com, a high price is a excessive price.

1.3 GOALS AND OBJECTIVES

Some of his concrete / his ideas It commonly starts offevolved with the introduction of a product (hardware or software), but in the same area and the depth of current products of their deficit research. Moreover, a solution is proposed in a method, which is better than the one from the previous one to the other. We have adopted the pioneer GSM-based safety machine as our closing year project. Home security is an vital issue. Having visibility-based safety structures has the gain of being convenient to setup.

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1.4 Methodology

The wireless sensor community central node is based totally on the machine gmm module, statistics collection node, machine manipulate node, and microcontroller with cell phone. Wireless Sensor Network The data collector module integrates the infrared detector, and the PASSIVE INFRARED detects that the house collects the data in the codealized alarm sign and identifies the dimension of the node's wireless network node. Once the wireless sensor network center nodes get hold of an alarm signal, it will without delay send customers to GOBAL SYESTEM MOBILE COMMUNICATION modules and GOBAL SYESTEM MOBILE COMMUNICATION network. The response acquired by way of the microcontroller depends, a name is sent to the text or call with cell station through a GOBAL SYESTEM MOBILE COMMUNICATION modem, and then the proprietor of the proprietor warns the owner of the house. On the different hand, this safety is inactive and no one does whatever if they are at home. When the temperature sensor detects very high interior temperature and at the identical time, the sensor sends the wi-fi sensor to the home manage center through coded alarm in the network. Once Wireless Control Center accepts alarm alerts, it will ship a brief alarm message to users without delay by GOBAL SYESTEM MOBILE COMMUNICATION module and GOBAL SYESTEM MOBILE COMMUNICATION network.

1.5 Project outline

Chapter 1: Role, Problems Statement, Goals and Objectives, Procedures, Project Outline

Chapter 2: Review of Literary Reviews, Surveys and Summaries.

Chapter 3: Analyzes, analyzes and simulates the theoretical mannequin as the device specification, features, energy, input and output.

Chapter 4: Displays the hardware improvement part of presentation, high-quality separation, circuit images, description of hardware connections.

Chapter 5: Outcomes and its discussions existing such last effects and fee analysis.

CHAPTER 2
LITERATURE REVIEWS

2.1 Introduction

Home protection is the invention of world. The electronics machine is the most necessary of the world science and technology. The GOBAL SYESTEM MOBILE COMMUNICATION is one of them. The most vital of object of work basically protection system. There are also many wireless communication strategies Modern practical functions of wi-fi communications have to meet the challenges of modern challenges for our heirs and the ideas of this subculture improvement have to be clear in their ideas on radio communication and control systems. SMS / GOBAL SYESTEM MOBILE COMMUNICATION based security purposes are a properly choice such as a wireless connection. SMS / GOBAL SYESTEM MOBILE COMMUNICATION based protection functions are a good alternative such as a wi-fi connection. The fundamental thought of our task affords GSM-based protection, the owner will be away from the confined area. So we concluded that these applied sciences are very clever for domestic security, which human beings are satisfied whilst going to their home.... For this reason, we have received wireless transmission modes via GSM., due to the fact we have our venture chosen due to the fact it is a budget friendly solution in contrast to different strategies, we are very familiar with GOBAL SYESTEM MOBILE COMMUNICATION science and are effortlessly available. Home protection measures are an imperative way to defend our residences from illegal bases.

2.2 Survey

A microcontroller is a single chip microcomputer made through VLSI fabrication. (4bit, 8bit, 6bit, 2bit, 64bit and 128-bit microcontrollers are reachable today) Same venture could have been designed with:

- ARDUINO
- 8051 microcontroller

We are using AT mega 328p to comprehend this venture because: The Adriano is moduleted of the gadget is technique of the signal to generate and transfer the signal the system of GOBAL SYESTEM MOBILE COMMUNICATION (Global System Mobile communicate. the number of hard ware and soft ware improvement needs do in order to get a device strolling Arduino. hard ware and soft ware development you want to run a gadget is easy to quantify Arduino. The biggest benefit is the hard ware platform already set up, specifically that it lets in USB programming and serial communication. The Arduino hardware platform already strength and reset circuit set up as well as best performance contact with the microcontroller on the circuit software and USB. The microcontrollers' I / O pins are usually fed sockets / headers for easy access. Next to the software, Aradino gives a microcontroller programming library more easily. Such beneficial matters as I / O Pins PWM at are able to speak with a unique tariff cycle or serial using a single command.

2.3 Summary

ADUDINO UNO is a microcontroller board that is primarily based on the ATMEG 328. It has 14 digital input / output pins (which can be used as 6 pwm output), 6 analog inputs, a sixteen MHz ceramic resonator, a USB connection, a energy jack, an ICSP header and a reset button. ADUDINO UNO is the make in this project

CHAPTER 3
ANALYSIS OF SYSTEM COMPONENTS

3.1 Introduction

A sequence of reasons to work collectively to catch some objectives is a gadget type. Basically there are three foremost reasons for each system, distinct input, processing and output. Exclusive elements in a machine are associated to each different and they are structured on every other. For example, the human physique represents a entire natural system. We are greater assured with the help of political systems, financial systems, tutorial machines and greater such as country-wide buildings. The reason of the laptop is to produce some output as the result of some enters processing. A well-designed computing device has extra manage that is referred to as 'control', which provides feedback for attaining system confident goals.

