



**END SEMESTER ASSESSMENT (ESA)  
B.TECH. (CSE)  
IV SEMESTER**

**UE18CS256 – MICROPROCESSOR AND COMPUTER  
ARCHITECTURE LABORATORY**

**MINI PROJECT REPORT**

**ON**

**AIR QUALITY MONITORING SYSTEM**

**SUBMITTED BY**

**NAME**

**SRN**

**1) Anchal Sharma**

**PES1UG19CS059**

**2) Anisha Ghosh**

**PES1UG19CS067**

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

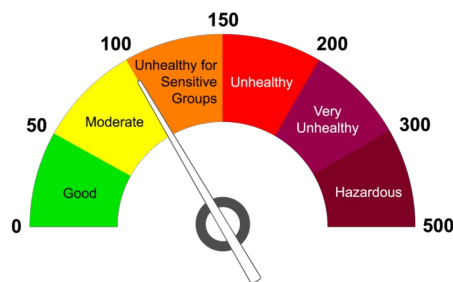
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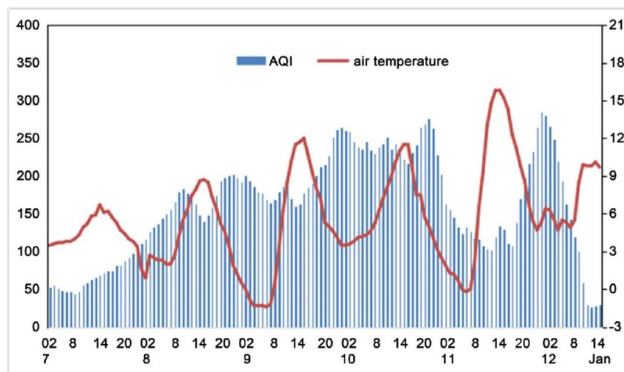
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## ABSTRACT OF THE PROJECT:

- The Earth and its environment are facing a serious threat by the increasing pollution of air. Air pollution can lead to poor air quality and increased temperatures..
- Air Quality Index or AQI is a measure of how air pollution affects one's health. In 2019, India was one of the top 5 countries with the worst average AQI in the World
- The first step to combating the problem is detecting the problem, we achieve this by developing an air quality monitoring system
- Our project aims to detect air pollution using AQI (in ppm). It also detects temperature which helps to determine a relationship between air quality and its effect on temperature.

