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GSM BASED HOME SECURITY SYSTEM

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ABSTRACT: - The increasing rate of crime has made home security systems a critical concern for individuals who wish to safeguard their homes from intrusions. Moreover, there is a growing demand for home automation, enabling users to optimize their living environments, such as adjusting temperature settings to combat hot climates when returning from the office. While traditional home security systems rely on alarms to indicate potential threats, GSM-based security systems offer enhanced security features. These systems utilize GSM modules (specifically the SIM800L) and ESP8266EX microcontrollers in conjunction with sensors and buzzers to send text messages to designated phone numbers whenever a sensor is triggered, enabling prompt action to be taken. This paper proposes a methodology for implementing an effective home security system using these components.

I.INTRODUCTION

With the rapid increase in crime rates, ensuring the security of our homes, offices, and shops has become paramount. Various home security systems are available in the market, offering a range of features such as fire detection, LPG monitoring, electronic door locks, heat sensing, smoke detection, and temperature monitoring

This research paper will concentrate on developing a PIR sensor- and GSM-based home security system. This system effectively detects intruders attempting to enter the premises and promptly notifies the owner by sending text messages to their mobile phone.

II.RELATED WORK

Components used for connection are as following: -

1.GSM800L :-
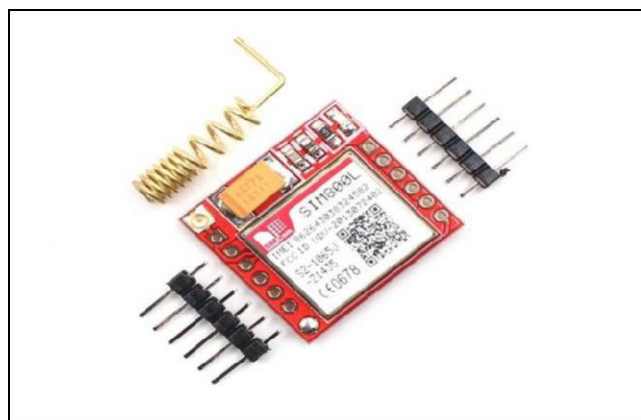
DESCRIPTION: -

The document describes SIM800 hardware. interface in great details. SIM800L is a quad -band GSM/GPRS module that works on frequancy GSM850MHZ, EGSM900MHZ , DCS1800MHZ and PCS1900MHZ , SIM800L Features GPRS multi-slot class 12/class 10 optional & support the GPRS coadingscheams CS1 , CS-2 ,CS-3, & CS-4 .Support -5*5*2 keypads , One full modern port user can configure two searial port ,power supply used -3.4 V-4.4 V

2.Controller-ESP8266EX:-
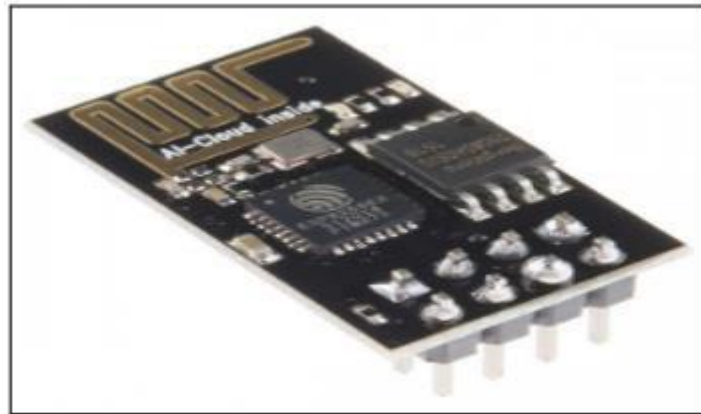
DESCRIPTION: -

Espressif Systems makes the ESP8266, a low-cost Wi-Fi microprocessor with integrated TCP/IP networking software and microcontroller capabilities.

The ESP8266EX's complete and independent Wi-Fi networking capabilities allow it to run as a standalone application or as a slave to a host MCU.The ESP8266EX immediately boots up from the flash when hosting the application.

