Vehicle Accident Monitoring And Emergency Aid System

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

By

Name: Md. Ashiqur Rahman

ID: 161-33-3168

Name: Md. Mahamudul Hasan

ID: 161-33-3130

Supervised by

SAIKAT BASAK

Senior Lecturer

Department of EEE

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

FACULTY OF ENGINEERING

DAFFODIL INTERNATIONAL UNIVERSITY

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Certification

This is to certify that this project and thesis entitled "Vehicle Accident Monitoring And Emergency Aid System" is done by Md. Ashiqur Rahman, ID No: 161-33-3168 and Md. Mahamudul Hasan ID No: 161-33-3130, 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 December 2019.

Signature of the Candidates   **Signature of the Supervisor**

Name: Ashiqur Rahman   **Saikat Basak**

ID #: 161-33-3168   **Senior Lecturer**
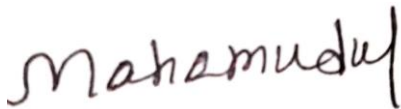
                                                                      Department of EEE, DIU

Name: Md. Mahamudul Hasan

ID #: 161-33-3130

Dedicated to

Our Parents

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LIST OF ABBREVIATIONS

NSF	National Science Foundation
TX/RX	Transmit and Receive
EMI	Immune to Electromagnetic Interference
IC	Integrated Circuit
US	Ultrasonic Sensor
LCD	Liquid Crystal Display
GSM	Global System for Mobile
GPS	Global Positioning System
SMS	Short Message Service
ADIS	Acquired Immune Deficiency
USB	Universal Serial Port
PWM	Pulse width modulation
CPU	Central Processing Unit
AREF	Analog Reference
DC	Direct Current
LIPO battery	lithium polymer battery
LED	Light Emitting Diodes

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First of all, we give thanks to Allah. It is a great pleasure for authors to express their unfettered gratification, sincere appreciation and profound respect to our respective supervisor Saikat Basak, Senior Lecturer, Department of Electrical & Electronic Engineering Daffodil International University for his constructive suggestion, scholastic guidance, constant inspiration, valuable advices and kind cooperation for the successful completion of work on "Vehicle Accident Monitoring And Emergency Aid System". This could not be possible without his help. Space does not allow us to mention each person by name, but we are deeply grateful to everyone associated with this project and thesis. We also wish to complement all our respective concern teachers & staffs of our department of their direct and indirect assistance at different times.

ABSTRACT

Now, one of Bangladesh's major concerns has become an alarming rise in road accidents. A lack of understanding and disregard for Traffic rules, imprudent riding, rapid development of vehicles, etc. Can be identified as factors leading to this problem. The pain of the victims of the accident can be reduced if identification of injuries is possible in no time. Emergency aid can often not be received promptly due to lack of knowledge of the incident to the individuals involved Most of the time loss of life due to poor first facilities. Our research offers a solution for identifying injuries and preventing the protection of human life. The number of women employer are increasing Day by day. Generally, their Travel by bus and women face many problems such as rape, molestation, kidnapping, etc. This unique system will lead to rising rates of crime against women. Giving women safety in urban areas in particular, as they can face problems when traveling the network is not so costly, so many women can support themselves, have been given priority. And our paper also senses when firing occurred in vehicles and sends the alert to the given number that we set such as fire service control room, police service control room, hospital service, etc.

CHAPTER 1

INTERODUCTION

1.1 Introduction

However, high vehicle demand has increased traffic hazards and road accidents. The lives of the people are at high risk. This is due to the lack of the best available emergency facilities in our country. This paper proposes an automated vehicle accident warning system. The proposed system would detect incidents in much less time and, within a few seconds, send basic information to the first aid center covering geographical coordinates, the time and angle at which a vehicle accident occurred. The central emergency shipping server will receive a warning message in a short time so that the emergency shipping system can alert the nearest ambulances. Which will help to save valuable lives. There is also an option to avoid sending a message in the rare case where there is no injury, this can save the ambulance's precious time. When the accident occurs, the warning message will automatically be sent to the central emergency dispatch system. The alert will be sent via the GSM module and the location of the accident using the GPS module will be identified. The accident can be accurately detected using a vibration sensor. This device provides in the most feasible way the optimal solution for poor emergency facilities for road accidents. The majority of road accidents are caused by drink-driving. Drinking and driving are already a serious matter for public health issue and one of the most important problems are likely to emerge in the near future. The program introduced we're aiming to reduce we are on the road accidents by drinking and driving in the near future. A device that detects Changes in the alcoholic gas content of the surrounding air are more commonly referred to as breathing analysis, Analyzing the alcohol content of the breath of a patient. The device recognizes the presence of alcohol, then it sends information to the related people. In this modern age, women feel unsafe to leave their homes due to increasing crimes such as bullying, rape, violence in our community, etc., the business and IT sectors are in the boom at the moment. Many women, even in night shifts, work in the company. Working women have a feeling of insecurity. The device proposed is more like a safety system in an emergency. You can fit this device in a bus seat. It is a tool that is simple to use with more

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functions and functionality. Holds the emergency push button on one of the bus seat buttons. Another purpose of this device is to inform parents and police about women's current location. Use a GPS to map the victim's current position and use a GSM phone to send the message to the predefined numbers. There is a huge amount of transport in Bangladesh. The fitness of the transports doesn't maintain most of the time so, the gas cylinders also at the risk of any accidents. Another purpose of this device when an accident happens, we'll be able to know about fire together with this project, Fire safety and precautionary measures. And GSM will send related information to the firefighter or related people.

1.2   Problem statement

The Classical object of this following device is to detect the location accident vehicles and Sends the details within a few seconds to the first aid center. But in our device. We face some problems. Hear delay arise. We used GPS in our device. It is an offline device during the offline system.it is connect automatically about 22 satellite and gets some time to connect. Here GSM and GPRS can't work less than 3.7 Volt.

1.3   Objectives

The Capability of This Device is to track and moving object can be used for several purposes. The main goal our project belongs to

- Detect the location in real time of accident vehicles. And sends the alert to the given number.
- To help women during her harassment period by clicking the push button.
- In alerts during the firing period.
- It senses on alcohol.

1.4   Applications of this project

Automatic identification of vehicle accidents is a crucial feature in today's high-speed motorway. Some application are

1. To create a real-time traffic accident detection system.

2. Deliver Public safety.

3. It can serve people's safety hours.

4. Deliver service harassment hour, and detect the location.

5. Deliver accident hour, and detect the location.

6. Deliver service firing hours and detect the location.

1.5   Research Methodology

In this system, there are many components like GSM, GPS, gas Sensor, ultrasonic sensor, alcohol sensor, buzzer, Pushbutton, etc. A systematic approach of study is implemented with the ultimate objective of a fully functional computer bearing in mind that this will help reduce accidents, any kind of harassment, fire sensing and alcohol sensing. This project uses a decentralized top-down approach. The project consists of seven modules. Each module is separate from each other. Starting from initial sensor testing and proceeding towards object detection, different phases were conducted step by step, tracking the location, display output, alarm system, and data transmission. Due to the decentralized approach, all modules and sensors act independently. This is the project, we use vibrate sensor for reducing accidents. In the vibrating sensor, when it will find any vibration, it will take incident location from the GPRS and send data to the GSM. And GSM sends data to the related people. And the gas sensor and push-button applies the same process. The gas sensor will detect the gases on fire. Push-button will send instant information for help. An object detection sensor detects the Obstacles ahead the device. The processing is performed by the microprocessor and the sensor information Is supervised by a controller. i.e. Arduino board. This approach was more suitable because if there is a fault in any one of the modules then the whole system would not be affected. This therefore provides the best performance possible by maintaining accuracy. Deletion of the accident, fire detection, women safety, Human and animal tracing, the key aspects of this project are the establishment of a communication connection

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between microprocessor and controller. [1]

1.6 Related Work in the world

1. Online Road Traffic Accident Monitoring System for Nigeria [11]
2. Accident Detection and Alert System. [12]
3. Arduino Based Vehicle Accident Alert System using GPS, GSM and Accelerometer. [13]
4. GPS- and GSM-Based Vehicle Tracking System. [14]
5. Design and Implementation of Women Safety System. [15]

Project Outline

Chapter 1: Introduction

In this chapter the discussions are about Research Methodology, objectives and Applications of this project.

Chapter 2: Analysis of the system components of the project

In this chapter, we talked about the equipment in this project. And discuss the characteristics of various components.

Chapter 3: Describes all the Hardware Development parts

This chapter is all about Project Flowchart and Descriptions of Hardware Connection.

Chapter 4: Discussion

This chapter includes final result of the project, and the test results of the project.

Chapter 5: Conclusion and Future Scope

We discussed about the conclusion and the scope for further developments.

CHAPTER 2

Analysis of the system component

2.1 Introduction

In this chapter we have discussed about various component that we used to create our device. Every Components of this device are most important and we used them perfectly.