3.2 Components

GOBAL SYESTEM MOBILE COMMUNICATION based home security has the following main components are

  i.   ARDUINO
  ii.   SIM800L
  iii. PASSIVE INFRARED   Motion Sensor
  iv.   12v 2A Adaptor
  v.   Light Emitting Diode(LED)
  vi.   Breadboard
  vii. Jumper Wires

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3.3 SYSTEM SPECIFICATIONS

3.3.1 ARDUINO

Arduino is an open-source hardware and software program software company, initiative and customer community that designs and manufactures single-board microcontrollers and microcontrollers toys to create digital devices and interactive objects that can be used and used in physical and digital world objects. Its merchandise is licensed underneath the GNU Laser General Public License (GNU General Public License), thru which enabling Ardino board and software program program software transport anyone. Arduino boards are historically hand-in-hand as preassembled constructions or personalized toys. Arduino board layout uses a range of microprocessors and controllers to change. Boards are made up of digital and analog enter / output (I / O) pin gadgets that can be interfaced with additional range of increment boards or routibars and separate circuits. Boards have serial communication interfaces, which include Universal Serial Bus (USB) in some models, which are also used to load packages from non-public computers. Microcontrollers are usually programmed the use of a dialect of aspects from programming language C and language C ++. In addition to the usage of regular compiler system chains, Ardino Enterprises provides a built-in Improvement Environment (IDE) primarily based on processing language projects. The Ordino project started in 2002 as a software program program for students of the University of Interjection Design Institute. Ivory in Ivory, Italy, goals to create devices that are worried in the use of sensors and activators in their environment, to refresh and cost the authorities and decrease the way to reach them. Common examples of such gadgets supposed for beginner hobbyist made less complicated.

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3.3.1. (a) ARDUINO of Features

- Micro-controller: (ATmega328)
- Operation Volt: 5v
- I/P Volt 7-12v
- I/P volt (limits): 6-20v
- Digital Input Output Pin : 14
- Block Diagram Pins: 6
- Power DC Current per I/O Pin: 40 mA
- Power DC Current for 3.3V Pin: 50 Ma
- Flashing Memory: 32 KB of 0.5 KB use by boot loader
- S R A M : 2 KB (ATmega328)
- E E P R O M : 1 KB (ATmega328)
- Frequency clock speed: 16 MHz

3.3.1. (b) ARDUINO Power

Arduino can be powered by way of Uno USB connection or with the aid of external energy supply. The energy source is robotically selected. External (non-USB) strength can be either AC-to-DC adapter (wall-wart) or battery. The adapter can be associated to a 2.1-mm center-positive plug-in plug-in strength jack. Power connectors can be leased from a battery in GND and Vin pin headers. Board can work on exterior donation of 6 to 20 volts. Although less than 7V, the 5V pin can provide less than 5 volts and the board may additionally be excessively unstable. If the usage of greater than 12V, the voltage regulator can hit extra excess heating and boards. Supported range is 7 to 12 volts. The power pins are as follows:

- This is the voltage on the Adriano board the usage of the exterior electricity source.

  We can grant voltage through this pin, or if the voltage furnish via the electricity jack can be accessed via this pins.

-
  The strength can be provided from the DC energy jack (7-12V), (7-12V). Through 5V or 3.3V pins the voltage provide can pass the controller and hit your board.

  3V 3.A 3.3 voltage pulp generated with the aid of the board controller. Most present day 50m

- Connected with GND. Ground pins

3.3.1. (c) ARDUINO Memory

The Atmega328 has 32 KB (with 0.5 KB used for the boot loader). It also has 2 KB of SRAM and 1 KB of EEPROM.

3.3.1. (d) ARDUINO Input and Output

The use of pin mode, digital write, digital study functions. They function at 5 volts. Each pin can provide or receive a most of forty mA and has an interior pull-up resistor (disconnected with the aid of default) of 20-50k Ohms.
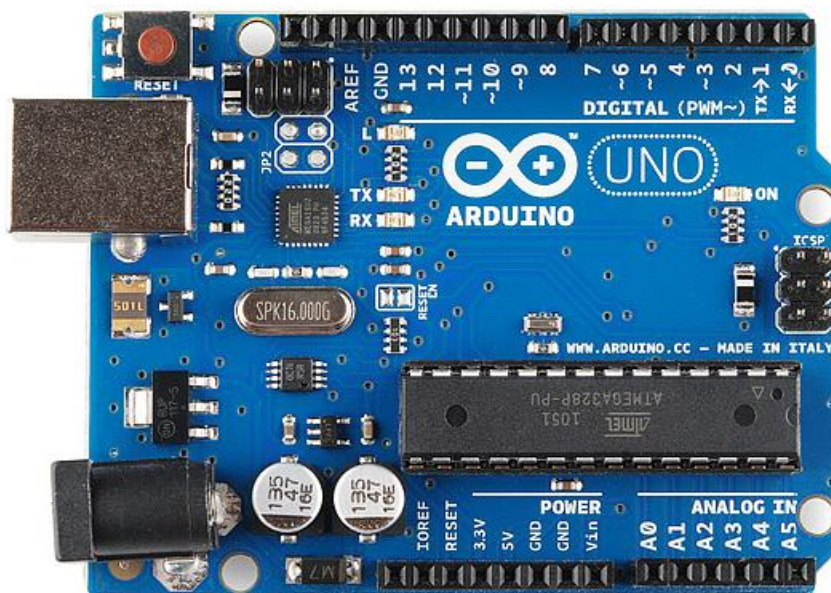
9

