

PROBLEM STATEMENT - Automatic switching of street light considering the intensity of sunlight , brightness control of lights on detecting movement and detection of smoke in case of fire.

OBJECTIVE- Smart street light system finds solutions to the major problems faced due to the outdated public lighting.

Some of the problems are:

- Lamps are controlled manually and person forgets to off the lights on time by which the energy wastage took place.
- Every time it provides the same amount of brightness it result on high energy consumption when there is no need of it.
- If any fire take place around then there is no system who can warn the people around to be safe.

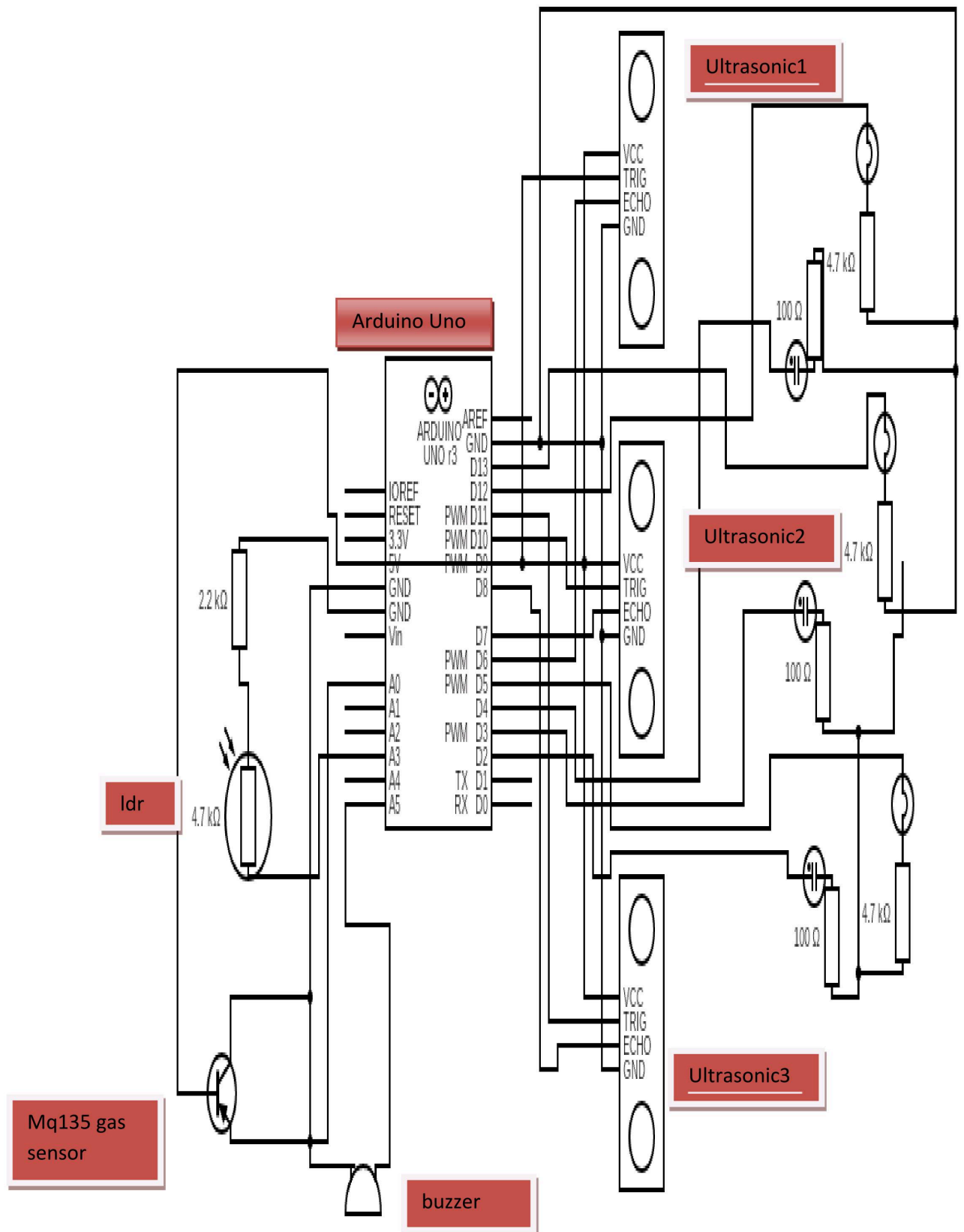
TOOLS USED -

- Arduino Uno.
- 3* Ultrasonic Sensor.
- Ldr.
- Mq 135 Gas Sensor.
- 3* Green Led (used for displaying dim light).
- 3* Blue Led (used for displaying bright light).
- 3*10 ohm resistor.
- 4* 2.2K ohm resistor.