2.2 Components

The Real Time Accident Monitoring and Emergency Aid System Device has the following main components are [2]

    i.   Arduino.

    ii.   Vibration sensor

    iii.   Alcohol sensor

    iv.   Ultrasonic sensor

    v.   Gas Senor

    vi.   Push button

    vii.   Liquid Crystal Display (LCD)

    viii. Global System for Mobile(GSM)

    ix.   General Packet Radio Service (GPRS)

    x.   Power Supply (3.7 and 9 volt battery)

    xi.   Wheel

    xii.   Chassis

    xiii. Jumper Wire

xiv. Bread Board

xv. Tools Needed

2.2.1 Arduino Board

Arduino is a broad-ranging electronic programmable circuit that can be easily integrated into a wide range of projects. It has a microcontroller capable of writing a program to detect and manipulate events in the real world. By responding to sensors and inputs, The Arduino was designed to communicate with a wide range of inputs such as motors, LEDs and displays. Arduino is a very popular compiler for inventors looking to develop interactive hardware projects because of its simplicity and affordability. Massimo banzi launched Arduino in Italy in 2005 as an access program for non-engineers to implement a simple, low-cost hardware design. Since the Arduino board is open source, it is published under an innovative popular license that allows anyone to build their own board. [3]

Fig. 2.1 Front side of Arduino UNO

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2.2.2 Arduino UNO Board

The Arduino UNO is one of the most popular boards of Arduino. Although not the first board to be renounced, because of its highest demand, it remains the most frequently used and reported on the market. [3]
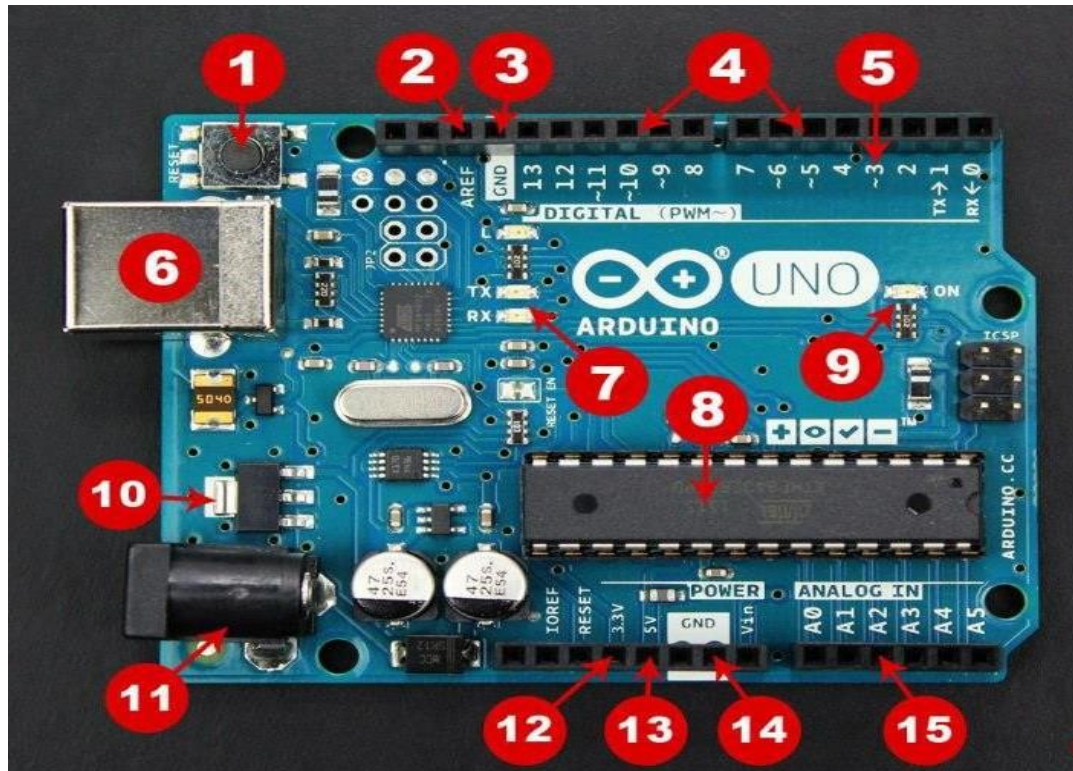
Fig. 2.2 Arduino UNO board breakdown

Here we are discussing the function of the Arduino board component. That is

1. **Reset Button** – Use this button to restart Arduino code installed on the board.
2. **AREF** – This is analog reference and is used for setting an existing reference voltage.
3. **Ground Pin** – There are several ground pins on the Arduino board and they all do the same.
4. **Digital Input/output** – Pins 0-13 utilize for digital input/output.
5. **PWM -** Stands for pulse width modulation. This pin marks the symbol (~) replicated by the analog output.

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6. **USB Port** – Works on the Arduino board uploading code and power supply.

7. **TX/RX** – These LEDs transmit or receive data.

8. **AT-mega Microcontroller** – This is called the brain where you store the software.

9. **Power Indicator** – When the panel is connected to a power source, the LED will light up at any time.

10. **Voltage Regulator** – This device is used to regulate the voltage level of the Arduino board.

11. **DC Power Jack** – This is used to power your Arduino with a power supply.

12. **3.3V Pin** – Get 3.3v from this pin for our project.

13. **5V Pin** – Get 5v from this pin for our project.

14. **Ground Pin** – There are several ground pins on Arduino's board and they all do the same..

15. **Analog Pin** – This pin can read and convert the analog sensor signal into the digital one.

2.2.3 Vibration Sensor

This module features an adjustable potentiometer, a vibration sensor, and a comparator chip from LM393 to provide an adjustable digital output based on the vibration level. The potentiometer can be adjusted to increase the sensitivity to the desired amount as well as decrease it. When activated, the device emits a high level of logic (VCC) and a low level (GND) when not. Additionally, when the module is activated, there is an onboard LED that turns on. [4]

2.2.3.a Features

    I.   The default state of the switch is close

    II.   Digital output Supply voltage:3.3V-5V

    III.   On-board indicator LED to show the results

    IV.   On-board LM393 chip

    V.   SW-420 based sensor, normally closed type vibration sensor

    VI.   Dimension of the board: 3.2cm x 1.4cm
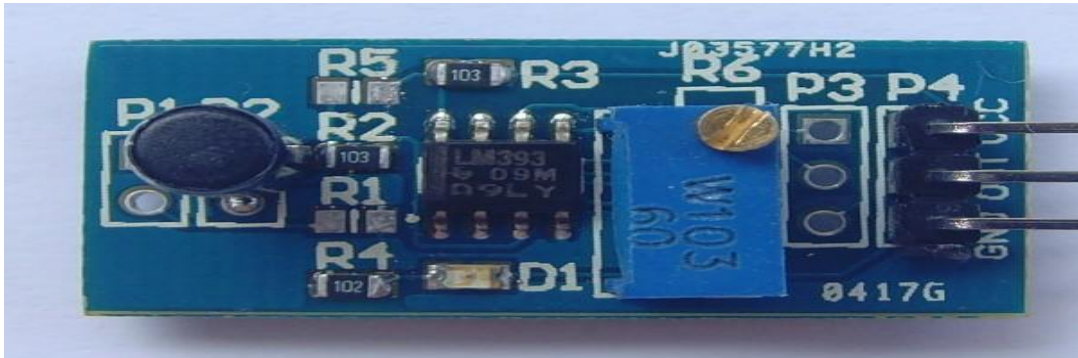
Fig 2,3. Vibration Sensor SW-420)

The logic status of this sensor module depends on the vibration and the external force applied to it. This module gives logic LOW output when there is no vibration. If it feels vibration, this module's output will go to HIGH logic. This circuit's working bias is from 3.3V to 5V DC.

2.2.3.b (SW-420) vibration sensor Pin Configuration
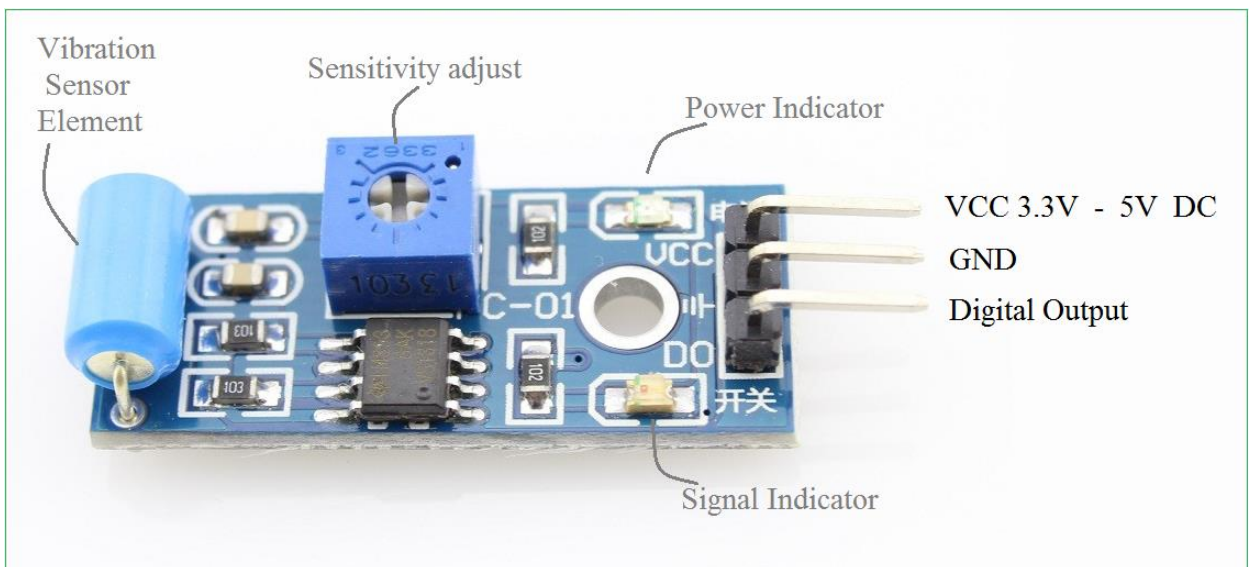
Fig. 2.4 Vibration Sensor (SW-420) Pin Configuration

Table 2.1 Pin configuration table of vibration sensor (SW-420)

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Pin Name	Description
VCC	This pin powers the module, typically the operating voltage is +5V
GND	Used to connect the module to system ground
Digital Out (DO)	You can also use this sensor to get digital output from this pin, by setting a threshold value using the potentiometer
Analog Out (AO)	This pin outputs 0-5V analog voltage based on the intensity of the gas

2.2.3.c Working process of vibration sensor (SW-420)

The vibration detector is a device that acts on the basis of various optical principles otherwise mechanical to detect observed machine vibrations. The vibration-sensor module usually has a sensitivity range of 10 mV / g to 100 mV / g, and the sensitivities are lower and higher and also available. You can pick the sensitivity of the sensor depending on the request. Understanding the vibration amplitude range levels to which the sensor will be exposed during all measurements is therefore important.

2.2.4 Alcohol Gas Sensor (MQ-3)

This device is made with the MQ3 Alcohol Gas Sensor. It is a low-cost semiconductor detector capable of detecting concentrations of alcohol gases from 0.05 mg / L to 10 mg / L.

