# ACCIDENT PREVENTION AND REPORTING SYSTEM USING GLOBAL POSITIONING SYSTEM

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## ABSTRACT

This device offers a special way to prevent drunk drivers. The cars equipped with this technology have an inbuilt alcohol sensor. When the driver starts the car, the sensors immediately transmit a signal to the buzzer, GSM, and LCD when they detect the presence of alcohol in his breath. In this setup, the microcontroller receives sensor outputs for comparison. The vehicle won't start, and the buzzer will sound.In order for an ambulance or the worried relatives to receive rapid assistance, accidents must be avoided and the site of accidents must be reported to coded phone numbers. The vehicle's position is communicated by SMS using GSM technology and is expressed as latitude and longitude coordinates.

## INTRODUCTION

Vehicle tracking system main aim is to give security to all vehicles. Accident alert system main aim is to rescuing people in accidents [1]. This is improved security systems for vehicles. The latest like GPS are highly useful now a days, this system enables the owner to observe and track his vehicle [2]. This new technology, popularly called vehicle Tracking Systems which created many wonders is fitted on to the vehicle in such that it is not visible to anyone security of the vehicle[3]. This who is inside or outside of the vehicle. Thus, it is used as a covert unit which continuously any in the interrupt to the system, sends the location data to the monitoring unit[4]. When the vehicle is stolen, the location data from tracking system can be used to find the location and can be informed to police for further action. Some Vehicle tracking System can even detect unauthorized movements of the vehicle and then alert the owner[5]. This gives an edge over their pieces of technology for the same purpose. This accident alert system in it detects the accident and the location of the accident occurred and sends GPS coordinates to the specified mobile, computer etc[6].

### Features of Vehicle Tracking and accident alert System

This tracking system can store the whole data where the vehicle had gone, where did it stop, how much time it take at every stop and can create whole data analysis. It is also used in buses and trains, to estimate how far are they, how much time it takes for them to come to a particular stop. These systems are used to data capture, data storage, data analysis and finally data transfer.

Accident alert system includes a sensor, sound meter, GPS and GSM module. The sensors will detect the accident& sound meters will trigger an alarm. The GPS will track the location coordinates and the GSM will send an alert notification to the nearby hospital & police authorities. Thus, this system will send an instant alert to the nearby rescue team & hospital facility to notify them of the accident occurred for them to take immediate actions.
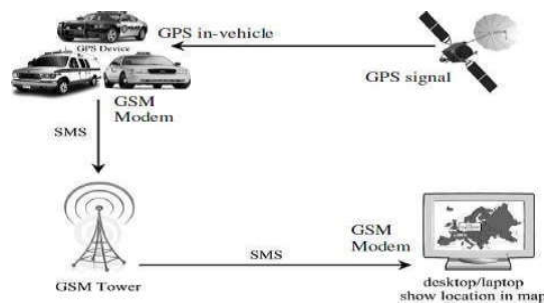
Figure 1 Overview of the system