- Jumper Wires.
- Breadboard.
- Power Supply.
- Data Cable for Arduino .

METHADODOLOGY FOLLOWED-

- The project contains Ldr which basically is used to detect the intensity of the light. It is used with the 2.2k ohm resistor and connected to the analog pins in the Arduino board. When the intensity of the light comes to the specific limit then the further operations work.
- When the light intensity is low or it is dark then all the dim lights (represented by green light in the project) will glow.
- When any of the moving object comes in range of the ultrasonic sensor the bright light of the current position of the object and the light just after that also will glow to improvise the quality of vision.
- When the object passed through it and no object is in range of the ultrasonic sensor then the bright light will switch off but the dim light will remain on until the intensity of Ldr becomes high or till the morning.
- When any fire take place around the road then the buzzer going to tone which can ensure safety .



CIRCUIT DIAGRAM

PROGRAM-

```
#define trigpin1 9
#define trigpin2 10
#define trigpin3 11
#define echopin1 6
#define echopin2 7
#define echopin3 8
#define led_white1 12
#define led_white2 13
#define led_white3 5

int light;

int buzzer=A5;

#define led_blue1 2
#define led_blue2 3
#define led_blue3 4

void setup() {
  Serial.begin(9600);

  pinMode(A0, INPUT);

  pinMode(buzzer, OUTPUT);

  pinMode(led_blue1,OUTPUT);
  pinMode(led_blue2,OUTPUT);
  pinMode(led_blue3,OUTPUT);

  pinMode(trigpin1,OUTPUT);

  pinMode(echopin1,INPUT);
```

```
pinMode(trigpin2,OUTPUT);
pinMode(echopin2,INPUT);
pinMode(trigpin3,OUTPUT);
pinMode(echopin3,INPUT);
pinMode(led_white1,OUTPUT);
pinMode(led_white2,OUTPUT);
pinMode(led_white3,OUTPUT);
}

void loop() {
light=analogRead(A3);

digitalWrite(led_white1,LOW);
digitalWrite(led_white2,LOW);
digitalWrite(led_white3,LOW);
if(light<50)
{
digitalWrite(led_blue1,HIGH);
digitalWrite(led_blue2,HIGH);
digitalWrite(led_blue3,HIGH);

long duration,distance,first_sensor,second_sensor,third_sensor;
while(1)
{
digitalWrite(trigpin1,LOW);

delayMicroseconds(2);

digitalWrite(trigpin1,HIGH);

delayMicroseconds(10);
```

```
digitalWrite(trigpin1,LOW);
duration=pulseIn(echopin1,HIGH);
distance=(duration/2)/29.1;
delay(100);
first_sensor=distance;
if( first_sensor<=10)
{digitalWrite(led_white1,HIGH);
digitalWrite(led_white2,HIGH);
delayMicroseconds(100000);}
else
break;}
digitalWrite(led_white1,LOW);
while(1)
{
delayMicroseconds(10);
digitalWrite(trigpin2,LOW);
delayMicroseconds(2);
digitalWrite(trigpin2,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin2,LOW);
duration=pulseIn(echopin2,HIGH);
distance=(duration/2)/29.1;
delay(100);
second_sensor=distance;
if(second_sensor<=10)
{
```

```
    digitalWrite(led_white2,HIGH);
digitalWrite(led_white3,HIGH);}
else
break;}

digitalWrite(led_white2,LOW);
while(1)
{
    delayMicroseconds(10);
    digitalWrite(trigpin3,LOW);
    delayMicroseconds(2);
    digitalWrite(trigpin3,HIGH);
    delayMicroseconds(10);
    digitalWrite(trigpin3,LOW);
    duration=pulseIn(echopin3,HIGH);
    distance=(duration/2)/29.1;
    delay(100);

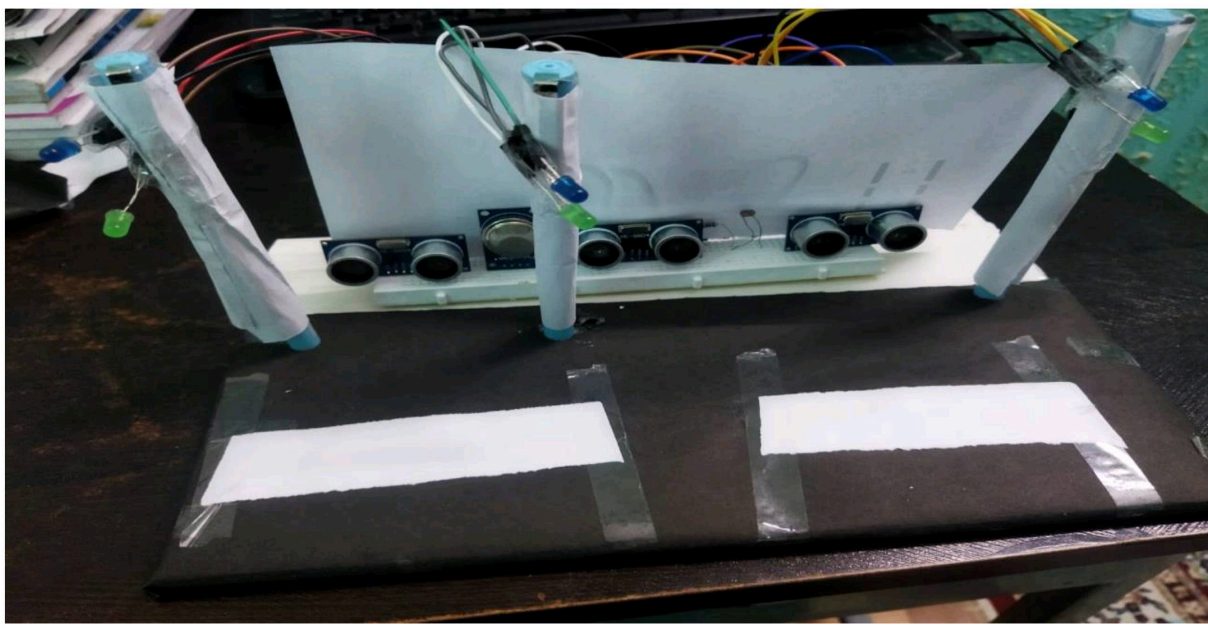
    third_sensor=distance;
    if(third_sensor<=10)
        digitalWrite(led_white3,HIGH);
    else
        break;
}

digitalWrite(led_white3,LOW);
digitalWrite(led_white1,LOW);
digitalWrite(led_white2,LOW);
}
```