Fig. 2.5 Alcohol Gas Sensor (MQ-3)

The detector's sensitive material is SnO2, which is lower in clean air conductivity.

The conductivity increases with the rise in alcohol gas concentration. It has a high sensitivity to alcohol and has a good resistance to disturbances due to smoke, vapor, and gasoline. This module provides analog and digital output. You can conveniently integrate the MQ3 alcohol sensor module with Microcontrollers, Raspberry Pi, Arduino boards, etc.. This alcohol detector, like your typical breathalyzer, great for measuring levels of alcohol on your breath. It has a high sensitivity and time to respond quickly. The sensor has an analog, alcohol-based resistive output. The drive circuit is very simple, only one resistor is required. A 0-3.3V ADC might be a simple interface. [6]

2.2.4.a MQ-3 Alcohol Gas Sensor Pin Configuration
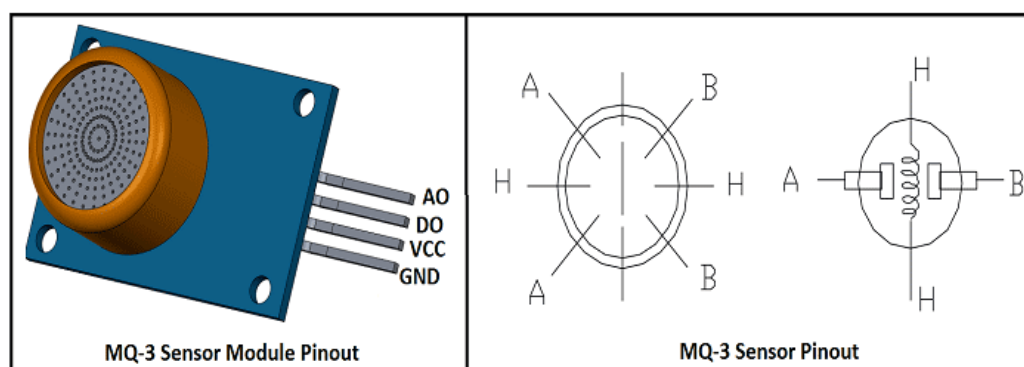
Fig. 2.6 An Alcohol Gas Sensor (MQ-3) Pin Configuration

Table 2.2 Pin configuration table of Alcohol Gas Sensor (MQ-3)

Pin Name	Description
VCC	This pin allows the module to work, usually + 5V
GND	Used to connect the module to the ground system
Digital Out (DO)	Using the potentiometer, you can also use this sensor to get digital output from this pin.
Analog Out (AO)	This pin produces analog voltage of 0-5V based on the gas intensity

2.2.4.b Working process of Alcohol Gas Sensor (MQ-3)

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The cube is the core system. As you can see in this cross-sectional view, it is essentially a SnO2 alumina tube cover, which is tin dioxide. And between them there's an Aurum electrode, the black one. You can also see how the wires are connected. Of general, the heating system, the yellow-brown parts and the coils in the photo are the alumina tube and the coils.
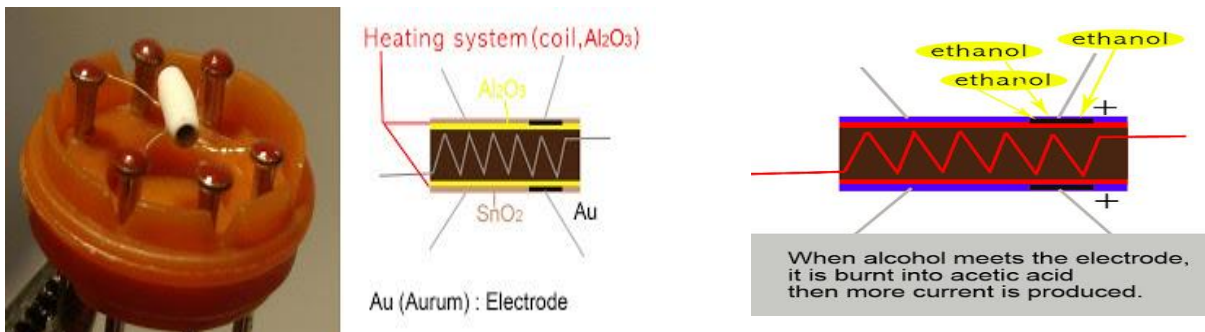
Fig. 2.7 Working process Alcohol Gas Sensor (MQ-3)

SnO2 ceramics will be a semiconductor, so more mobile electrons are usable, that means you're ready to make more current flow. Instead, when the alcohol molecules in the atmosphere touch the aluminum and tin dioxide electrode, ethanol burns into acetic acid and produces more current. The more alcohol we're getting, the more we're getting. Because of this current change we get different values from the sensor.

2.2.5 Carbon Monoxide Sensor (MQ7)

The MQ-7 Is a carbon monoxide (CO) detector for detecting airborne CO concentrations. It can detect concentrations of CO-gas between 20 and 2000 ppm anywhere.

Fig. 2.8 Carbon Monoxide Sensor (MQ7)

This detects high and low temperatures by cycle process and detects CO at low temperatures.

It is widely used in domestic alarm for CO gas leakage, industrial alarm for CO gas, and

portable detector for CO gas.

2.2.5.a Carbon Monoxide Sensor (MQ7) Pin Configuration
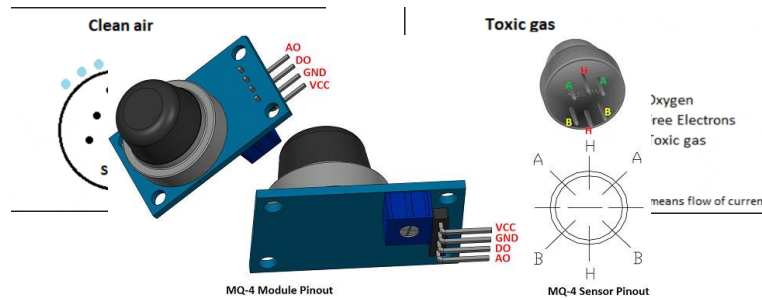
Fig. 2.9 Carbon Monoxide Sensor Pin Configuration (MQ7)

Table 2.3 Pin configuration table of the Carbon Monoxide Sensor (MQ7)

2.2.5.b Working process of Carbon Monoxide Sensor (MQ7)

Pin Name	Description
VCC	This pin allows the module to work, normally + 5V
GND	Used to attach the module to the ground network
Digital Out (DO)	Using the potentiometer, you can also use this sensor to get digital output from this pin.
Analog Out (AO)	This pin generates analog voltage of 0-5V depending on the gas strength

A gas sensor's ability to detect gases depends on the chemiresister conducting current. The most widely used chemiresistor is Tin Dioxide (SnO_2), a semiconductor n-type with free electrons (also known as donor). The air would normally contain more oxygen than oil gasses. The particles of oxygen attract free electrons in SnO_2 that push them to the SnO_2 surface. Since there are no free electrons, the output current is zero.

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Fig. 2.10 Working process Carbon Monoxide Sensor (MQ7)

The gif below shows the free electrons attracting oxygen molecules (blue color). (Black color) inside the SnO2 and prevents the free conduction of electrons when the sensor is put in the atmosphere of toxic or combustible gasses, This reduced gas (orange color) binds to adsorbed oxygen particles and breaks the chemical bond between oxygen and free electrons. As the free electrons return to their initial position, the current can now be performed, The amount of free electrons available in SnO2 will be proportional to this conduction, More free electrons will be available if the gas is highly toxic.[16]

2.2.6 Ultrasonic Sensor (HC-SR04)

The ultrasonic sensor is called for quantifying the characteristics of sound waves with the frequency above the audible range of human. It is working on three basic principles: Flight time, Doppler Effect, and the decrease of sound waves. The ultrasonic sensor is non-intrusive in that it has no need for physical connection with its target and it can identify specific shiny or clear targets Otherwise, it is unclear from some vision- oriented sensors. Otherwise, its measurement is highly sensitive to temperature and the angle of targets. [5]

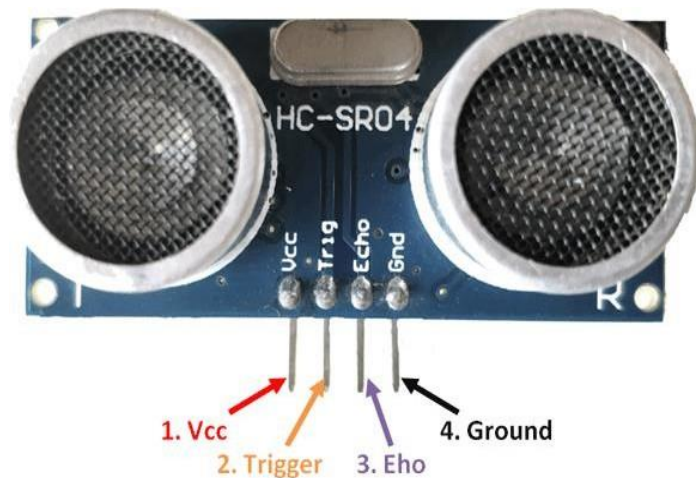## 2.2.6.a HC-SR04 Ultrasonic Sensor Pin Configuration

Fig. 2.11 HC-SR04 Configuration of the ultrasonic sensor pin

Table 2.4 Pin configuration table of ultrasonic sensor (HC-SR04)

Pin Number	Pin Name	Description
1	Vcc pin	The Vcc pin is typically working for input power supply with +5v
2	Trigger pin	The trigger pin is used to take input. This pin has to keep high for 10μs to initialize measurement by transmitting the ultrasonic Wave.
3	Echo pin	The echo pin is an output pin. This echo pin becomes higher for a period of time which is equal to the time needed for the ultrasonic Wave to reverse back toward the sensor.
4	Ground pin	This pin is connected to the system's ground pins.