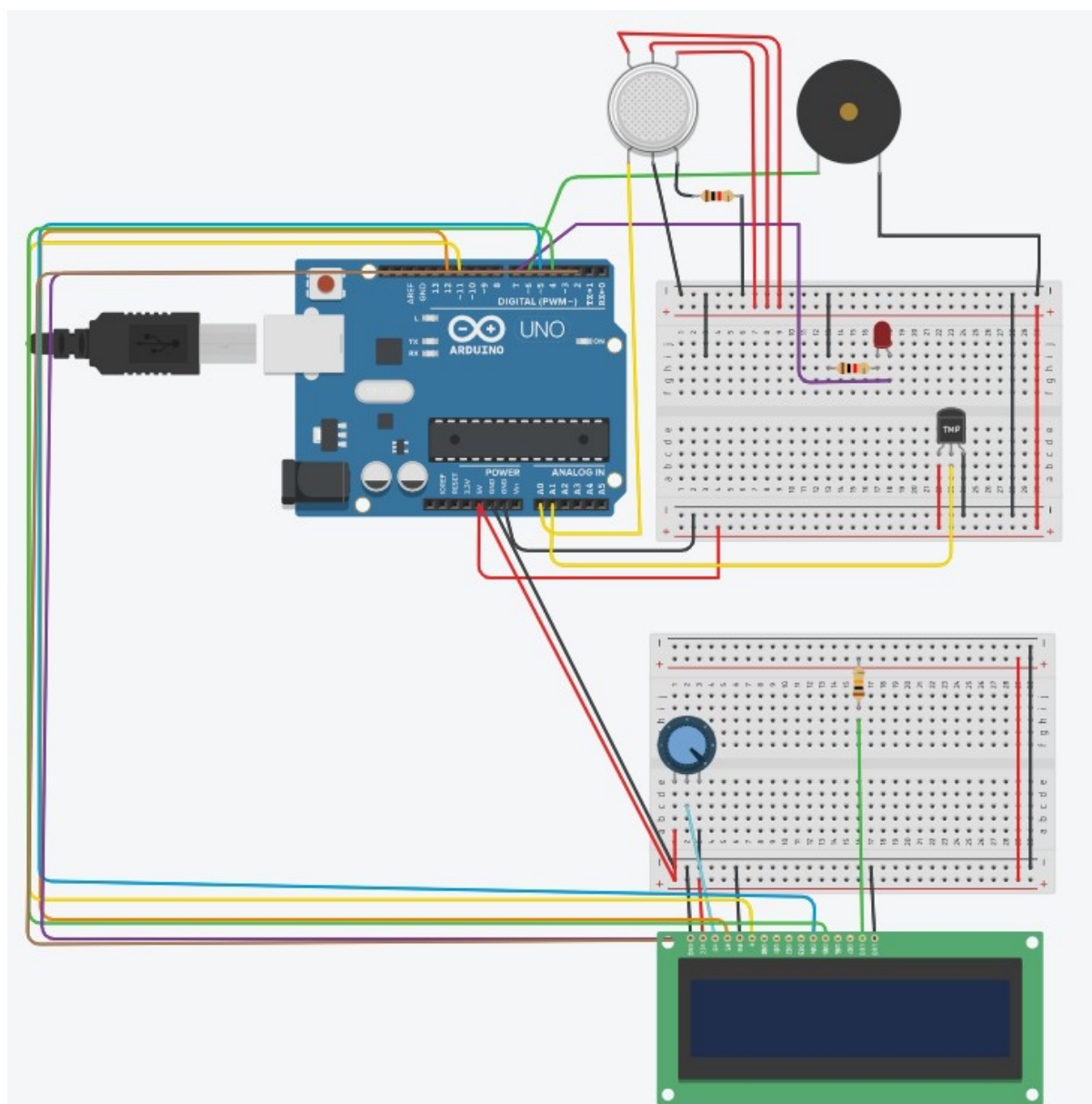


AQI Scale



Relationship between Temperature and AQI

## CIRCUIT DIAGRAM:



## ARDUINO CODE:

```
#include <LiquidCrystal.h>

const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

int led = 7;
int buzzer = 6;
int sensor = A0;
const int temperaturePin = A1;
int thre = 500 ;

void setup()
{
  lcd.print("  Welcome");
  delay(1000);
  lcd.setCursor(0,1);
  lcd.print("    To    ");
  delay(1000);
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("  AIR");
  delay(1000);
  lcd.setCursor(0,1);
  lcd.print("QUALITY MONITOR");
  delay(1000);
  lcd.clear();
  pinMode(led,OUTPUT );
  pinMode(buzzer,OUTPUT );
  pinMode(sensor,INPUT );
  pinMode(temperaturePin,INPUT );
}
float getVoltage(int pin)
{

  return (analogRead(pin) * 0.004882814);
