# Automatic Engine Locking for Drunken Drivers

Introduction

Nowadays, drink and drive is very common. Every hour 40 people who are under the age of 25 die in road accidents. As per the world health organization an average of 12000 people die every year and an average of nine lakh people get arrested in drinking and driving accidents

So to avoid all these accidents a prototype was developed for alcohol detection and engine locking system by using Arduino uno microcontroller interface with an alcohol sensor along with an LCD screen and a DC motor to demonstrate the concept.

The system detects the alcohol level present in the air inside the vehicle , it will continuously monitor the alcohol concentration. When the alcohol level reaches the peak value then it locks the engine immediately and Buzzer will start ringing and display the message.
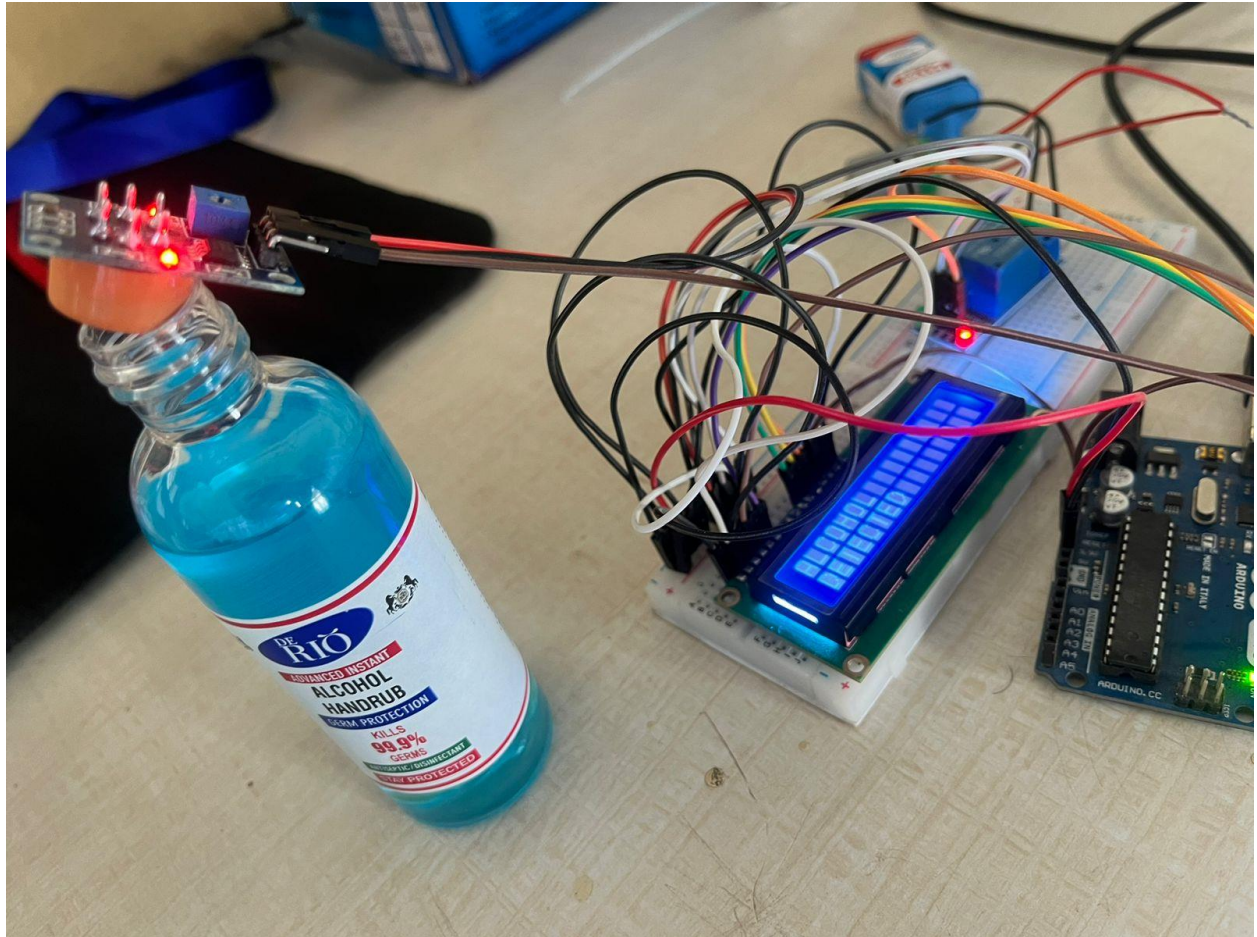
Circuit Diagram
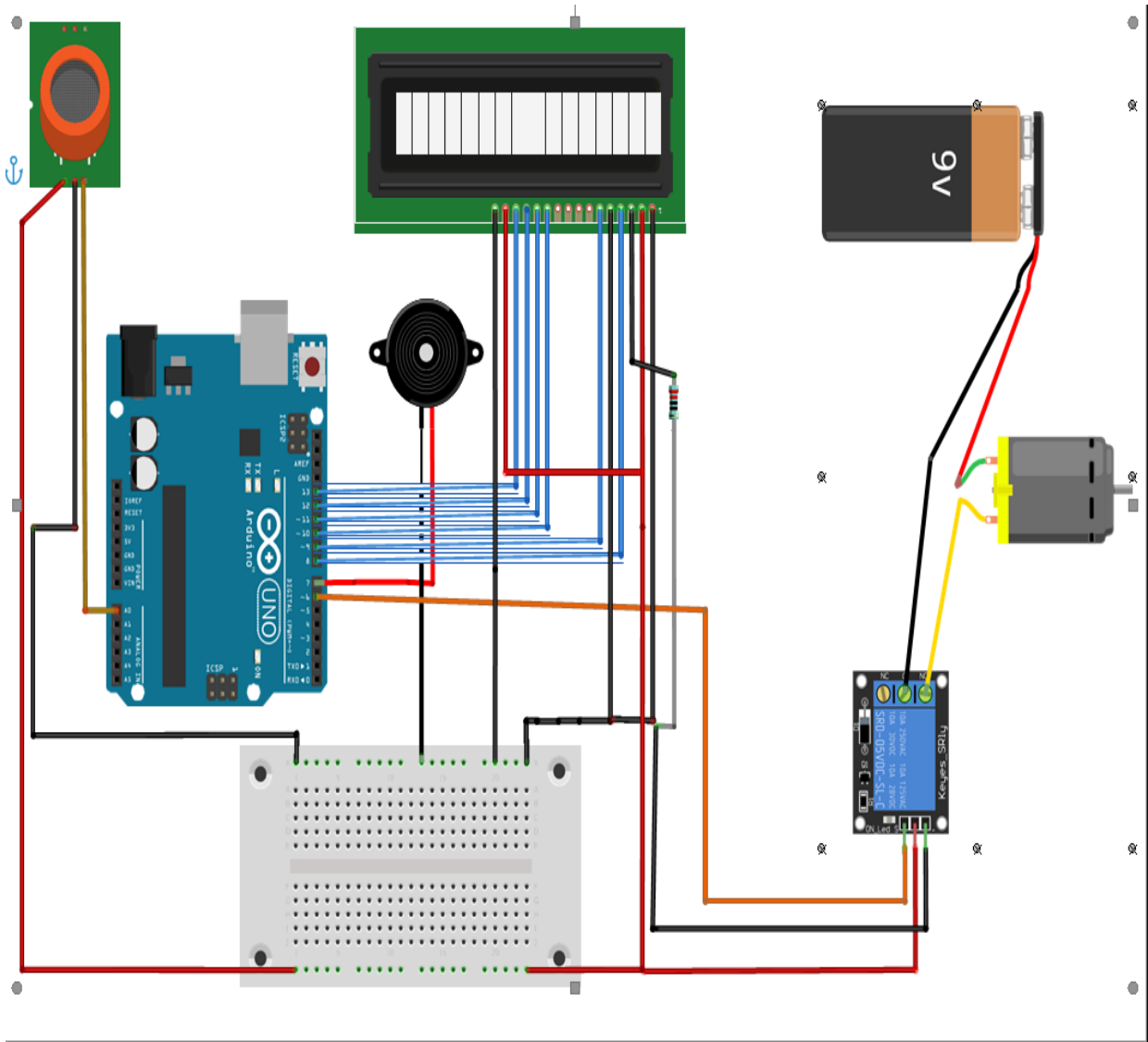
Complete Circuit
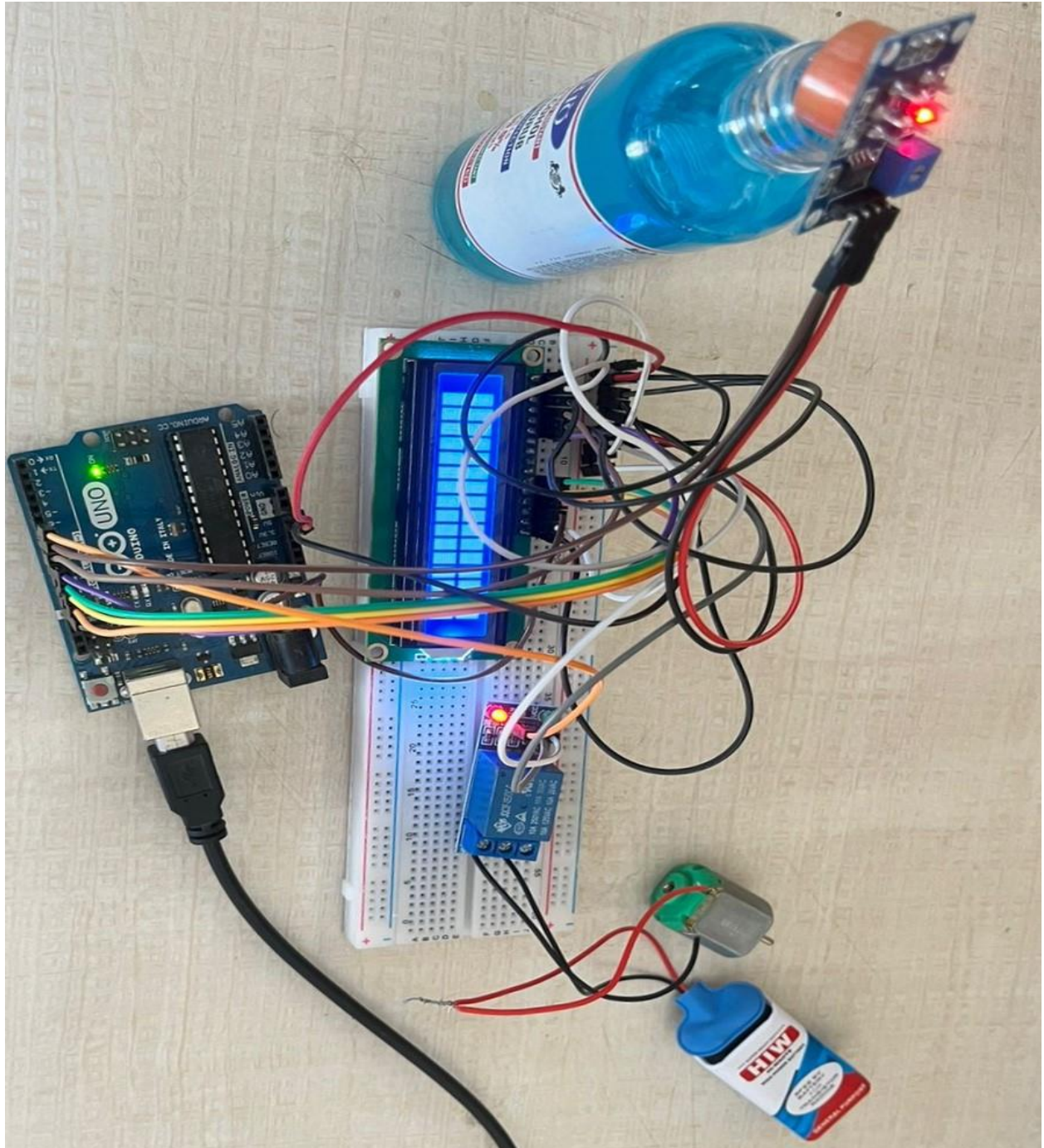
When alcohol is detected by Sensor
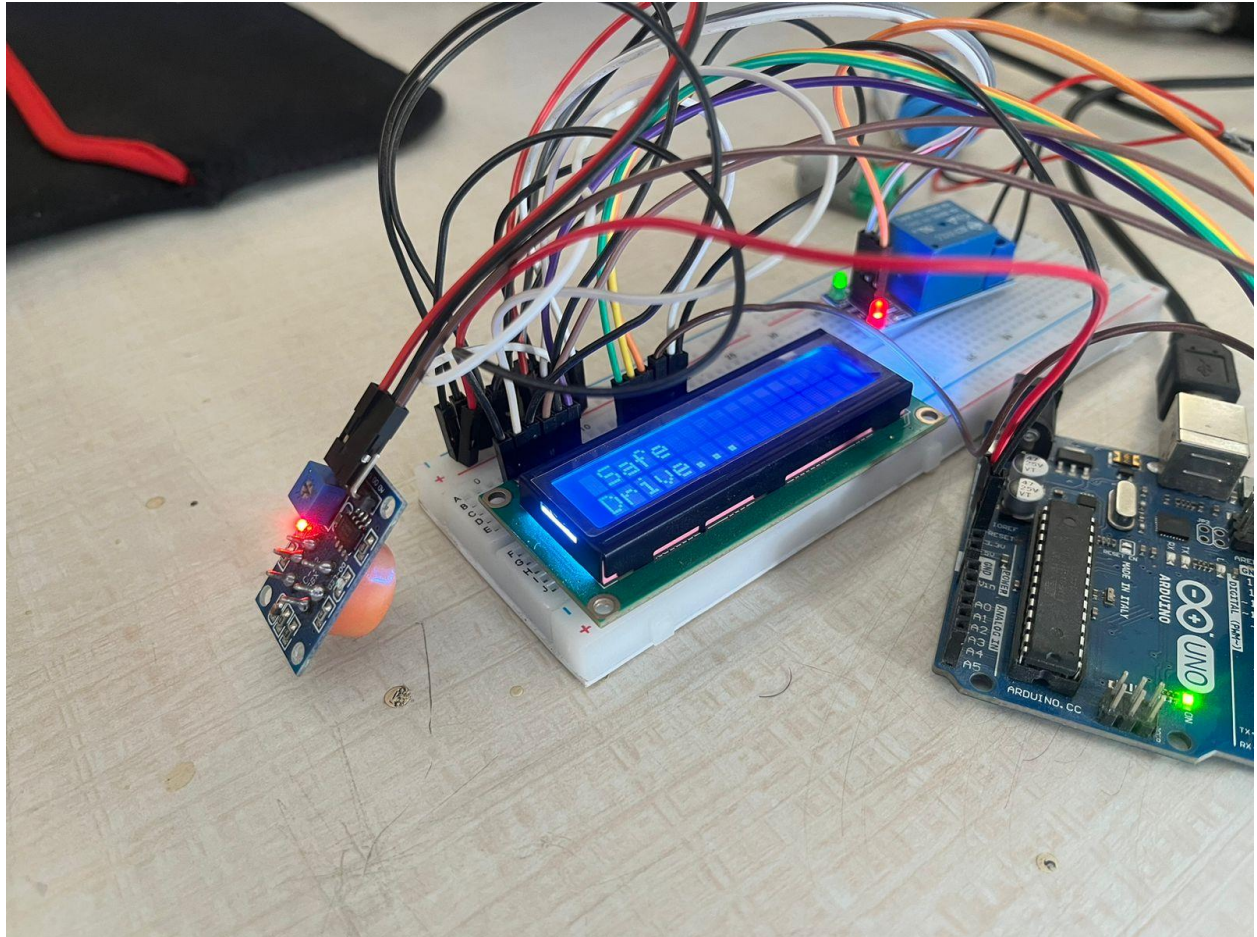