## 1.BLOCK DIAGRAM

This is the block diagram of vehicle tracking and accident alert system. This is how the overall view of the vehicle tracking and accident alert system circuit. The blocks connected here are LCD display, GPS, GSM, DC motor, Relay, Alcohol sensor.
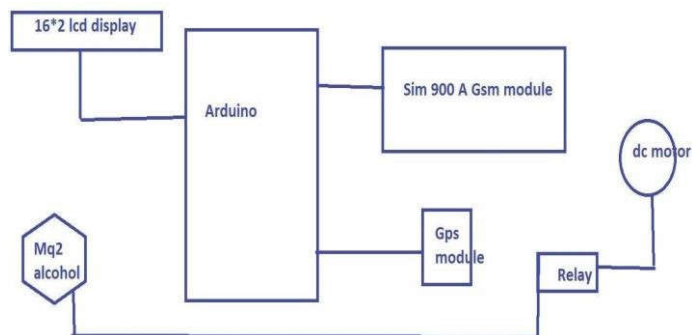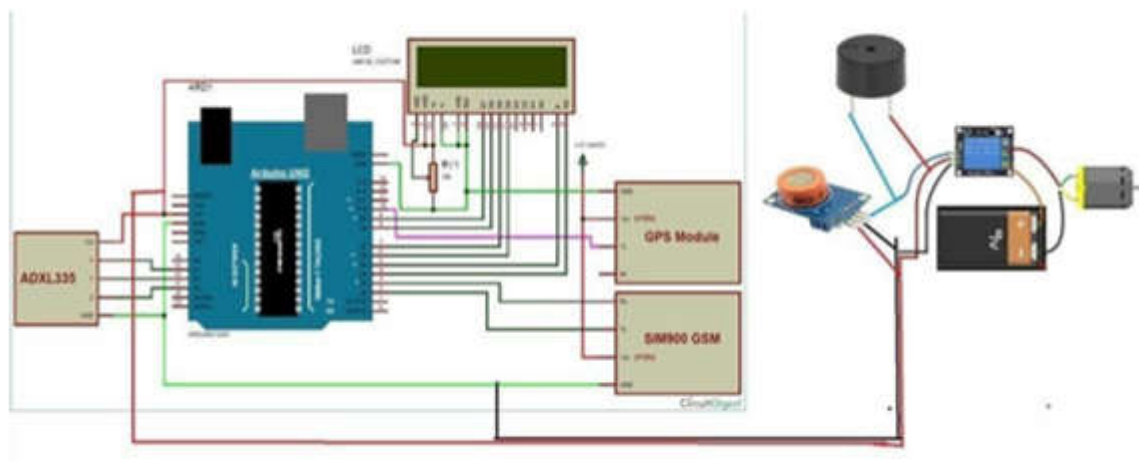


Figure 2 Block diagram
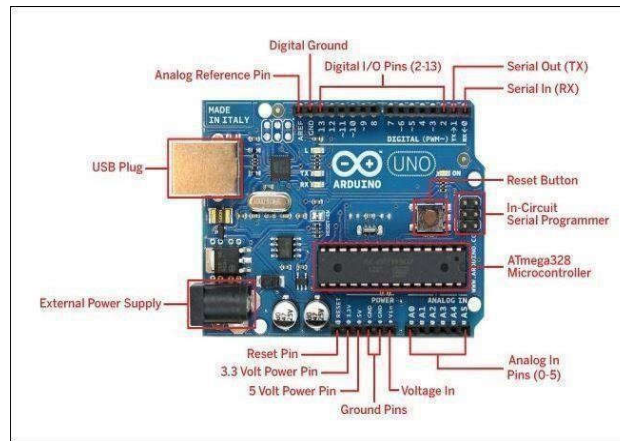
## 2.CIRCUIT DIAGRAM



## 3. ARDUINO UNO:

Figure 4 Arduino UNO

Arduino which is an open-source hardware and software platform used for building electronic projects. The Arduino board is designed around an 8-bit or 32-bit microcontroller, which can be programmed using the Arduino software.

## 4. GPS MODULE:

GPS abbreviates global positioning system and this is used to detect the latitude and longitude of the particular position and it also shows the exact time. It detects these values anywhere on the earth. In our project it plays main role and it is the main source of the latitude and longitude of the vehicle to know the accident occurred location, or even for theft tracking of the vehicle. This gadget gets the coordinates from the satellite for each and every second. This device is the main component of vehicle tracking project.