2.2.6.b Working process of ultrasonic sensor (HC-SR04)

The ultrasonic sensor (HC SR04) is a four pins module as shown in Fig 3.5 above whose pin names are Vcc pin, Trigger pin, Echo pin, and Ground pin sequentially. This sensor is the most famous sensor applied to various purposes where distance measurements or sensing elements are needed. This sensor (HC SR04) has two devices like a human eye which acts as an ultrasonic transmitter and receiver. This sensor acts with easy high school formulas that are **Distance = Speed × Time** The ultrasonic transmitter sends an ultrasonic wave which moves in the air. When this wave finds an object by any fields it becomes returned back to the sensor and this Returned wave is received by the ultrasonic receiver module as given in below the picture.
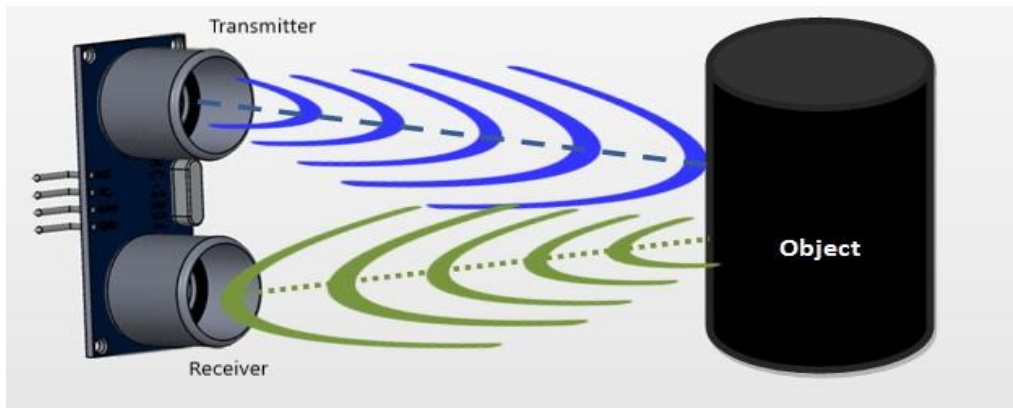
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Fig. 2.12 An ultrasonic sensors working process

Now, we measure the distance by utilizing the formula above and have to know the speed and time. Whereas we are utilizing the ultrasonic wave we know the general speed of the ultrasonic wave at room conditions that is 330 m/s. The device built-in on the module that will measure the time taken for the ultrasonic wave to get back and witch on the echo pin high for that equal certain amount of time. In this way, we can also realize the time taken. Now we can easily measure the distance by utilizing a microcontroller or microprocessor.

2.2.7 Push Button

A Push Button is a method of switching function on a simple "Push-to-make" mechanism. It initially stays in off-state or usually open state, but when pressed, it allows the current to pass through it or we may assume that when pressed it makes the loop.

Fig. 2.13 Push Button

In some types, their body is usually made of plastic or metal. The design of the push button has four hands, two on one side and two on the other. So, with a single push button, we can run two circuit lines. As shown in the figure above, two legs on both sides are connected internally. [7]

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2.2.7.a Working process of push button

When opening the push button (undressed) There is no connection between the pushbutton's two legs, So the pin (through the pull-down resistor) is attached to the ground and we read a low.
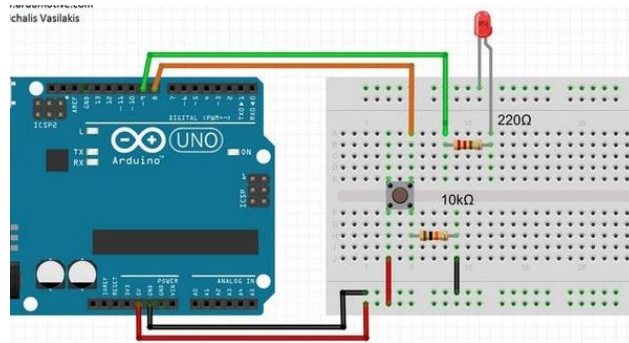
Fig. 2.14 push button working process

It makes a connection between its two legs when the button is closed (pressed), Bind the pin to 5 volts, so we're reading a high.

2.2.8 Sim 800l GSM

SIM800L is a miniature cellular module that allows for GPRS transmission, sending and receiving SMS and making and receiving voice calls. This can be included in a large number of IOT projects. You can use this module to accomplish almost anything a normal cell phone can; SMS text messages, make or receive phone calls, connecting to the internet through GPRS, TCP/IP, and more! To top it off, the module supports quad-band GSM/GPRS network, meaning it works pretty much anywhere in the world. [8]

2.2.8.a Hardware Overview of SIM800L GSM/GPRS module

The origin of the module is SimCom Cellular chip SIM800L GSM. The operating voltage of the chip is between 3.4V and 4.4V, making it an ideal candidate for direct LiPo battery supply. It makes it a good choice to incorporate into projects without much space.
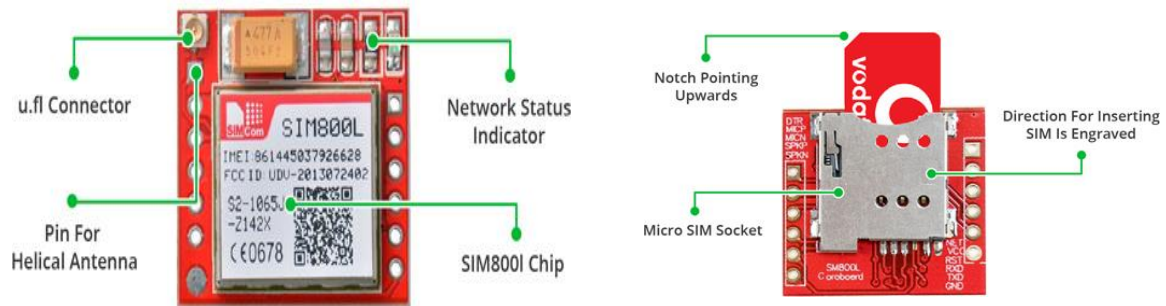
Fig. 2.15 SIM800L GSM/GPRS module Hardware Overview

All necessary SIM800L GSM Chip data pins are broken down to the header of the pitch of 0.1″. It includes the pins required to interact over UART with a microcontroller. With Auto-Baud detection, the module supports the baud rate from 1200bps to 115200bps. To connect to a network, the module needs an external antenna. Normally the unit comes with a Helical Antenna and soldiers directly to the PCB NET pin. In case you want to keep the antenna away from the board, the board also has a U.FL connector facility. On the back is a SIM port! Any activated 2 G micro SIM card would work perfectly. Usually the correct way to insert the SIM card is etched on the SIM socket layer.

2.2.8.b MQ7 Gas sensor Pin Configuration

Fig. 2.16 SIM800L GSM/GPRS module Pin Configuration

Table 2.5 Pin configuration table SIM800L GSM/GPRS module

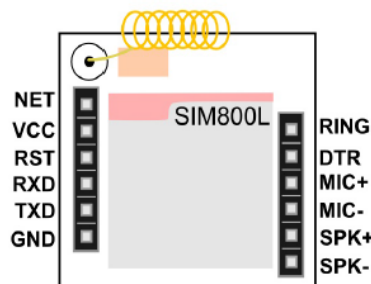| Pin Number	Pin Name	Description
1	Vcc pin	The Vcc pin is typically working for input power supply with 3.7v
2	TXD	Transmit Data
3	RXD	Receive Data
4	Ground pin	This pin is connected to the system's ground pins.
5	RST	Sim Reset
6	NET	Network Status
7	SPK+	Differential audio output (speakerN)
8	SPK-	Differential audio output (speakerP)
9	MIC-	Differential audio input (microphoneN)
10	MIC+	Differential audio input (microphoneP)
11	DTR	Data terminal ready
12	RING	Ring indicator

2.2.9 Neo 6m (GPS)

The heart of the module is a u-blox NEO-6 M GPS chip. The chip is less than the size of a postage stamp, but it packs in its small frame a surprising amount of features.
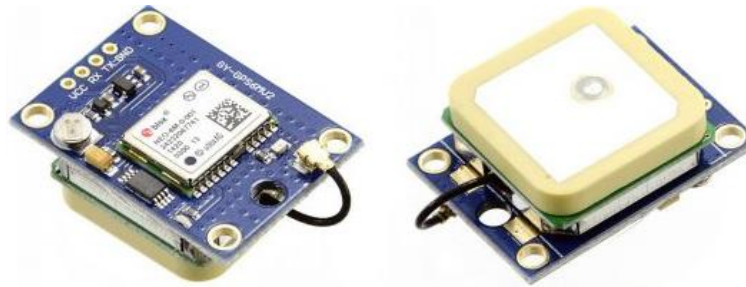
Fig. 2.17 Neo 6m (GPS) module

It can track and reach as many as 22 satellites on 50 channels highest tolerance rate in the industry, i.e. -161 dB monitoring while using just 45mA of supply current. Unlike other GPS modules, with 2.5 m Horizontal position accuracy, it can update up to 5 locations a second. The u-blox 6 positioning system also features a less than 1 second Time-To-First-Fix (TTFF). One of the best features of the chip is Power Save Mode (PSM). This allows the power consumption of the system to be minimized by selectively turning ON and OFF portions of the receiver. This dramatically reduces the module's power consumption just 11mA Making it ideal for high-power applications such as GPS wristwatch. [9]

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2.2.9.a Working process of Neo 6m (GPS)

In fact, GPS receivers function by deciding how far they come from a number of satellites. We are pre-programmed to learn at any given time where the GPS satellites are. The satellites relay information about their location and the current time in the form of radio signals to the Earth. Such Signals show the position of the satellites and the location of the receiver.
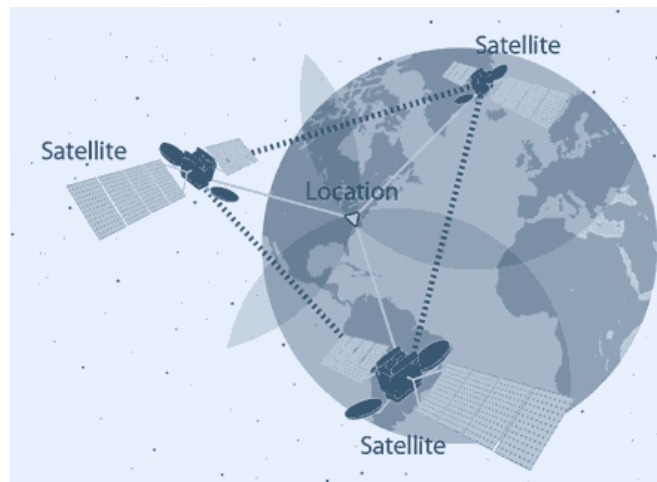
Fig. 2.18 Neo 6m (GPS) module Working process

The receiver then measures the distance between each satellite and estimates how long it took for the signals to arrive. Once it has data about how far and where at least three satellites are in orbit, it can classify your position on Earth. This process is referred to as Trilateration.

