Experiment 5

Student Name: Harsh Kumar **UID:22BCS15754**
Branch: BE - CSE **Section/Group: FL_IOT_603 'B'**
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1. **Aim-** To Design a weather station by checking Air quality of an environment with the help of IoT.

2. **Objective:**
   1. Learn about interfacing.
   2. Learn about IoT programming.

3. **Equipment Used-**
   1 × MQ 135 Air Quality Sensor Module
   1 × Arduino Uno R3
   4 × Male to Female Jumper Wire
   Software: Arduino IDE

4. **Procedure-**
   - **i.** Connect MQ-135 sensor's VCC pin with 5V terminal of Arduino UNO. This will power up the sensor.
   - **ii.** Additionally, we will connect the analog pin AO with A0 and DO with Pin 2 of Arduino UNO. Both the devices will be commonly grounded. □
   - **iii.** Open your Arduino IDE and go to File > New. Copy the code below in that file.
   - **iv.** This sketch will read both the analog and digital outputs of the sensor. If the analog output is greater than 400 then an LED connected at Arduino pin 2 will turn ON.
   - **v.** Otherwise, turn the LED OFF and print both the analog and digital output readings on the serial monitor.

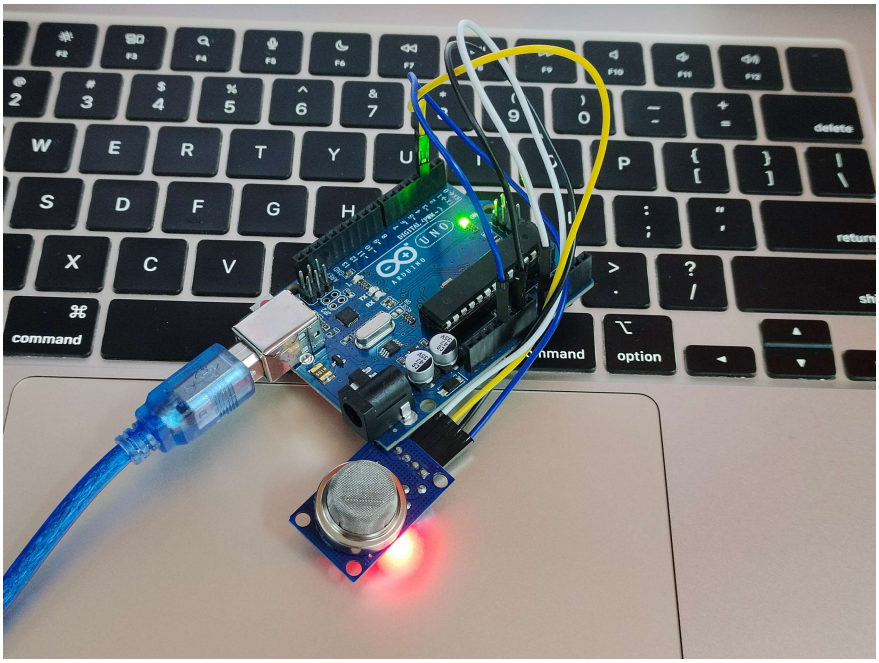
5. Code:

```
int sensorValue;
int digitalValue;
void setup()
{
 Serial.begin(9600); // sets the serial port to 9600
 pinMode(13, OUTPUT);
 pinMode(2, INPUT);
}
void loop()
{
sensorValue = analogRead(0); // read analog input pin 0
digitalValue = digitalRead(2);
if (sensorValue > 400)
{
digitalWrite(13, HIGH);
}
else
 digitalWrite(13, LOW);
Serial.println(sensorValue, DEC); // prints the value read
Serial.println(digitalValue, DEC);
delay(1000); // wait 1000ms for next reading
}
```

6. **Result-**

On the serial monitor, you can see the values of the analog pin being detected. Currently, in my case, they are around about 150, which indicates normal air. □

- Normal air returns approximately 100-150 □
- Alcohol returns approximately 700 □
- Lighter gas returns approximately 750




```
Output  Serial Monitor ×
Message (Enter to send message to 'Arduino Uno' on '/dev/cu.usbmodem11301')
Analog Value: 52
Digital Value: 1
Analog Value: 51
Digital Value: 1
Analog Value: 50
Digital Value: 1
Analog Value: 44
Digital Value: 1
Analog Value: 41
Digital Value: 1
Analog Value: 40
Digital Value: 1
Analog Value: 38
Digital Value: 1
Analog Value: 36
Digital Value: 1
```

7. **Conclusion-**

In this experiment, we successfully designed and deployed a weather station capable of monitoring air quality. The data collected can provide valuable insights into the environmental conditions of a specific area, contributing to better decision-making for public health, agriculture, and other fields. The project demonstrates the effective integration of IoT with environmental monitoring, opening the door to future enhancements and wider applications.