Figure 5 GPS Module

## 5. GSM MODULE:

GSM abbreviates global system for mobile communication, this is a second generation (2G) mobile network. This is widely used in all over the world for mobile communication. This GSM device consists of sim slot in which a sim can be inserted which has a unique number, this unique number is used for contact. This GSM device consists a unique number called Imai number and this is different foreach and every hardware kit. In our project the device is used for transmitting data. The data from GPS is transmitted to given mobile through this GSM itself.
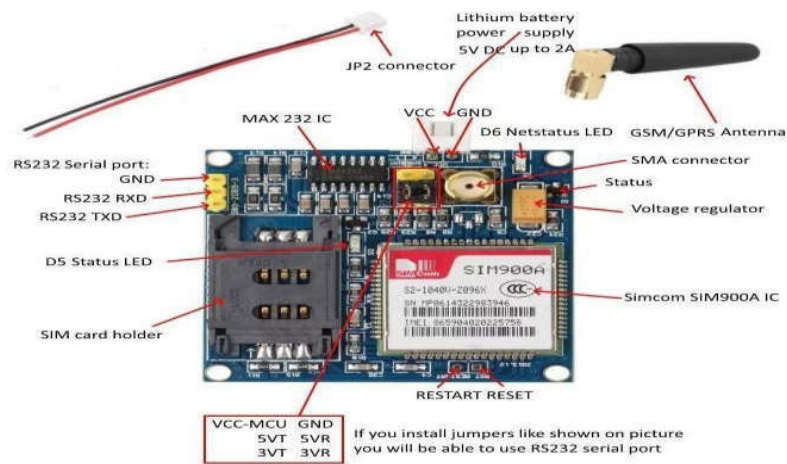
Figure 6 GSM module

## 6.TILT SENSOR

A tilt sensor, also known as a tilt switch or inclinometer, is a device that measures the angle or orientation of an object with respect to the force of gravity.
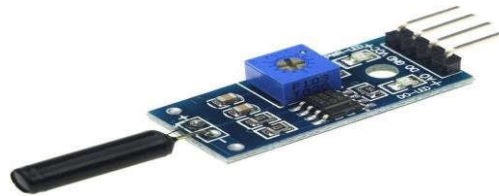


Figure 7 Tilt sensor

## 7. Alcohol sensor

The alcohol sensor is technically referred to as a MQ3 sensor.An Alcohol sensor is a device that is used to detect the presence of alcohol in a person's breath or blood.
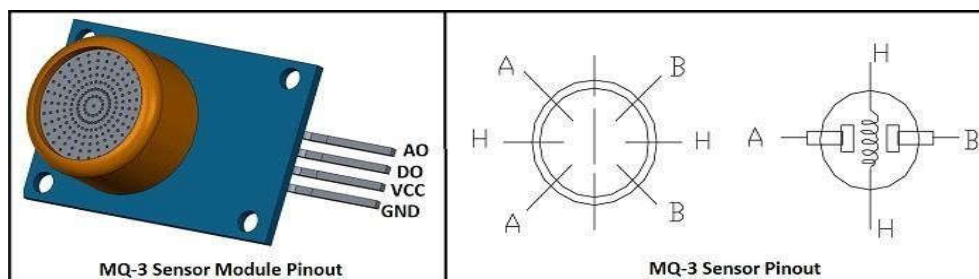


Figure 8 Alcohol sensor

## 8. LCD
It is the display device which is of 16x2 size and it has yellow background light. This LCD is connected to microcontroller.
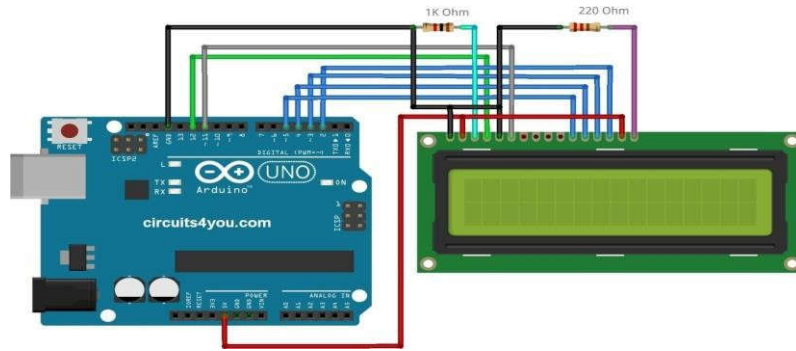
Figure 11 Interface diagram of LCD display with Arduino

## 9. RELAY

It is a Electromagnetic switch which consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals.



Figure 12 Relay

## 10. DC MOTOR

Which is converts electrical energy into Electrical Energy.



Figure 13 DC Motor

## 11. POTENTIOMETER

A potentiometer is a type of position sensor. They are used to measure displacement in any direction. Linear potentiometers linearly measure displacement and rotary potentiometers measure rotational displacement.