2.2.9.b Neo 6m (GPS) Pin Configuration
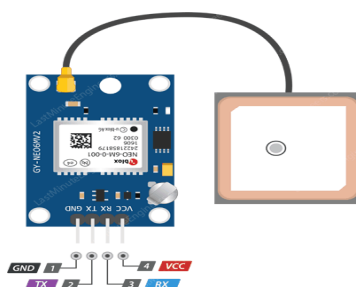
Fig. 2.19 Neo 6m (GPS) module Pin Configuration

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Table 2.6 Pin configuration table Neo 6m (GPS) module

Pin Number	Pin Name	Description
1	Vcc pin	The Vcc pin is typically working for input power supply with +5v
2	TX	Pin is used for serial communication.
3	RX	pin is used for serial communication
4	Ground pin	This pin is connected to the system's ground pins.

2.2.10 LCD Module (16×2)

Everywhere around us, we consider LCD screens. To view the time, computers, calculators, TV sets, mobile phones, digital watches use some kind of An LCD is an electronic display device that creates a visible image using liquid crystal.
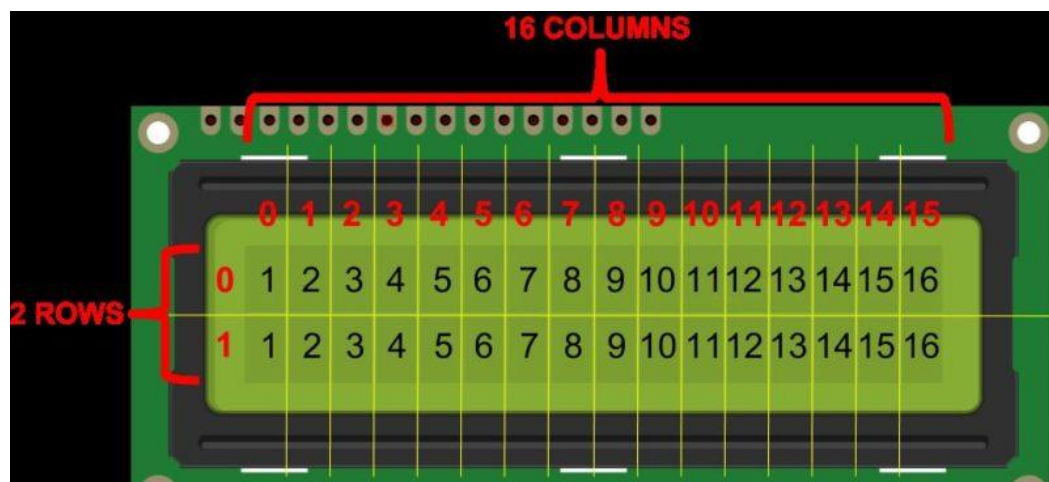
Fig. 2.20 LCD Module (16×2)

The 16×2 LCD display is a very basic module that is widely used in DIYs and circuits. The 16×2 translates in 2 such lines o a display of 16 characters per line. Each character is displayed in a matrix of 5×7 pixels in this LCD. [10]

2.2.10.a Hardware Overview of LCD Module

These LCDs are ideal only to display text / characters, hence the name ' Character LCD. 'The display has a backlight LED and is capable of displaying 32 ASCII characters in two rows with 16 characters per row.
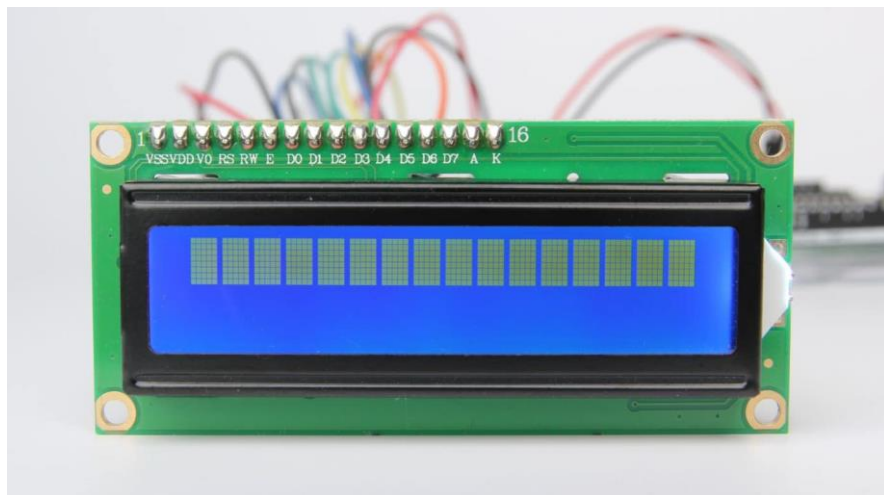
Fig. 2.21 Hardware Overview LCD Module (16×2)

That rectangle has a 5×8 pixel grid. When you look closely, you can see the tiny rectangles on the screen for each character and the pixels that make up a character. Every rectangle is a 5×8 pixel grid. Although they only display text, we come in a variety of sizes and colors, such as 16×1, 16×4, 20×4, with blue background white text, green black text, and much more.

2.2.10.b LCD(16×2) Pin Configuration

Fig. 2.22 LCD Module (16×2) Pin Configuration

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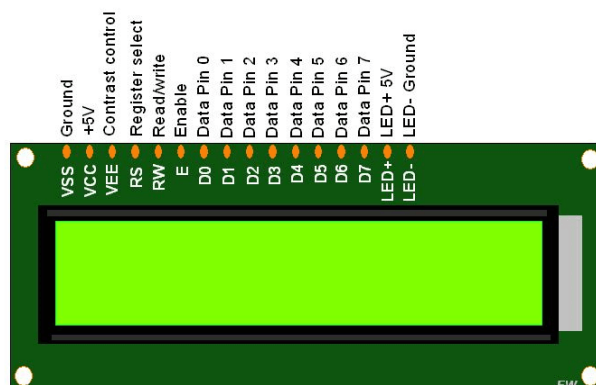| Pin Number	Pin Name	Description
1	Vcc pin	The Vcc pin is typically working for input power supply with +5v
2	Vo (Contrast with the LCD)	Checks the LCD's contrast and brightness. We may make fine contrast changes using a simple voltage divider with a potentiometer.
3	RS (Register Select)	The RS Pin Let's say Arduino the LCD if the commands or data are sent. This pin is essentially used to separate data control commands. If the RS pin is lower, for example, we send commands to the LCD (such as moving The cursor to a particular location, clearing the screen, scrolling the display to the LCD.
4	Ground pin	This pin is connected to the system's ground pins.
5	R/W(Read/Write)	The LCD's R/W RS pin is to track whether you are learning LCD data or writing LCD data. Since we only use this LCD as an OUTPUT tool, we will connect this LOW pin. It pushes it into the process of reading.
6	E(Enable)	The E pin is used for display enabling. In other words, when this pin is set to LOW, the LCD doesn't care what's going on with R / W, RS, and the data bus lines; when this pin is set to HIGH, the LCD processes the input data.
7	DO-D7(Data Bus)	The DO-D7 pins we send to the display carrying the 8 bit data. For example, we can Set the pins to 0100 0001 (According to the table ASCII) on the LCD if we want to see the upper case ' A ' character on the screen.
8	A_K (Anode&Cathode)	The LCD back light is controlled with A-K pins.

Table 2.7 Pin configuration table LCD(16×2) module

2.2.11 Jumper Wire

A jump wire with a solid tip at each end is a short electrical wire (Or without them even, just "tinned"), which is normally used for breadboard interconnection of components. Depending up on its two end tip or tip whole jumper wire has several types Male- Female, Female- male, Male-Male etc. In our project we used male to female jumper wire which is connected to the robots MCU to the sensor. And in bread board for different connection other simple jumper wire was used. The picture of several jumpers is given below

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Fig.2.23 Jumper wire

2.2.12 Bread Board

A breadboard is an implementing device to design and test our circuits. We don't need to solder components and wires to make a circuit by utilizing a breadboard. It is easier to attach components and reuse them. Since parts are not soldered we can transmute our circuit and redesign at any time without any trouble.

2.2.12.a Construction of a breadboard

A breadboard is a line of conductive metal strips encompassed in a box made of white ABS plastic. A breadboard has many holes that design in vertically or horizontally. Each hole of lines is separated by insulation. There are a number of holes in the plastic box that arranged in an individual way. A standard breadboard arrangement consists of two types of the area called divests (bus divests and socket divests). Bus divests are generally utilized to implement power supply to the circuit. It consists of two lines, one for +ve line and the other for -ve line or ground. Socket divests are used to contain most of the elements in a circuit. Usually, it consists of two segments and each with 5 rows and 64 columns. Each column electrically connects from inside of the breadboard
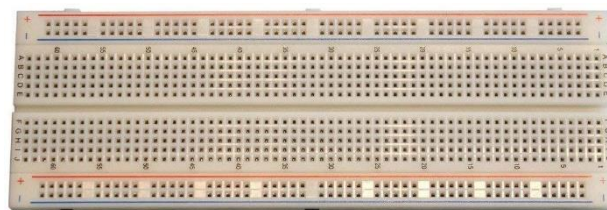
Fig. 2.24 Breadboard

2.2.13 Tools Needed

Fig. 2.25 some tools

Some tools name are given below

i. Soldering Iron

ii. Glue gun

iii. Cutter

iv. Knife

v. Digital Multimeter

vi. Screwdriver

vii. Tweezer

viii. Panavise jr

ix. Wire Strippers

x. Needle nose Plier

2.2.14 Summary

This chapter deals with the equipment used in the Accident Detection and Messaging System and Emergency Aid System of this company. All the equipment used in this project is in good shape and functioning properly, and the machine must work properly for that. In this section, we try to discuss specifics of each individual hardware job description and their works about the user.