Fig 3.1: Arduino

3.3.2 Microcontroller (ATMega328p)

ATMEGA328P-PU AVR is a Power CMOS 8-bit microcontroller based totally on the larger RISC architecture. Effective instructions for single clock cycle, ATmega328P-PU MHz achieves drawings from around 1 MIPS near the system, which is designed to optimize the fee of the machine in order to optimize quite a number processing times. AVR Core 32 integrates a wealthy education set with regular registrars due to the fact of the reasons. All 32 registrars without delay join to the Arithmetic Logic Unit, which lets in two impartial registrars to get right of entry to a single guidance achieved in a single clique with one click. Supported with the full suite of ATmega328P-PU AVR functions and gadget development tools: Compiler, macro assembly and software debugger / simulator, in-circuit emulator and contrast toy.
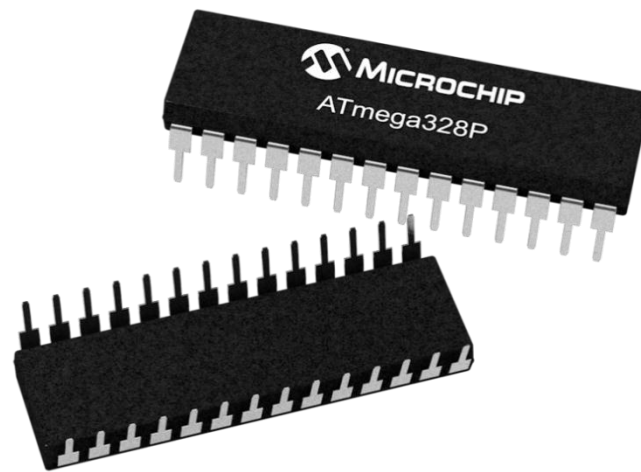
Fig. 3.2: ATMega328p Microcontroller.

3.3.2. a Features ATMega328p

- High Performance, Low Power Design

- 8-Bit Microcontroller Atmel® AVR® advanced RISC architecture

- Memory Includes

- I/O and Package

  - 23 programmable I/O lines

  - 28 pin PDIP package

- Operating voltage:1.8 - 5.5V

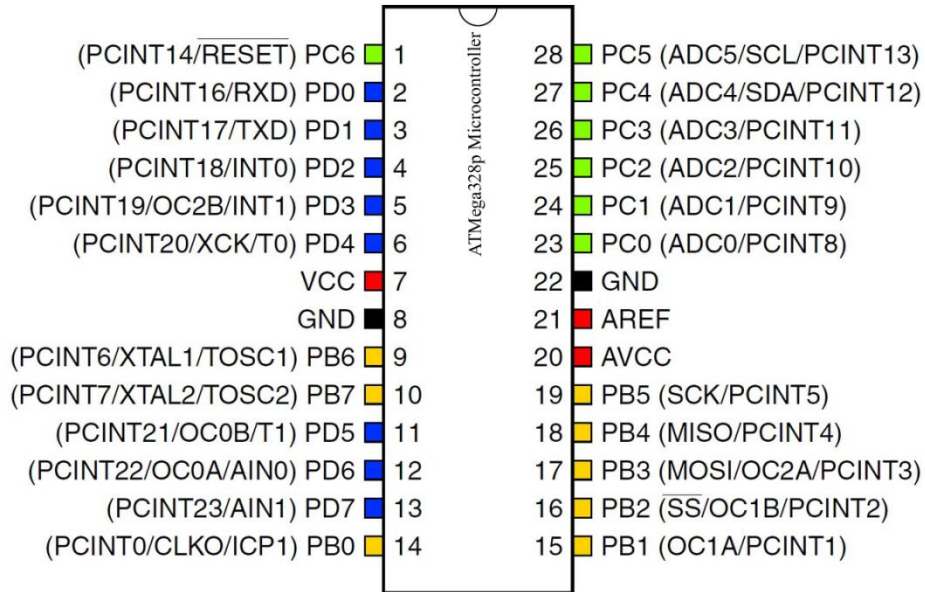- Operating temperature range:40°C to 85°C

Fig. 3.3: Pin diagram of ATMega328p Microcontroller.

3.3.3 GOBAL SYESTEM MOBILE COMMUNICATION MODULE

Designed for the world market, SIM 800 L is a tri band GOBAL SYESTEM MOBILE COMMUNICATION / GPRS engine that works in frequency EGOBAL SYESTEM MOBILE COMMUNICATION 900 MHz, DCS 1800 MHz and PCS1900 MHz SIM800 GPRS Multi-Slot Division 10 / Type eight (Optional) Functionality and Support GPRS coding schemes CS-1, CS-2, CS3 and CS-4 With a small configurations of 40 mm x 33 mm x 2.85 mm, SIM 30000 can healthy almost all the indispensable area in your utility such as a smartphone, PDA cellphone and different cells. The authentic interface of the cellular software is made thru a 60-pin board-to-board connector, which affords all the hardware interfaces between modules and customers. RF Antenna Interface • Two serial ports can assist you effortlessly advance your applications.