Figure 14 Potentiometer

## 12. BUZZER

a type of electronic device that's used to produce a tone, alarm or sound. Here we are using Piezo Buzzer.

## 13. BATTERY



The 9v battery is an electric battery that supplies a nominal voltage of 9volts.Here we are using this battery for giving supply to the DC Motor.

## RESULTS AND DISCUSSION

The code has been developed using embedded C to send the alert messages through arduino uno. The circuit has been connected as shown in figure.
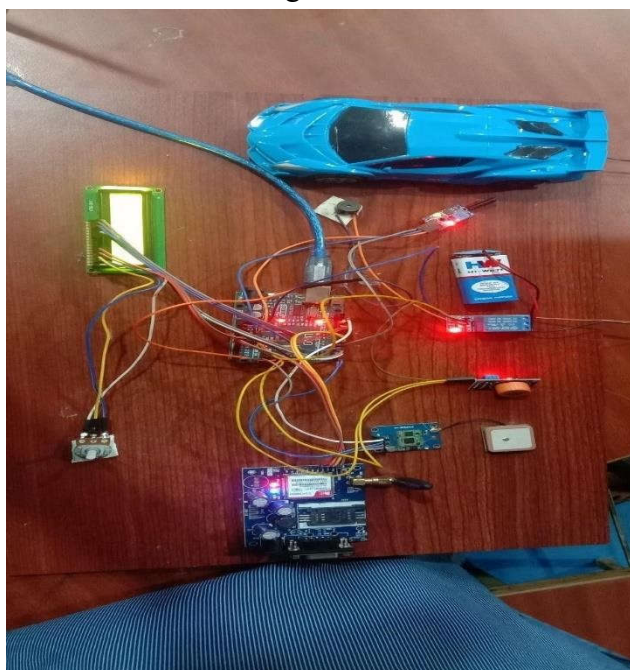


## RESULTS FOR ALCOHOL SENSOR:

When a person consume alcohol and try to drive the vehicle then the alcohol sensor detects it and the buzzer starts sounding and the vehicle will not allow him to drive.

FIGURE 18 Wheels under normal operating
conditions

FIGURE 19   Wheels when alcohol  detected

**ACCIDENT REPORTING SYSTEM**

If accident takes place then the tilt sensor detects it and it's output is send to Arduino as input and the Arduino output is sends to GPS and GSM .The GPS is used to track the latitude and longitude of the accident spot. GSM  is used to send the message to the authorized mobile number.
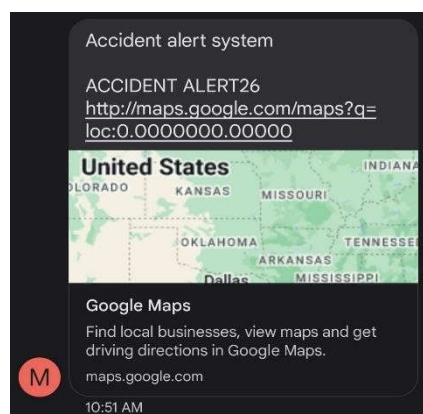




Figure 20 Output Of Lcd Display



Figure 21 Message Format

**CONCLUSION**

Vehicle tracking system makes better fleet management and which in turn brings Large  profits Better scheduling route planning can enable you handle larger jobs loads with in a particular time. Vehicle tracking both in case of personal as well as business purpose improves safety and

security, communication medium, performance monitoring and increases productivity. So in the coming year, it is going to play a major role in our day-to- day living.

Main motto of the accident alert system project is to decrease the chances of losing life in such accident which we can't stop from occurring. Whenever accident is alerted the paramedical reached to the particular location to increase the chances of life. This device in mention is much more useful for the accidents occurred in deserted places and midnights. This vehicle tracking and accident alert feature plays much more important role in day today life in future.

## FUTURESCOPE

This system can be interfaced with vehicle air bag system that prevent vehicle occupants from striking interior object such as the steering wheel or window.

This can also be developed by interconnecting a camera to the controller module that take place the photograph of the accident spot that makes the tracking easier.

## REFERENCE

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