3.Sensor: - MQ6 Gas sensor:-

DESCRIPTION: -

When the gas being detected comes into contact with the sensing element of the MQ6 Gas sensor, it causes a modification in the resistivity of the element. This change in resistivity is then measured to determine the concentration of the gases present in the environment. The sensing range of the MQ6 sensor is particularly suitable for detecting gas leaks in residential settings, as well as in places such as hotels and restaurants where LPG cylinders are used for

cooking purposes. It is important to detect and address gas leaks promptly, as the combustion of LPG is highly exothermic, meaning it releases a significant amount of heat if ignited.

4.IR Proximity sensor:-
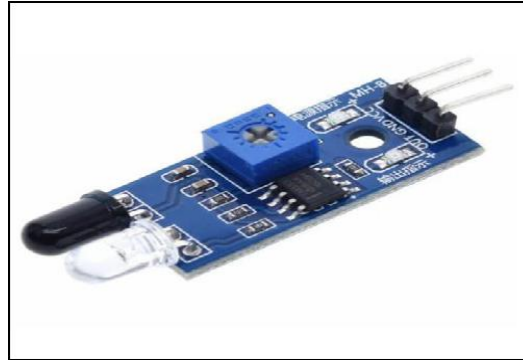
DESCRIPTION: -

An infrared sensor (IR sensor) is a radiation-sensitive optoelectronic component with a spectral sensitivity in the **infrared wavelength range 780 nm ... 50 μm.Motion detectors, which are used in building services to turn on lights or in** alarm systems to detect unwanted visitors, increasingly frequently incorporate IR sensors.

Specifications: -
  • **The operating voltage is 5VDC.**
  • **The range is up to 20 centimeters.**
  • **Fixed ambient light sensor.**
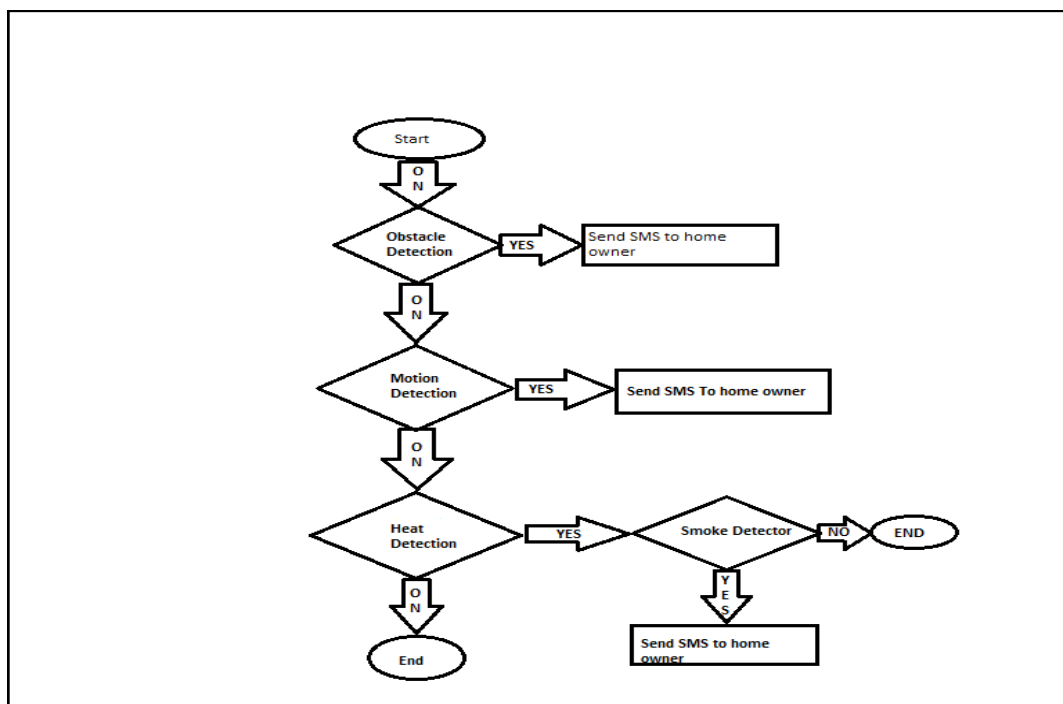
Flow chart Image: -