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• Two audio channels encompass two microphones inputs and two speaker outputs. This can be effortlessly configured by using AT command.

3.3.3.a Features of SIM800L

- Support wide range of frequencies (from 850 MHZ to 1900 MHZ) for different Classification of GSM
- Input voltage varies from 5v to 30v.
- Very less weight in few grams.
- Provided with SIM holder and antenna connector.
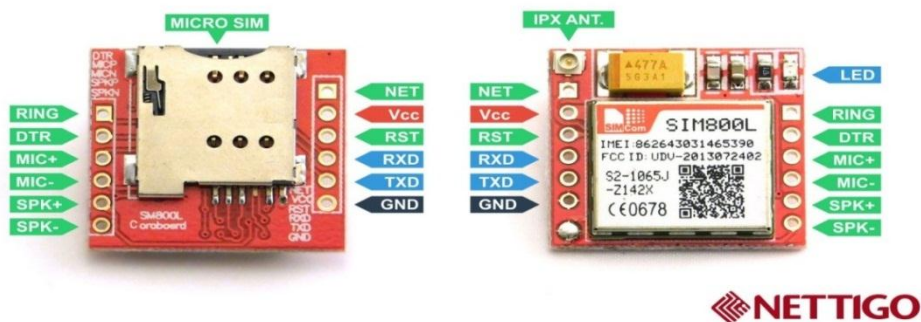- Programmable with AT commands.

Fig 3.4: SIM800L GOBAL SYESTEM MOBILE COMMUNICATION Module

3.3.4 LIGHT EMITTING DIODE

The Elements would possibly additionally be used to shape its radiation pattern. LEDs current many blessings over incandescent slight sources such as minimize electrical energy consumption, longer lifetime, elevated robustness, smaller size, quicker switching, and larger sturdiness and reliability. LEDs effective ample for room lights are incredibly high priced and require greater unique modern-day and warmness administration than compact fluorescent lamp sources of related output.
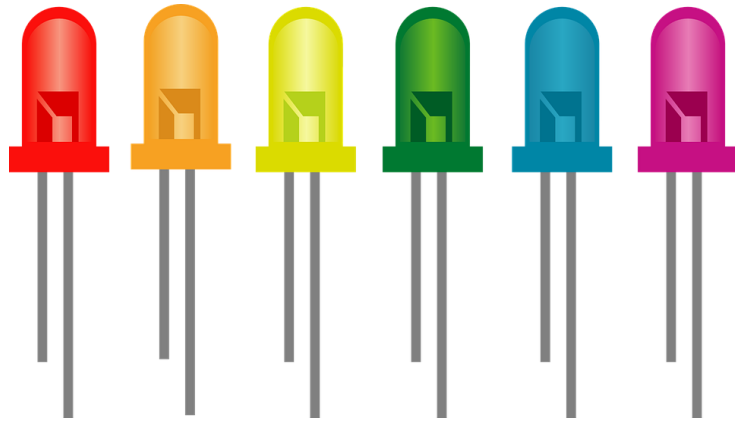
Fig 3.5: Light Emitting Diode (LED)

3.3.5 PASSIVE INFRARED   Sensor with Motion Detection

The PASSIVE INFRARED   sensor detects the switch of a human in about 10 meters from the sensor. This is a common standard, given that the actual identification modifications are 5 meters and 12 meters. PASSIVE INFRARED   usually creates a piarine electrical sensor, which can detect infrared radiation levels. There are many necessary things needed to discover out when a individual has left or entered the area. PASSIVE INFRARED   sensors are incredible, they have flat sketch and minimal effort, have a wide vary of lenses, and with easy interface. Most PASSIVE INFRARED sensors have a 3-pin connection on the aspect or bottom. One pin will be ground, another will be the mark and the final pin will be power. Energy is usually up to 5V. Sometimes the higher modules do no longer have direct output and optionally solely operates a relay that takes location on land, electricity and two changes. Interactive Passive Infrared   with micro controllers is very easy. PASSIVE INFRARED   acts as a digital output to pay attention to excessive or low flip pins. This help can be detected with a assist to get an immoderate signal in an I / O pin. Once the sensor is frozen, the output pace will continue till the output will be greater for a few seconds, then it will return less. If the output continues, the output will be cycled in this mannerSensor line nonetheless eyesight once more The PASSIVE INFRARED   sensor accurately wishes a warm-up time with a particular ceasefire. This nature is secured during the disposal of studying in the domain.

Fig 3.6: PASSIVE INFRARED   Motion Sensor

Table 3.1 Pin out and Rating of PASSIVE INFRARED   Motion Sensor

Pin	Name	Function
-	GND(Ground)	Connects to Ground (VSS)
+	Vcc	3.3V to 5V ~100uA
OUT	Output	I/O set INPUT mode

Table 3.2 Jumper Setting in PASSIVE INFRARED   Motion Sensor

Position	Mode	Description
H	Retrigger	The Output High
L	Normal	triggered on HIGH/LOW pulses. The output is LOW when idle.