CHAPTER 3

HARDWARE DEVELOPMENT

3.1 Introduction

This chapter describes the methods implemented in a Smart Car making algorithms. The main topics discussed in this chapter are how this project flowing software. The description hardware connection information.

3.2 Project Flowchart
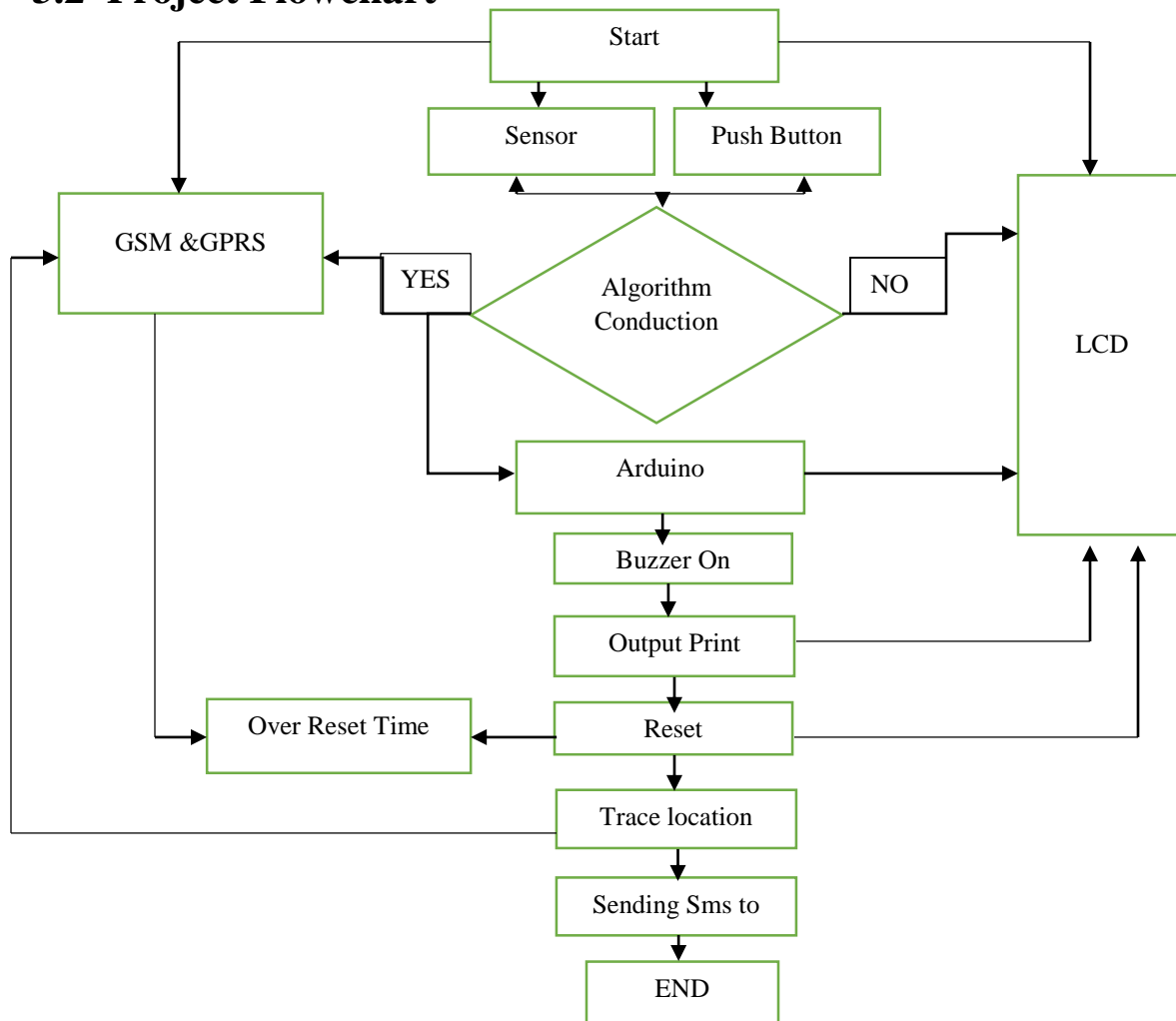
Fig. 3.1 Flowchart of the Accident Monitoring and Emergency Aid System device

3.3 Algorithm of the Smart Car Device

Step 1: Start

Step 2: Take input from the sensor (vibration, alcohol gas, Carbon Monoxide Gas, Distance, pushbutton)

Step 3: Arduino

Step 4: programing conduction

Step 5: Sensor Object Detect or User push Button

Step 6: Buzzer On

Step 7: LCD Display Output result Print

Step 8: Trace Location and Sending Sms to Center

Step 5: End

3.4 Hardware Connection

Fig. 3.2 Block diagram of Accident Monitoring and Emergency Aid System device

3.4.1 Descriptions of Hardware Connection

- Here is the simple circuit diagram in the figure 4.2
- The GSM TX pin connects to Arduino RX number of pin
- The GSM RX pin connects to Arduino TX number of pin
- The GPRS TX pin connects to Arduino 5 number of pin
- The GPRS RX pin connects to Arduino 6 number of pin
- The MQ7 pin connects to Arduino 6 number of pin
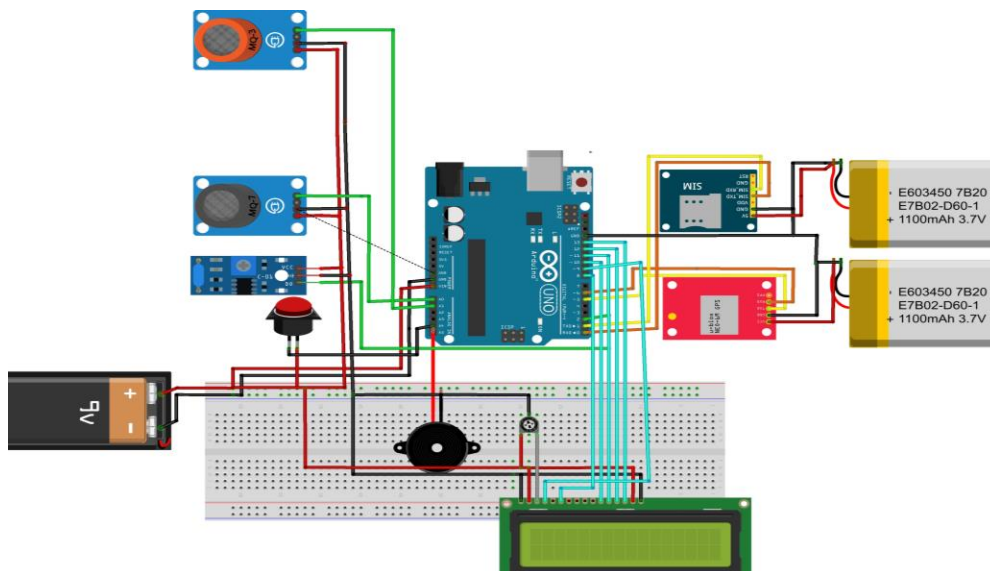- The MQ3 pin connects to Arduino 6 number of pin
- The Pushbutton pin connects to Arduino 6 number of pin
- The vibration sensor pin connects to Arduino 6 number of pin
- The LCD has 16 pin
- The LCD VE pin Decide the display level of contrast. Grounded in order to achieve optimal contrast.
- The LCD RS pin connects to Arduino 9 number of pin
- The LCD Enable pin connects Arduino 8 number of pin
- The LCD D4 pin connects Arduino 10 number of pin
- The LCD D5 pin connects Arduino 11 number of pin
- The LCD D6 pin connects Arduino 12 number of pin
- The LCD D7 pin connects Arduino 13 number of pin

- 2 and 15 pins of the motor LCD are connected to +5v pin
- 1 and 16 pins of the LCD are connected to Ground pin

3.5 Summary

After complete all the task according to this chapter our device will ready to perform the main critical thing of this chapter to build the algorithm that we used in our device. so the main object of this chapter was to understand the algorithm and the connection diagram that we used in our device

CHAPTER 4
DISCUSSIONS AND RESULTS

4.1 Introduction

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

4.2 Final Result

In this project, the Real-time Accident monitoring system and emergency aid has been made to follow the GSM and GPS module, vibrate sensor, gas sensor, ultrasonic sensor, alcohol sensor, and push button. This device works for accident monitoring. It sends data to the related persons to take necessary actions. This device also works for controlling women's harassment, when a woman gets into trouble, she can push the button to send information to the related persons. It also works for alcohol detection of the driver, it works by using MQ3 gas sensor. It also works for fire detection, it works by the MQ7 fire sensor. The real-time accident monitoring system was lastly finished by a lot of effort. To complete the work, we spent a lot of time on designing, implementing, writing, and debugging the code sitting in front of the computer. The accident monitoring system device has a few wreakers but gains most of the purposes. And we are success to finish the work properly.