Display message

In the depicted scenario, the detection of alcohol content within a vehicle is seamlessly facilitated through the utilization of an MQ3 sensor, a quintessential component renowned for its accuracy in alcohol detection. Harnessing the power of modern technology, a microcontroller, specifically an Arduino Uno, swiftly processes the sensor data, triggering an immediate response mechanism.

Upon detecting an unsafe level of alcohol, the microcontroller initiates a series of preprogrammed actions aimed at safeguarding both the driver and potential road users. First and foremost, a distinctive and attention-grabbing alarm system, embodied by a buzzer is activated, ensuring that the driver is promptly made aware of their impaired state. Simultaneously, a dedicated LCD display dynamically illuminates with a clear and concise message, unequivocally stating that the driver is unfit to operate the vehicle and urgently requires assistance.

Thise intervention extends beyond mere notification, it extends to prevention To deter any further attempts at driving under the influence of alcohol a sophisticated locking mechanism is invoked, effectively immobilizing the vehicle until appropriate action is taken. This strategic immobilization not only protects the driver from potential harm but also serves as a primary measure against endangering other events or person.

When alcohol is not detected by Sensor

Display Message

When alcohol is not detected by the sensor the sensor will act as normal and there will be not any immediate action will act and the driver is fit for its journey and have no alcohol consumption.

In the depicted scenario, the intricate interplay between cutting-edge technology and responsible vehicular management is epitomized through the utilization of an MQ3 sensor within the vehicle. Renowned for its precision in alcohol detection, the MQ3 sensor stands as a stalwart guardian against the perils of drunk driving, its functionality seamlessly integrated into the vehicle's operational framework.

When the sensor diligently carries out its task and detects the absence of alcohol within the vehicle, it operates with customary efficiency, exhibiting no deviations from its normative behavior. In such instances, the sensor dutifully continues its surveillance without sounding any alarm or invoking immediate action. This uneventful response signifies a reassuring confirmation that the driver is indeed fit for their journey, having abstained from any alcohol consumption that might compromise their ability to operate the vehicle safely.

This absence of an alarm or intervention serves as a tacit endorsement of the driver's responsible behavior and adherence to traffic safety regulations. It affirms their commitment to upholding road safety standards and underscores their conscientious approach towards driving. With the sensor functioning within expected parameters and no cause for concern detected, the driver is granted the assurance and freedom to proceed on their journey unimpeded.

Source code

```cpp
#include <LiquidCrystal.h>
LiquidCrystal lcd(8, 9, 10, 11, 12, 13);//RS,EN,D4,D5,D6,D7
#define gas 7
#define buzzer 8
#define relay 6
int alc=1;
void setup()
{
  Serial.begin(9600);     // initialize serial communications at 9600 bps:
  pinMode(gas,INPUT);
  pinMode(relay,OUTPUT);
  pinMode(buzzer,OUTPUT);
  digitalWrite(relay,HIGH);
  digitalWrite(buzzer,LOW);
  lcd.begin(16, 2);//initializing LCD
  lcd.setCursor(0,0);
  lcd.print("Alcohol");
  lcd.setCursor(0,1);
  lcd.print("Detection");
  delay(3000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Engine");
  lcd.setCursor(7,0);
  lcd.print("Start");
  delay(1000);
}
void loop()
{
```

```
alc=digitalRead(gas);
if(alc==HIGH)
{
 digitalWrite(buzzer,LOW);
  lcd.clear();
  digitalWrite(relay,LOW);
  lcd.setCursor(0,0);
  lcd.print(" Safe ");
  lcd.setCursor(0,1);
  lcd.print("Drive... ");
  delay(2000);
  lcd.clear();
  digitalWrite(buzzer,LOW);
}
else
{
 digitalWrite(relay,HIGH);
 digitalWrite(buzzer,HIGH);
 lcd.setCursor(0,0);
 lcd.print("Kindly Maintain Distance , The Driver is Drunk");
 lcd.setCursor(0,1);
 lcd.print("Vehicle will Stop Soon");
 delay(5000);
 lcd.clear();
 lcd.setCursor(0,0);
  lcd.print(" Press");
  lcd.setCursor(0,1);
  lcd.print("key...");
}
}
```

Advantages

1. It can accurately measure a driver's BAC level and prevent them from operating the vehicle if their level is above the legal limit.

2. Drink and drive can be avoided.

3. This reduces the risk of accidents caused by impaired driving.

4. The system can help to deter drunk driving by providing a visual reminder of the consequences of drinking and driving.

The development of alcohol detectors and engine locking systems is an ongoing process, and there are several potential future developments that could enhance their effectiveness and functionality. Here are some of the possibilities:

SMS Or CALL By using the GSM Module(SIM 808) : When a driver is drunk the GSM module sends a sms or call on some priority numbers for emergency situation and the person receiving message will be able to know the location of the vehicle.

Real-time monitoring and reporting: Advanced alcohol detectors and engine locking systems maybe capable of transmitting data in real-time to law enforcement agencies or other relevant parties ,enabling immediate action to be taken if found to be impaired

Improved accuracy: New sensor technologies maybe developed that can detect alcohol at lower levels or more accurately differentiate between alcohol and other substances, such as mouth freshner, car perfume or hand sanitizer.