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3.3.6 12V 2A ADAPTOR

- Input Voltage Range: 100Vac -240Vac

- No load power consumption<0.5W

- Input Current Harmonic: EN60950-1

- Output voltage Ripple and Noise: <120mVp-p

- Output 12V dc 2A

- Protections: Short circuit / Over load / Over voltage

- Fully enclosed plastic case

3.3.6. (a) The Characteristics of Electrical

- Efficiency: >= 75%

- Turn-On Delay Time:300mS

- Load Regulation: 5% max.

- Hold-up Time: 5mS min.

- Dielectric Strength:(Hi-Pot):Between AC input and secondary applied AC 3.0kV,test   time 1 minute, and cut off current shall be less than 10 mA.AC 3.0kV,test time 10 Sec.for mass production.

- Insulation Resistance: Between AC input and secondary applied 500Vdc,test time 1 minute. 500Vdc, test time 10 Sec.for mass production.   ≥100MΩ

- Operating Temperature: 0 to 50oC

- Storage Temperature: -40 to 85oC

- Relative Humidity: 5 to 95%

Fig. 3.7: 12v 2A Adaptor.

3.3.7 Jumper Wire

A jump wire (also acknowledged as jumper wire, or jumper) is an electrical wire, or team of them in a cable, with a connector or pin at each cease (or every now and then barring them – absolutely "tinned"), which is commonly used to interconnect the components of a breadboard or other prototype or take a look at
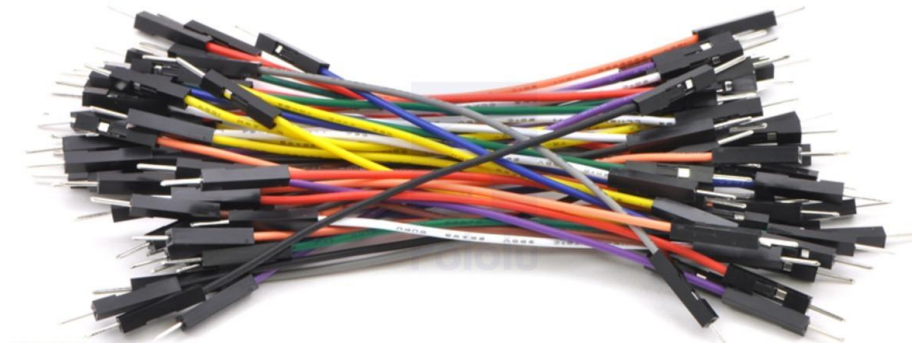

Fig.3.8 Jumper wire

3.3.8 Breadboard

A breadboard sketch and take a look at circuit is a extensively used tool. When the use of a bread board, circuits and parties do now not have to promote circuits. Because it is high-quality for mounting and reusing. Fabrics are now not offered anymore, you can choice your circuit layout at any time besides any crisis. It includes a subject blanket conductive steel clip in white ABS plastic, the place each clip warms with different clips. A unique style system, there is a hole in the plastic box. A wellknown board is two sorts of structure, which is diagnosed as the buckle. Bus strips and socket strips. Bus buckle is normally geared up with circuit electricity supply. There are two columns for electricity voltages and each other.

3.3.8. A Construction of a Breadboard

A breadboard is a line of conductive steel strips encompassed in a field made of white ABS plastic. A breadboard has many holes that plan in vertically or horizontally. Each hole of traces is separated through insulation. There are a number of holes in the plastic field that arranged in an man or woman way. A general breadboard association consists of two kinds of the vicinity referred to as divests. Bus divests are normally utilized to implement power provide to the circuit. It consists of two lines, one for +ve line and the different for -ve line or ground. Socket divests are used to include most of the elements in a circuit. Usually, it consists of two segments and every with 5 rows and sixty four columns. Each column electrically connects from inner of the breadboard.
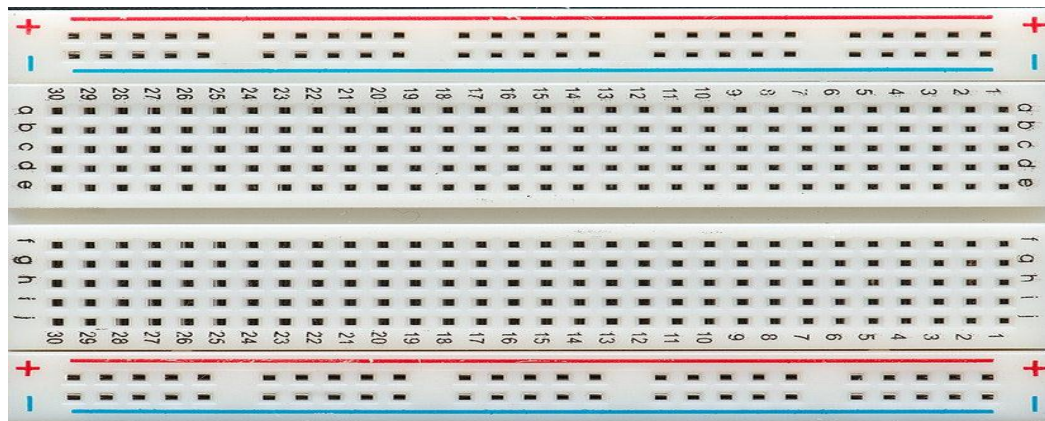

Fig. 3.9 Breadboard

3.4 Summary

This chapter is about those used hardware in this project. All the hardware that has been used in this project are in true shape and working properly and for that the GOBAL SYESTEM MOBILE COMMUNICATION primarily based safety have to work properly. In this chapter, we are attempting to talk about important points about the used each character hardware working description and their works.