Fig. 4.1 Final projects Output (carbon monoxide Value)

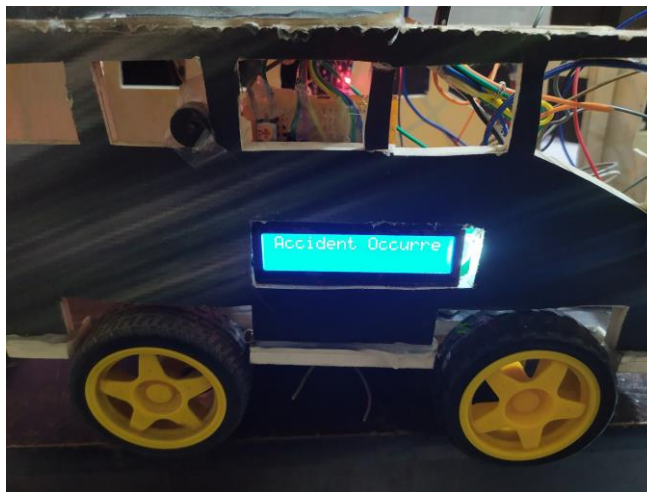Fig. 4.2 Final projects output (Human Detective)

Fig. 4.3 Final projects output (Accident Occurred signal)

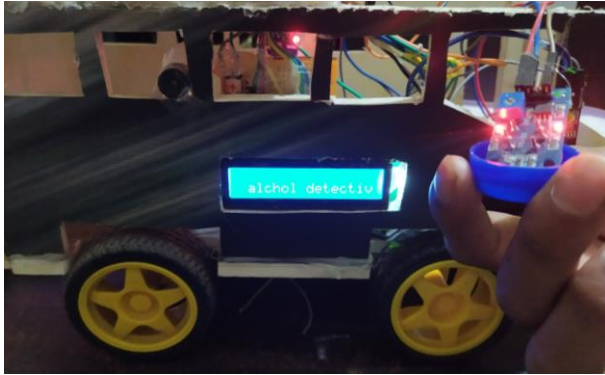Fig. 4.4 Final projects output (Women harassment)

Fig. 4.5 Final projects output (Alcohol Detective)

Fig. 4.6 Final projects output (Fire Signal)
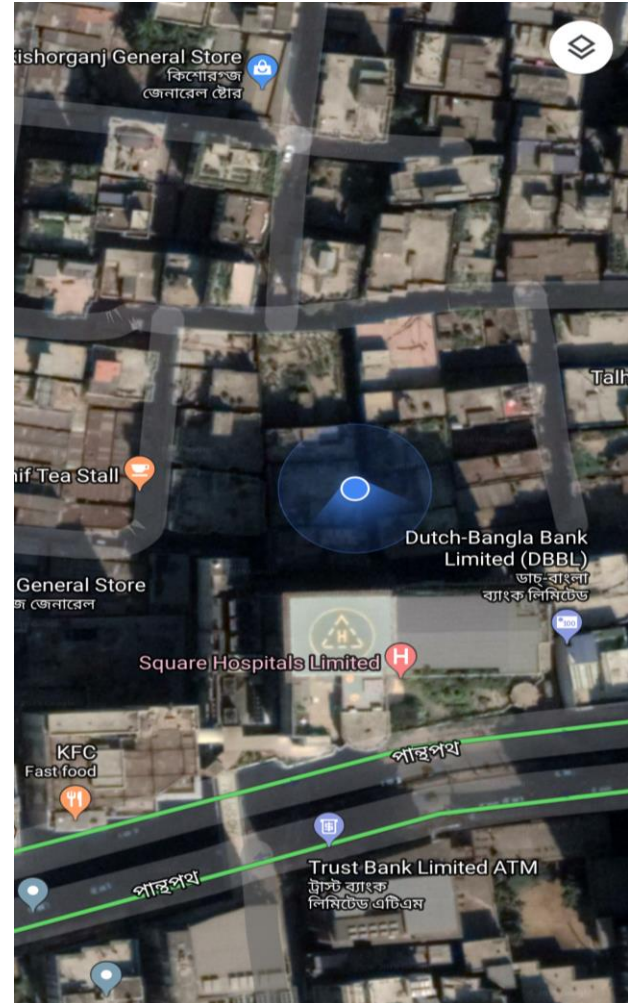
Fig. 4.7 Google Map Real time location

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4.3 Cost Analysis

Table 5.1 Cost analysis of the project

Serial No.	Name	Quantity	Price (BDT)
1.	Arduino UNO	1	500
2.	Sim 800l GSM	1	400
3.	Neo 6m GPS	1	800
4.	vibration sensor	1	200
5.	Alcohol Sensor Module (MQ-3)	1	150
6.	Carbon Monoxide Gas Sensor(MQ7)	1	130
7.	Push button	1	10
8.	Ultrasonic Sensor	1	230
9.	Chassis	1	500
10.	Metal Gear DC Motor (800rpm)	4	900
11.	Rubber Wheel	4	280
12.	LCD(16x2)	1	150
13.	3.7v Battery	5	900
14.	Board	2	150
15.	U-clamp motor holder	4	40
16.	Male-Female jumper wire	2	150
17.	Others		500
	Total		**5990**

4.4 Summary

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

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CHAPTER 5
CONCLUSIONS

5.1 Conclusions

The accident detection and alert system deliver critical information to emergency responders as soon as possible. Reducing the time between the occurrence of an accident and the detection of it may reduce mortality rates. To verify its usability and performance, the entire work must be incorporated with the vehicle. Therefore, this study would significantly reduce the ratio of death from accidents even on rural roads. Then it is of great importance to the people of the country like Bangladesh in their daily lives. Even in unpopulated areas, this planned study will provide vital information on incidents. Therefore, the pre-configured contacts could be better able to serve the victims, and they could prepare to have essential first aid kits to be carried with them to the spot of the crash. This work thus guarantees a decrease in the death ratio and deaths in the country, which will also be of greater importance in daily life. Then, when a bus cross a road, he/she might not see a human/animal in front of the bus. On that moment, the alarm system will provide alteration alarm to him/her. Then, if any woman gets harassed on the bus, she can press the push button to seek help from the police. And the alcohol detection sensor will sense if the driver is drunk or not.

5.2 Limitations of the Project

- Network is must.
- In this project, the GPS device delays to connect with the satellite.
- Accident measurement accuracy is not up to the mark at now.
- GSM module only work between 3.7 to 4 volts.

5.3 Further Improvements & Future Scope

Further the system can be implemented Use the sound detector to detect an incident more effectively and reliably. This can also be done by attaching the camera to the controller unit, which takes the image of the accident site, making it easier to monitor. Accident accuracy will be main concern for the future development.

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REFERENCES

[1] Student Research Paper Conference Vol-2, No-15, July 2015

[2] https://www.hackster.io/TechnicalEngineer/accident-detection-and-messaging-system-using-gsm-and-gps-21fb76

[3] https://en.wikipedia.org/wiki/Arduino_Uno

[4] https://5.imimg.com/data5/DV/NE/MY-1833510/vibration-sensor.pdf

[5] http://www.sensorwiki.org/doku.php/sensors/ultrasound, retrieved on 20/09/2019

[6] https://www.sunrom.com/p/alcohol-sensor-module-mq3

[7] https://components101.com/switches/push-button

[8] https://lastminuteengineers.com/neo6m-gps-arduino-tutorial/

[9] https://lastminuteengineers.com/sim800l-gsm-module-arduino-tutorial/

[10] https://www.arduino.cc/en/Tutorial/HelloWorld

[11] https://www.researchgate.net/publication/276512934_Online_Road_Traffic_Accident_Monitoring_System_for_Nigeria

[12] https://www.ijitee.org/wp-content/uploads/papers/v8i4s2/D1S0048028419.pdf

[13] https://circuitdigest.com/microcontroller-projects/arduino-based-accident-alert-system-using-gps-gsm-accelerometer

[14] https://electronicsforu.com/electronics-projects/hardware-diy/gsm-gps-based-vehicle-tracking-system

[15] https://www.ijrte.org/wp-content/uploads/papers/v7i6s3/F1035376S19.pdf

[16] http://www.learningaboutelectronics.com/Articles/MQ-7-carbon-monoxide-sensor-circuit-with-arduino.php

[17] http://dspace.daffodilvarsity.edu.bd:8080/bitstream/handle/123456789/1381/P04799.pdf?sequence=1

[18] http://wiredspace.wits.ac.za/jspui/bitstream/10539/20113/2/797945%20Syed%20Mohsi