Fig - 1, Flow Chart

DESCRIPTION: -

The microcontroller is powered through the VCC 5V and GND pins, enabling it to operate. Initially, upon receiving power, the microcontroller remains in a low state, awaiting input signals. Port 2.0 serves as an input for the microcontroller, while port 2.4 detects signals from the PIR sensor. Port 2.5 detects high temperature, port 2.6 detects gas, and port 2.7 detects intrusion. On the other hand, Port 0 is designated as an output port, connecting to the input of the buzzer. When an input signal is detected by any of the sensors, the microcontroller interrupts its ongoing software program. It accesses the address bus of the input signal, loads the program stored in the address register, and then sends it to the control register. The microcontroller processes the loaded program, executing the instructions accordingly. It generates instruction streams to the output register or ports, which can set the output high and send information to the GSM Modem. The microcontroller initializes the GSM Modem to send SMS notifications to a programmed number, while also activating the indicator and buzzer. The microcontroller's processing frequency, determined by the crystal oscillator, is set to 11.0592MHz, regulating the rate at which it handles information.
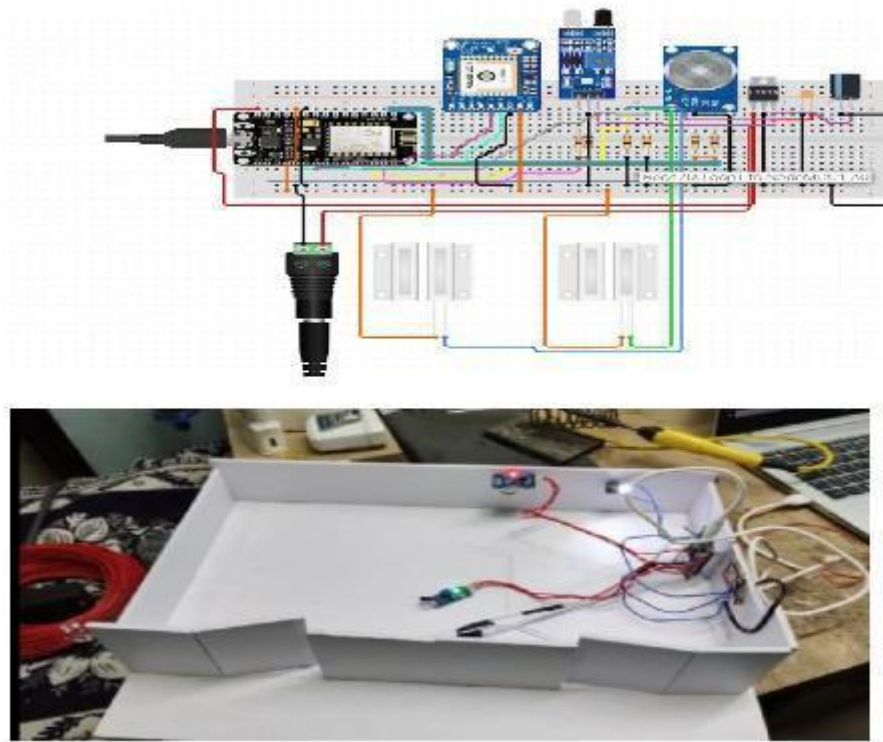
III. RESULTS

Fig no:-2 Hardware Result

IV. CONCLUSION

With the increasing crime rates, home security has become a pressing concern for everyone, and it is crucial to take appropriate measures to prevent intrusions. Furthermore, there is a growing demand for home automation, allowing users to leverage technological advancements. This project introduces a model that utilizes GSM technology to provide security for homes through SMS notifications. The primary concept behind our project is to ensure GSM -based security even when the owner is not present in the restricted areas. To achieve this, we have employed wireless transmission using GSM, which is a cost-effective and efficient solution. We have chosen GSM technology due to its familiarity, availability, and effectiveness when compared to other wireless communication methods.

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