CHAPTER 4
DESIGN AND IMPLIMENTATION

4.1 Introduction

The Micro-controller is completely monitoring the protection of your home, if it is an accident, it will send a message to your cell phone. The complete Wi-Fi sensor, along with GOBAL SYESTEM MOBILE COMMUNICATION module, facts gathering node, system node and cell telephone manipulation, is made up of microcontrollers primarily based on the nodes of the network. Node modules associated to Wi-Fi sensor neighborhood statistics infrared detector added When IR finds that some human beings roam round the house, node series records will ship encoded alarm signals to the Wi-Fi sensor network Core node over the wi-fi sensor network set up on the home. Once the wireless sensor community middle receives an alarm signal, it will ship a short message of alarms to customers with the aid of GOBAL SYESTEM MOBILE COMMUNICATION module and GOBAL SYESTEM MOBILE COMMUNICATION network
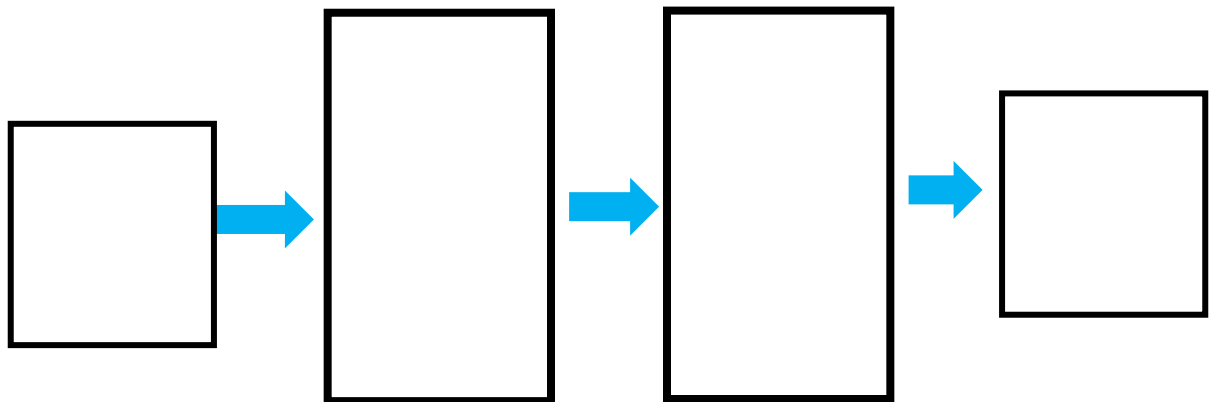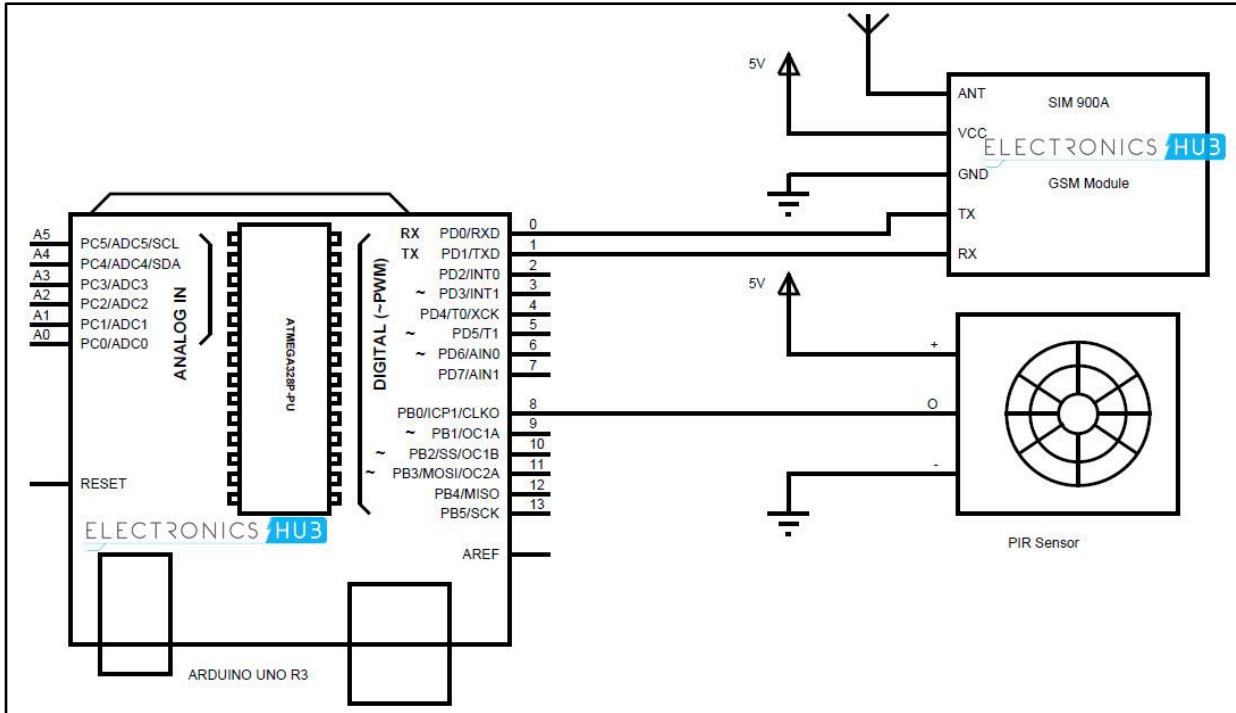
4.2 The Block Diagram

