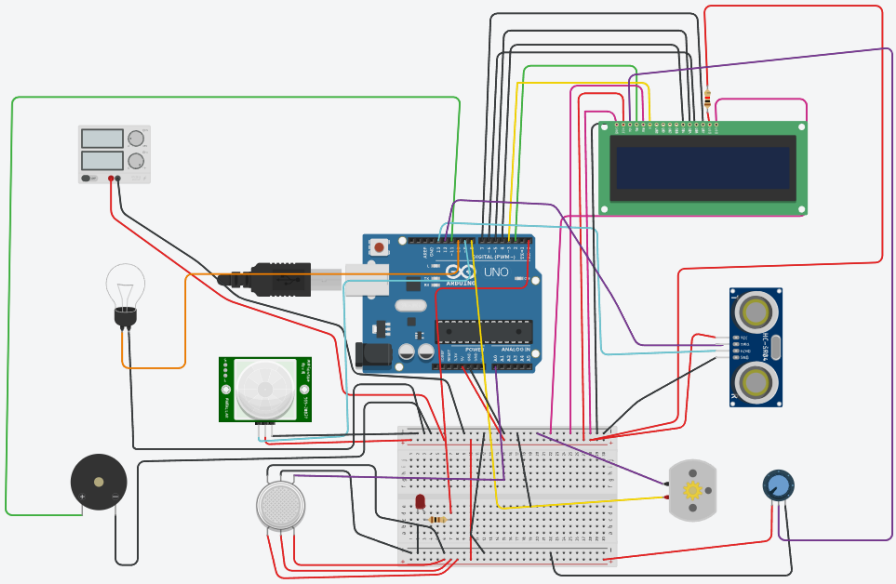
UNO

```
#include<LiquidCrystal.h>
LiquidCrystal lcd(2,3,4,5,6,7);
int trigPin = 12;
int echoPin = 13;
float travelTime;
float level;
float speed;//miles per hour
float readStatusofContainer(int trigPin,int echoPin)
 {
 //sending ping
 digitalWrite(trigPin,LOW);
 delayMicroseconds(100);
 digitalWrite(trigPin,HIGH);
 delayMicroseconds(10);
 digitalWrite(trigPin,LOW);
 //returns round trip time of container status
 return pulseIn(echoPin,HIGH);
}
// *** DC Motor ***
int motorPin = 8;
// *** PIR Sensor ***
int pirPin = 9;
// *** Light ***
int lightPin = 10;
// *** Gas Sensor ***
int gasPin = A0;
int threshold = 400;
// *** Piezo ***
int buzzPin = 11;
```

```
// *** LED ***
int ledPin = 0;
void setup()
{
 Serial.begin(9600);

// *** LCD Display ***
 lcd.begin(16,2);

// *** Ultrasonic Sensor ***
 pinMode(trigPin,OUTPUT);
 pinMode(echoPin,INPUT);

// *** DC Motor ***
 pinMode(motorPin,OUTPUT);

// *** PIR Sensor ***
 pinMode(pirPin,INPUT);
// *** Light ***
 pinMode(lightPin,OUTPUT);

// *** Gas Sensor ***
 pinMode(gasPin,INPUT);

// *** Piezo ***
 pinMode(buzzPin, OUTPUT);

// *** LED ***
 pinMode(ledPin,OUTPUT);
```

```
}
void loop()
{
 // *** Trash can monitoring ***
 // Trash can height 5 inches
 travelTime = readStatusofContainer(trigPin,echoPin);//microseconds
 travelTime = travelTime/1000000;//seconds
 travelTime = travelTime/3600;//hours
 speed = 60.0;//miles per hour(86.4 for 5 inches)
 level = speed * travelTime;//miles
 level = level/2;//because travelTime is round trip time
 level = level * 63360;//inch
 if(level <= 4.5)
 {
 //dispaly status
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Trash Level:");
 lcd.setCursor(0,1);
 lcd.print(level);
 lcd.print(" inches");
 delay(100);
 }
 else
 {
 //dispaly status
 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("Trash is full");
```

```
lcd.setCursor(0,1);
lcd.print(level);
lcd.print(" inches away");
delay(100);
}

// *** Water level monitoring ***
// Water tank height 20 inches
travelTime = readStatusofContainer(trigPin,echoPin);//microseconds
travelTime = travelTime/1000000;//seconds
travelTime = travelTime/3600;//hours
speed = 240.1;//miles per hour(345.3 for 20 inches)
level = speed * travelTime;//miles
level = level/2;//because travelTime is round trip time
level = level * 63360;//inch
if(level <= 19.0)
{
//dispaly status and Turn on motor
digitalWrite(motorPin,HIGH);
lcd.clear();
lcd.setCursor(0,0);
lcd.print("Level: Motor");
lcd.setCursor(0,1);
lcd.print(level);
lcd.print(" in On");
delay(100);
}
else
{
```

```
//dispaly status and Turn off motor
digitalWrite(motorPin,0);
lcd.clear();
lcd.setCursor(0,0);
lcd.print("Level: Motor");
lcd.setCursor(0,1);
lcd.print(level);
lcd.print(" in Off");
delay(100);
}
 // *** Motion Detection
if(digitalRead(pirPin)==HIGH)
digitalWrite(lightPin, HIGH);
else
digitalWrite(lightPin, LOW);
delay(100);

// *** Detects flammable gases ***
if(analogRead(gasPin) >= threshold)
{
digitalWrite(ledPin,HIGH);
digitalWrite(buzzPin,HIGH);
}
else
{
digitalWrite(ledPin,LOW);
digitalWrite(buzzPin,LOW);
}
delay(100);
```

}