}
void loop()
{
  int analogValue=analogRead(sensor);

  float voltage, degreesC;
  voltage = getVoltage(temperaturePin);
  degreesC = (voltage - 0.5) * 100.0;
  lcd.setCursor (0, 0);
  lcd.print ("Air Qual:");
  lcd.print (analogValue);
  lcd.print (" PPM");
```

```

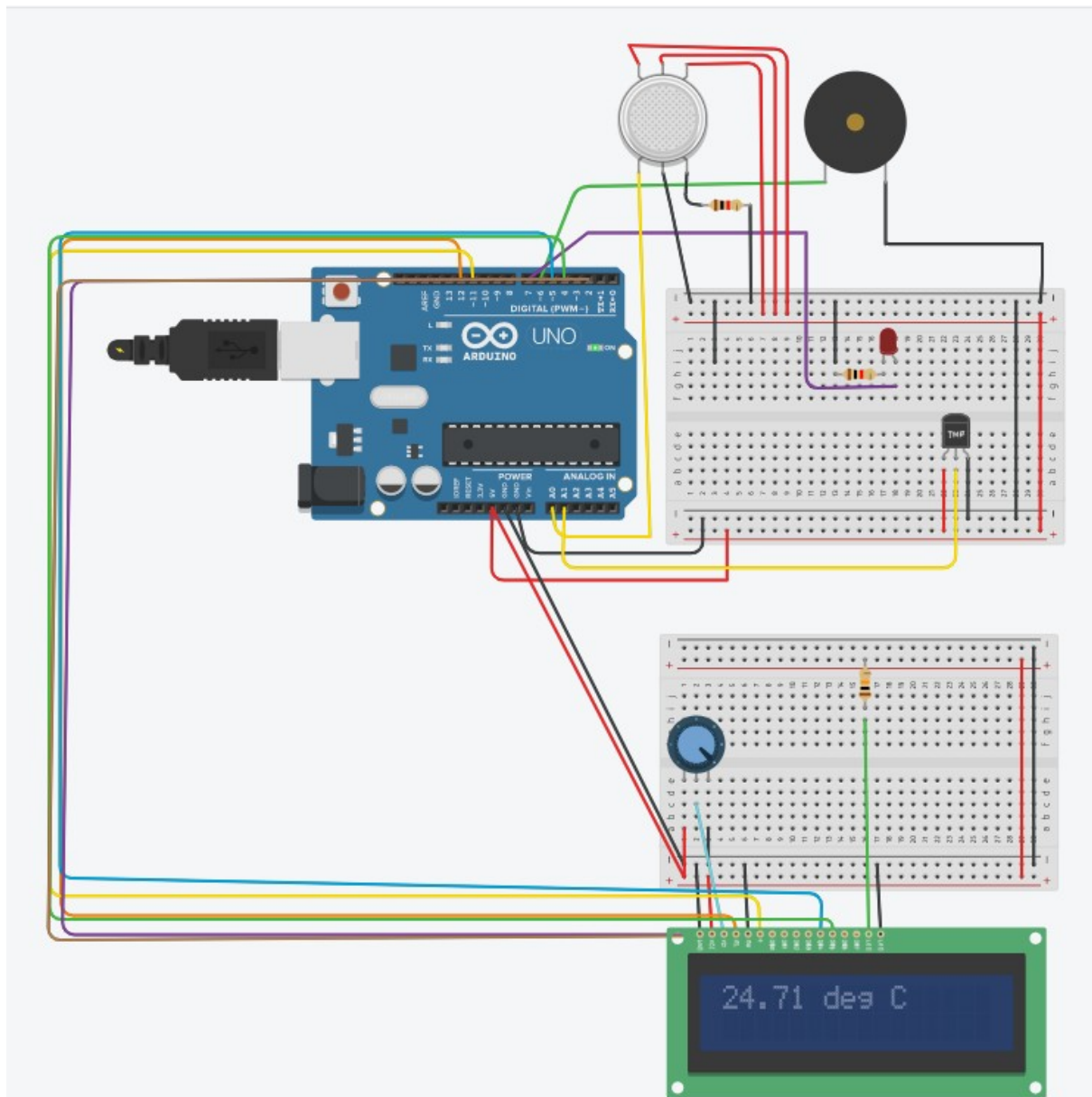
lcd.setCursor (0,1);

if(analogValue<=50)
{
  lcd.print("FA ");
  delay(1000);
  lcd.clear();
}

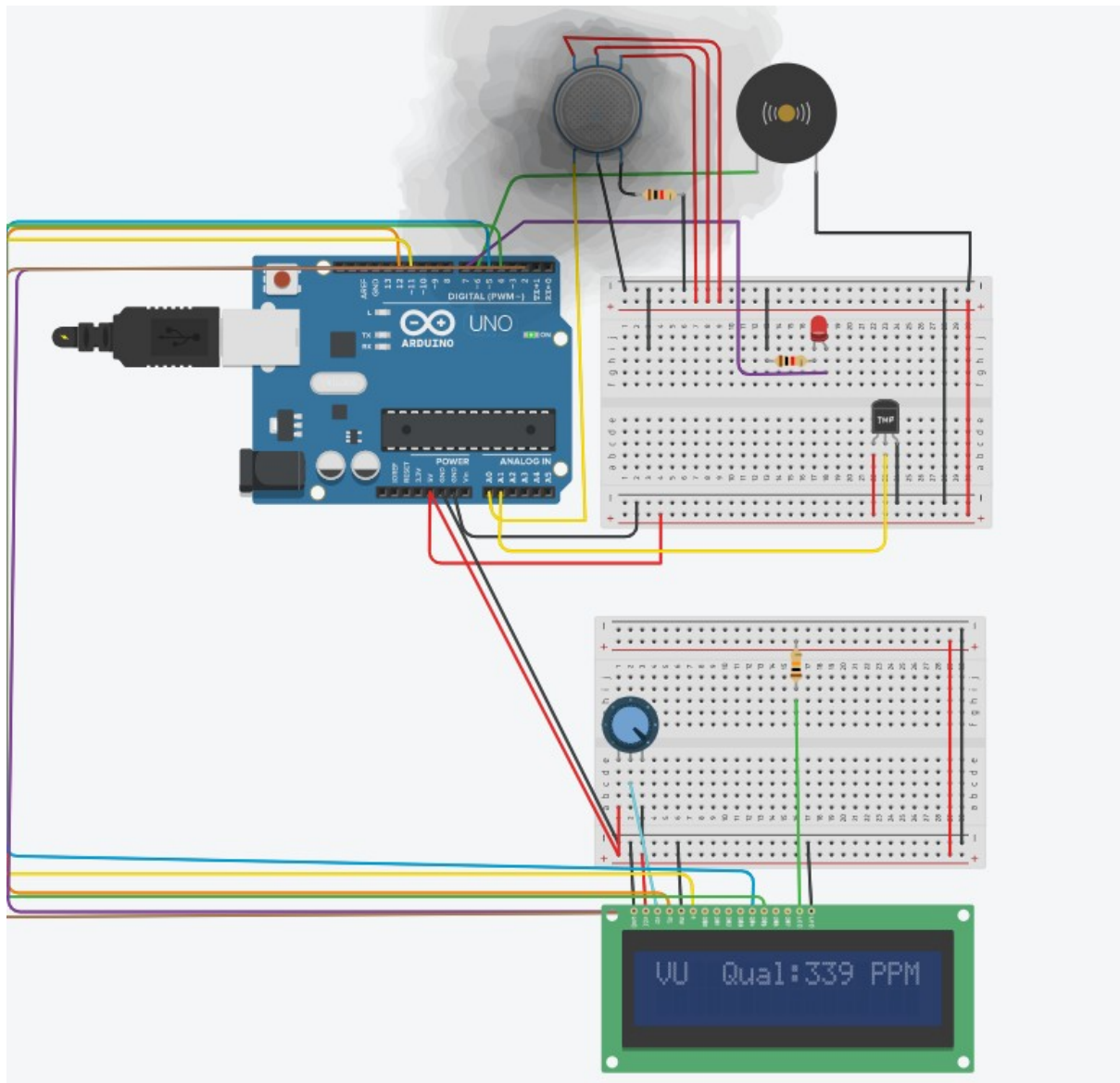
else if(analogValue>50 && analogValue<=100)
{
  lcd.print("Mod ");
  tone(buzzer , 10, 10000 ) ;
  delay(1000);
  lcd.clear();
}
if(analogValue>100 && analogValue<=150)
{
  lcd.print("MU ");
  tone(buzzer , 100, 10000 ) ;
  delay(1000);
  lcd.clear();
}
if(analogValue>150 && analogValue<=200)
{
  lcd.print("UN ");
  digitalWrite(led , HIGH );
  tone(buzzer , 1000, 10000 ) ;
  delay(1000);
  lcd.clear();
}
if(analogValue>200)
{
  lcd.print("VU ");
  digitalWrite(led , HIGH );
  tone(buzzer , 10000, 10000 ) ;
  delay(1000);
  lcd.clear();
}
lcd.print(degreesC);
lcd.print(" deg C");
delay(1000);
lcd.clear();
}

```

## SCREEN SHOTS OF THE OUTPUT:



Temperature is displayed. Piezo and LED are not “high” because air quality index is low



Piezo and LED are both “high” since the air quality index is “Very Unhealthy”



## REFERENCES

- <https://www.youtube.com/watch?v=QxTHMr3-ILg&t=12s>
- <https://www.tinkercad.com/things/ascn1ro2gFR-lcd-display>
- <https://www.tinkercad.com/things/ikdA3Clop1f-working-with-piezo-buzzer>
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- <https://webcam.srs.fs.fed.us/test/AQI.shtml>