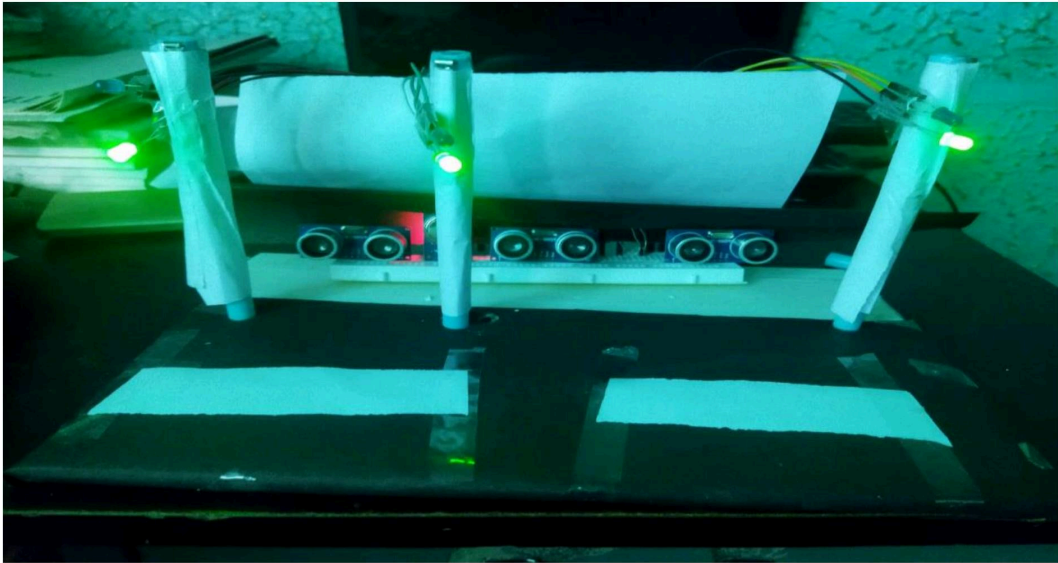


```
else  
  
{digitalWrite(led_blue1,LOW);  
  
digitalWrite(led_blue2,LOW);  
  
digitalWrite(led_blue3,LOW);  
  
}  
  
noTone(buzzer);  
  
int sensorValue = analogRead(A0);  
  
serial.println(sensorValue);  
  
if(sensorValue>300)  
  
    tone(buzzer,100);  
  
else  
  
    noTone(buzzer);  
  
delay(100);  
  
}
```

OUTPUT- When the ldr intensity is high or it is morning.



- When the intensity is low or at night but no object around.



- When any object is around.