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4.3 Circuit Diagram

Based on an Arduino of the project, the connection is quite simple. PASSIVE INFRARED velocity detection sensor module has a digital output pin. It is linked to Arduino's digital I / O pins. The GOBAL SYESTEM MOBILE COMMUNICATION module communicates with the microcontroller in a serial system. It has an Rx and Tx pin on the board. These pins are connected to Arduino's Tx and Rx pins. While it is important to take into account when importing program (sketch) to aroodino, the GOBAL SYESTEM MOBILE COMMUNICATION modemlest will be disconnected due to the fact it can interfere with serial communication with Ordino IDE.

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4.4 Hardware Connection of Description

• The Rx pin of the GOBAL SYESTEM MOBILE COMMUNICATION Module is connecting to the Tx pin of the ARDUINO.

• The Tx pin of the GOBAL SYESTEM MOBILE COMMUNICATION Module is connect to the Rx pin of the ARDUINO.

• The output pin of the PASSIVE INFRARED   Sensor is connecting to the pin 5 of the ARDUINO.

• The Vcc pin of PASSIVE INFRARED   Sensor & GOBAL SYESTEM MOBILE COMMUNICATION Module both are connecting of 5v pin of the ARDUINO.

• The GND pin of PASSIVE INFRARED   Sensor & GOBAL SYESTEM MOBILE COMMUNICATION Module each are join the GND pin of the ARDUINO.

4.5 Summary

After finishing all the stuffs in accordance to this chapter the GOBAL SYESTEM MOBILE COMMUNICATION GSM primarily based home security will be equipped to perform. The most important hard issue about this chapter was once to energy up the SIM800L. Because this system takes minimum 2A present day for higher performance. two So the essential object of this chapter was once to understand the connection diagram.

CHAPTER 5
RESULT AND DISCUSSION

5.1 Introduction

This chapter will present all the results and calculation and relevant discussions.

5.2 Final Result

The working of the task is defined below.

Passive infrared (PIR) sensor detects motion with the aid of sensing the distinction in infrared or radiant warmness stages emitted by means of surrounding objects. The output of the passive infrared sensor goes excessive when it detects any motion. The range of a standard passive infrared sensor is around 6 meters or about 30 feet For desirable operation of passive infrared sensor, it requires a warm up time of 20 to 60 seconds. This is required because, the passive infrared sensor has a settling time all through which it calibrates its sensor according to the environment and stabilizes the infrared detector. During this time, there must be very little to no motion in front of the sensor. If the sensor is not given adequate calibrating time, the output of the passive infrared sensor may also now not be reliable. When the passive infrared sensor detects any motion, the output of the sensor is high. This is detected by way of the Arduino. Arduino then communicates with the global system mobile communication module by serial communication to make a call to the preprogrammed mobile number. An necessary point to be cited about passive infrared sensors is that the output will be excessive when it detects motion. The output of the sensor goes low from time to time, even when there is movement which may lie to the
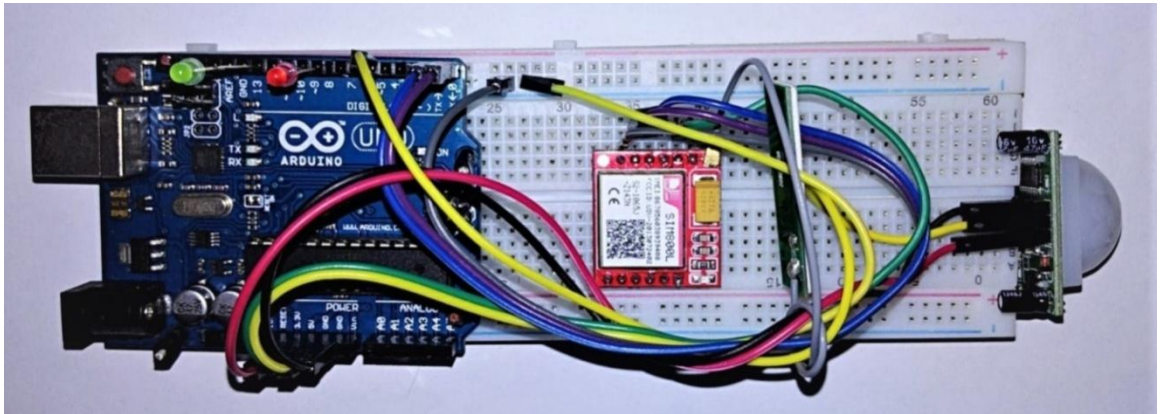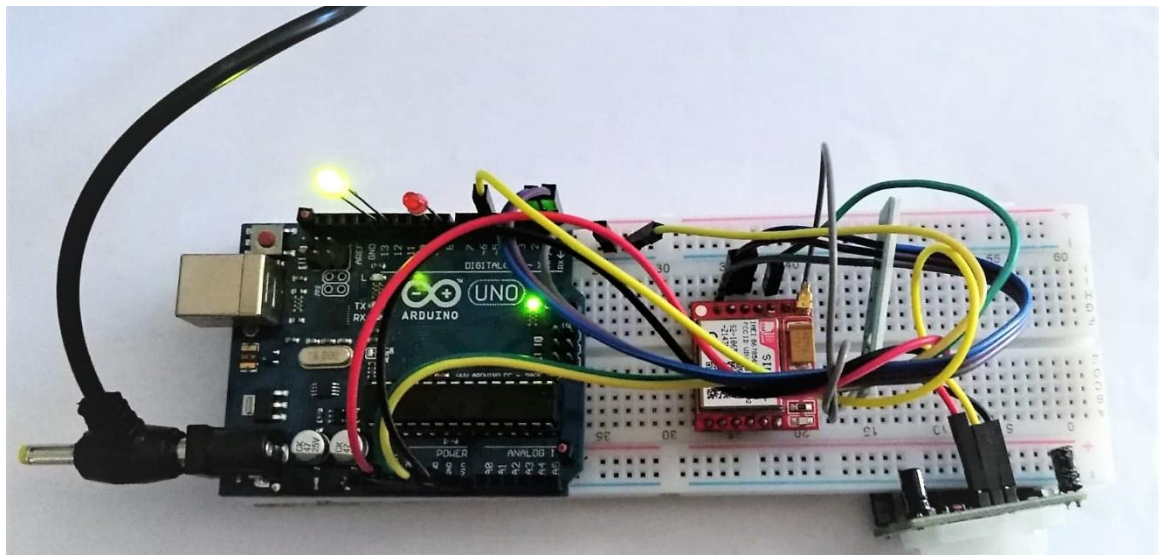
Fig.5.1: Final Project (Without power supply)