APPENDIX

// Libraries – Arduino

```
#include  <Arduino.h>
#include  <TinyGPS.h>
#include  <LiquidCrystal.h>
#include  <SoftwareSerial.h>
#include  <TimerOne.h>
#include  <AVR/Sleep.h>
//Display pinout
LiquidCrystal Display(8,9,10,11,12,13);
SoftwareSerial GPS(5,6);
TinyGPS gps;
// Emergency Number
#define PhoneNumber        "1687362654"


#define intervalue        1000
#define MQ7_Sensor        0.02f
#define fire_value        6.0
#define correct           1
#define Fack              0
#define Display_Scrl      3
#define Display_dot       '.'
#define Display_spach     ' '
```

```
#define MSG_delay_MSG      1
#define MSG_Phone_Number      2
#define MSG_CALL_MSG     3
#define MSG_RCV_MSG      4
#define LINE_FEED       0x0A
#define mq3_pin       A4


typedef unsigned char int2a;
typedef unsigned long int3u;


unsigned char phonenum1[15], sbuf[100];
const char *SMSwrite[]        = {"High CO value  @", "Your Vehicle Got Accident  @", "Your
Vehicle is Located  @","Women Harasment  @", " SMS By: Diu Helpline"};
const char *googlemaplink     = " http://maps.google.com/maps?q=";


//Sensor pinout
const int MQ7Pin          = A0;
const int BuzzerPin        = A1;
const int trigPin         = A2;
const int echoPin         = A3;
const byte interruptPin     = 2;
const int  PushSwitch      = 7;




int Push = 0;
long duration;
int distancesoner;
int saveDistance;
```

```c
struct {
  unsigned char DisplyCofire    : 1;
  unsigned char ClrDisply       : 1;
  unsigned char Accident        : 1;
  unsigned char Messeg          : 1;
  unsigned char gasvalue        : 1;
  } Flags;


#define SoundOn()        digitalWrite(BuzzerPin, HIGH)
#define SoundOff()       digitalWrite(BuzzerPin, LOW)
// Void Loop
void DisplyTitle          (void);
void Displycarbonvalue       (void);
void sound               (void);
void TaskCarbonMonitor       (void);
void TaskAccident          (void);
void AccidentProcces        (void);
void TaskMesseg           (void);
void GSMprocces            (void);
void SMSSend        (const char *phonenum1, const char *Messeg);
void GPSloction       (char *Laat, char *Loon);
void floot          (double m, char *ress, int afterpoinnt);
int intToStart        (int y, char strte[], int b);
void reverlenn         (char *strte, int lenn);
void DisplayInit        (void);
void CarbonSensInit       (void);
int3u  ReadCarbon        (void);
void TimerOff          (void);
void pushbutton         (void);
```

```
void ultrasonic          (void);
void mq3sensor           (void);


void setup() {
 Serial.begin(9600);
 GPS.begin(9600);
 Display.begin(16,2);
 pinMode(BuzzerPin, OUTPUT);
 pinMode(trigPin, OUTPUT);
 pinMode(echoPin, INPUT);
 pinMode(interruptPin, INPUT_PULLUP);
 pinMode(PushSwitch, INPUT);
 pinMode(mq3_pin, INPUT);
 attachInterrupt(digitalPinToInterrupt(interruptPin), TaskAccident, RISING);
 Timer1.initialize(100000);
 Timer1.attachInterrupt(TimerOff);
 DisplayInit();
 CarbonSensInit();
 GSMprocces();
 DisplyTitle();
 sleepo_enable();
 sleepo_cpu();
 sound();

}
void loop(void) {
 TaskCarbonMonitor();
 AccidentProcces();
 TaskMesseg();
 pushbutton();
```

```
  ultrasonic();

  mq3sensor();

}

// gasvalue detective function

void TaskCarbonMonitor(void) {

 if (Flags.gasvalue) {

   float fireco;

   fireco =  Readfireco() * MQ7_Sensor;

   Display.setCursor(9,0);

   Display.print(fireco,2);

   if (fireco > fire_value) {

    if (!Flags.DisplyCofire) {

      SoundOn();

      Display.setCursor(0, 1);

      Display.print("HIGH CO Content");

      SendLinkLoction(PhoneNumber, SMSwrite[0]);

      SoundOff();

      Flags.ClrDisply = Fack;

      Flags.DisplyCofire = correct;

     }

    } else

     if (!Flags.ClrDisply) {

      Flags.DisplyCofire = Fack;

      Flags.ClrDisply = correct;

      Display.setCursor(0, 1);

      Display.print("            ");

     }

 Flags.gasvalue= Fack;

 }

}
```

```
// Women Harassment function
void pushbutton (void){
  Push = digitalRead(PushSwitch);
  if (Push == HIGH) {
    SoundOn();
    Display.clear();
    Display.print("Women Harassment");
    SendLinkLoction(PhoneNumber, SMSwrite[3]);
    Display.setCursor(0,1);
    Displycarbonvalue();
    SoundOff();
    }
}
  // Accident Function
void AccidentProcces(void) {
  if (Flags.Accident) {
    Display.clear();
    Display.print("Accident Occured");
    SendLinkLoction(PhoneNumber, SMSwrite[1]);
    Display.setCursor(0,1);
    Display.print("RESET THE VEHICLE");
    Flags.Accident = Fack;
    setup_sleep_modedevice(SLEEP_PWR_off);
    clier();
    sleep_enable();
    sleep_cpu();
  }
}
void TaskMesseg(void) {
```

```
if (Flags.Messeg) {
  #ifdef DISP_Phone_masseg
    String Ph = phonenum1;
    String SMS = sbuf;
    Display.clear();
    Display.print(Ph);
    Display.setCursor(0,1);
    Display.print(SMS);
  #endif
  if (!strcmp(PhoneNumber, phonenum1)) {
    sound();
    SendLinkLoction(phonenum1, SMSwrite[2]);
  }
  Flags.Messeg = Fack;
  }
}
void DisplyTitle(void){
  Display.clear();
  Display.setCursor(0, 0);
  Display.print(" SMART VEHICLE");
  delay(500);
  Displaycarbonvalue();
}
void Displaycarbonvalue(void) {
  Display.setCursor(0,0);
  Display.print("CO Value:   ppm");
}
//Gsm function
void GSMprocces(void) {
  Serial.println("AT\r");
```

```
 delay(250);
 Serial.println("AT+CMGF=1\r");
 delay(250);
 Serial.println("AT+CNMI=2,2,2,0,0\r");
 delay(250);
}
void SendLinkLoction(const char *phonenum1, const char *GSMMassege) {
 char i, Laat[15], Loon[15], GSMMassege[150];
 GSMMassege[0] = '\0';
 strcat(GSMMassege,GSMMassege);
 strcat(GSMMassege, googlemaplink);
 #ifdef sampal
  strcat(GSMMassege,"23.684994");
  strcat(GSMMassege,",");
  strcat(GSMMassege,"90.356331");
 #else
  GPSloction(Laat,Loon);
  strcat(GSMMassege,Laat);
  strcat(GSMMassege,",");
  strcat(GSMMassege,Loon);
 #endif
 strcat(GSMMassege, SMSwrite[4]);
 SMSSend(phonenum1, GSMMassege);
}
void SMSSend (const char *phonenum1, const char *Messeg){
 Serial.print("AT+CMGS=\"+880");
 Serial.print(phonenum1);
 Serial.println("\"\r");
 delay(1000);
 Serial.println(Messeg);
```

```
  delay(500);
  Serial.println((char)26);
}
//GPS Function
void  GPSloction(char *Laat, char *Loon) {
 char c;
 float Laatitude, Loongitude;
 unsigned long previousMillis = millis();
 while (millis() - previousMillis <= intervalue) {
 if (GPS.available()) {
 char c = GPS.read();
 if(gps.encode(c)) {
 gps.f_get_position(&Laatitude, &Loongitude);
 floot(Laatitude, Laat, 4);
 floot(Loongitude, Loon, 4);
 #ifdef GPS_display_loction
 Display.clear();
 Display.print(Laat);
 Display.setCursor(0,1);
 Display.print(Loon);
 #endif
 break;
 }
 }
 }
}
void sound(void)
{
 SoundOn();
 delay(150);
```

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```
  SoundOff();
}


void serialEvent()
{
  static int2a i;
  static int2a msgcnt,phcnt;
  static int2a state = MSG_delay_MSG;

  while (Serial.available()) {
  char UDR = (char)Serial.read();
  switch (state) {
  case MSG_delay_MSG:
  if (UDR == '\"') state = MSG_Phone_Number;
  break;
  case MSG_Phone_Number:
  if (phcnt++ < 13)
  phonenum1[phcnt-1] = UDR;
  else
  state = MSG_CALL_MSG;
  break;
  case MSG_CALL_MSG:
  if (UDR == LINE_FEED)
  state = MSG_RCV_MSG;
  break;
  case MSG_RCV_MSG:
  if ((sbuf[msgcnt++] = UDR) == LINE_FEED)
  {
  sbuf[msgcnt-2] = '\0';
```

```
  for (i = 0 ; i < 10; i++)

 phonenum1[i] = phonenum1[i+3];

 phonenum1[i] = '\0';

 state = MSG_delay_MSG;

 msgcnt = 0;

 phcnt = 0;

 Flags.Messeg = correct;

 }

 }

 }

}
void TaskAccident(void)

{

 static int2a i = 0;

 if (!Flags.Accident&& ++i >= 255) {

  i = 0;

 Flags.Accident = correct;

 SoundOn();

 }

}
void TimerOff(void)

{

 static int2a i = 0;

 if (!Flags.gasvalue&& ++i >= 10) {

  i = 0;

  Flags.gasvalue= correct;

 }

}
void CarbonSensInit(void)

{
```

```
  Display.setCursor(0,1);
  Display.print("Sensor Init:");
  while ((analogRead(MQ7Pin ) * MQ7_Sensor) > fire_value) ;
  sound();
  Display.print("OK");
}
int3u ReadCarbon(void)
{
  int2a i;
  int3u COValue = 0;
  for (i = 0; i < 32; i++)
    COValue += analogRead(MQ7Pin );
  return COValue >>= 5;
}
void DisplayInit(void)
{
  int2a i, j, adr;
  Display.print("  INITIALIZING");
  Display.setCursor(0,1);
  for ( j = 0; j < Display_Scrl; j++ ) {
   adr = 0xc0;
   for ( i = 0; i < 16; i++ ) {
     Display.setCursor(i,1);
     Display.print(Display_dot);
     if ( i < 8 ) delay(200+(50*i)); else delay(25);
     Display.setCursor(i,1);
     Display.print(Display_spach);
   }
  }
}
```

```c
void floot(double m, char *ress, int afterpoinnt)
{

  int ipart = (int)m;


  double fpart = m - (float)ipart;


  int i = intTooStart(ipart, ress, 0);


  if (afterpoinnt != 0)  {
    ress[i] = '.';
    fpart = fpart * pow(10, afterpoinnt);
    intTooStart((int)fpart, ress + i + 1, afterpoinnt);
  }
}


int intTooStart(int y, char strte[], int b)
{
  int i = 0;
  while (y) {
    strte[i++] = (y%10) + '0';
    y = y/10;
  }
  while (i < b)
  strte[i++] = '0';


  reverlenn(strte, i);
  strte[i] = '\0';
  return i;
```

```
}
void reverlenn(char *strte, int lenn){
 int i=0, j=lenn-1, tamp;
 while (i<j) {
  tamp = strte[i];
  strte[i] = strte[j];
  strte[j] = tamp;
  i++; j--;
 }
}
//Human detective Functions
void ultrasonic(void)
{
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);

distancesoner= duration*0.034/2;

saveDistance = distancesoner;
if (saveDistance <= 5){
   SoundOn();
   Display.clear();
   Display.setCursor(1,2);
   Display.print("Human detective");
   delay(500);
```

```
    SoundOn();

    Display.clear();

    Displycarbonvalue();

    SoundOff();


}
}
// Alcohol Detect Function
void mq3sensor (void)
{
  float alcholValue=0;
  for(int i=0;i<10;i++)
    alcholValue+= analogRead(mq3_pin);
    delay(10);
    float v= (alcholValue/10) * (5.0/1024.0);
    float MGL= 0.67 * v;


    if(MGL > 2.2){
     SoundOn();
     Display.clear();
    Display.setCursor(1,2);
    Display.print("alchol detect");
    delay(500);
    SoundOn();
    Display.clear();
    Displycarbonvalue();
    SoundOff();
    }
}
```

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