Fig.5.2: Final Project (With power supply)

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5.3 Cost Analysis

Table 5.1 Cost analysis of the project

Serial No.	Name	Quantity	Price (BDT)
1.	Arduino UNO	1	550
2.	SIM800L	1	1050
3.	12v 2A Adaptor	1	450
4.	PASSIVE INFRARED Sensor	1	120
5.	Breadboard	1	130
6.	Male-Female jumper wire	2 set	110
7.	LED	10	50
8.	Other		300
	Total		**2760**

5.4 Summary

At last completing this chapter and the project is ready to use.

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CHAPTER 6
CONCLUSION

6.1 Conclusion

Global system mobile communication based totally domestic safety alarm gadget is designed using ARDUINO, PASSIVE INFRARED (PIR) motorscation sensors and a GOBAL SYESTEM MOBILE COMMUNICATION module. When the gadget is activated, it continuously exams for speed and if the speed is detected then it will name the owner. Only the intruder's alert is present on this system and can be upgraded to other safety indicators such as fire, smoke etc.

6.2 Limitation of the Work

The essential problem of this task has no face detection system. Anyone will matter as unknown. Even the consumer enters the room, then the machine additionally call the given number. The other hindrance is load shading. Because the gadget runs in AC supply. This issue needs to limit with the aid of using IPS or photo voltaic panel.

6.2 Future Scope

GOBAL SYESTEM MOBILE COMMUNICATION is one of the contemporary cell technologies the use of clever MODEM, which can without difficulty have interfaced to embedded microcontrollers. Now the whole lot is going to be automatic the use of this technology, the use of this technology we can get entry to the gadgets remotely. Using GOBAL SYESTEM MOBILE COMMUNICATION and GPS now we can pick out the people, vehicles etc. in anywhere of the world.MODEM is speaking with the microcontroller using AT commands, for example if we prefer to ship an SMS to quantity +8801682520379, the commands we have to send is AT+CMGS=" <+8801682520379>"............ In this project, it is used to make name to the owners cell when any person entered the domestic without permission. In this undertaking in future we can add a multimedia digital camera to see what is going internal the home by means

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APPENDIX

//Original Code

//GOBAL SYESTEM MOBILE COMMUNICATION Based Home Security.

```
int LED1=12;

int GND1=13;

int LED2=8;

int GND2=9;

int  Passive Infrared   Output=5;

void setup()

{

 Serial. Begin (9600);

 pin Mode(LED1,OUTPUT);

 pin Mode(GND1,OUTPUT);

 pin Mode(LED2,OUTPUT);

 pin Mode(GND2,OUTPUT);

 pin Mode(Passive Infrared   Output, INPUT);

 digital Write(Passive Infrared   Output, LOW);

 digital Write(GND1,LOW);

 digital Write(GND2,LOW);

 digital Write(LED1,LOW);

 digital Write(LED2,LOW);
```

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```
  delay (15000;

  digital Write(LED1,HIGH);

}

void loop()

{

 if(digital Read(Passive Infrared   Output)==HIGH)

 {

  digitalWrite(LED2,HIGH);

  Serial.println ("OK");

  delay (10000);

  Serial.println ("ATD+8801682520379;");

  delay (1500);

  Serial.println("ATH");

  digital Write(LED2,LOW);

  delay (10000);

 }

}
```