



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment 5

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Branch: BE-CSE

Semester: 5th

Subject Name: IOT Lab

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Section/Group: IOT_627-B

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Subject Code: 22CST-329

1.Aim: To Design a weather station by checking Air quality of an environment with the help of IoT

2.Objectives:

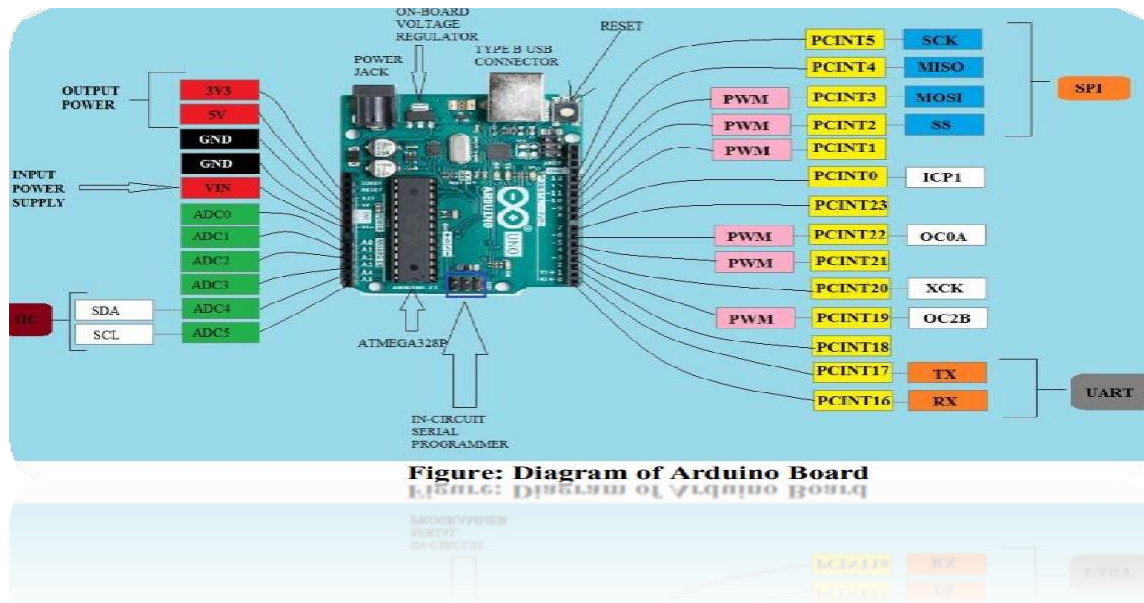
1. To study hardware and software related to IoT
2. To understand the function of Arduino Uno and other controllers.

Hardware Required:

1. Arduino Uno R3
2. MQ 135 Air Quality Sensor Module
3. Male to Female Jumper Wire
4. Software: Arduino IDE

3.Procedure:

An Arduino is actually a micro controller based kit. It is basically used in communications and in controlling or operating many devices. Arduino UNO board is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding. Some boards look a bit different from the one given below, but most Arduino's have majority of these components in common. It consists of two memories- Program memory and the data memory.



About Air Quality Sensor:

MQ-135 sensor belongs to the MQ series that are used to detect different gasses present in the air. The MQ-135 sensor is used to detect gases such as NH₃, NO_x, alcohol, Benzene, smoke, CO₂, etc. The steel exoskeleton houses a sensing device within the gas sensor module. This sensor has 4 pins:

- 5V: Module power supply – 5 V
- GND: Ground
- DOUT: Digital output
- AOUT: Analog output

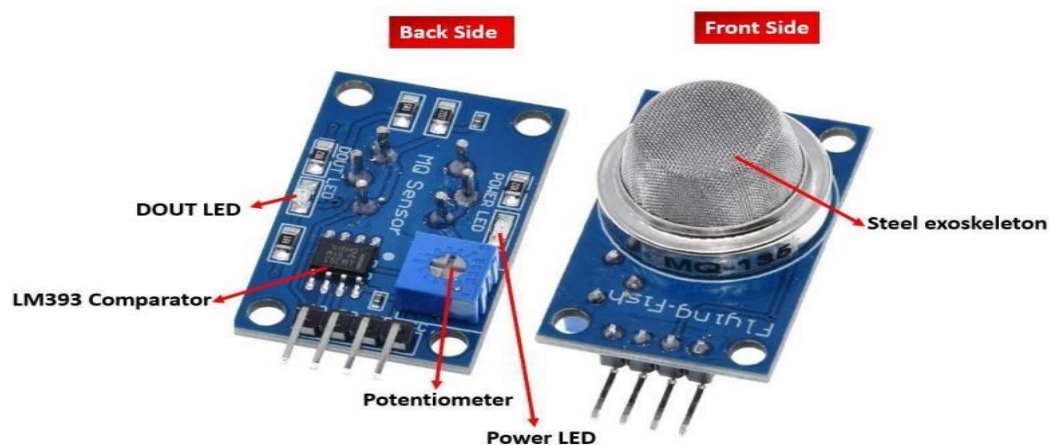
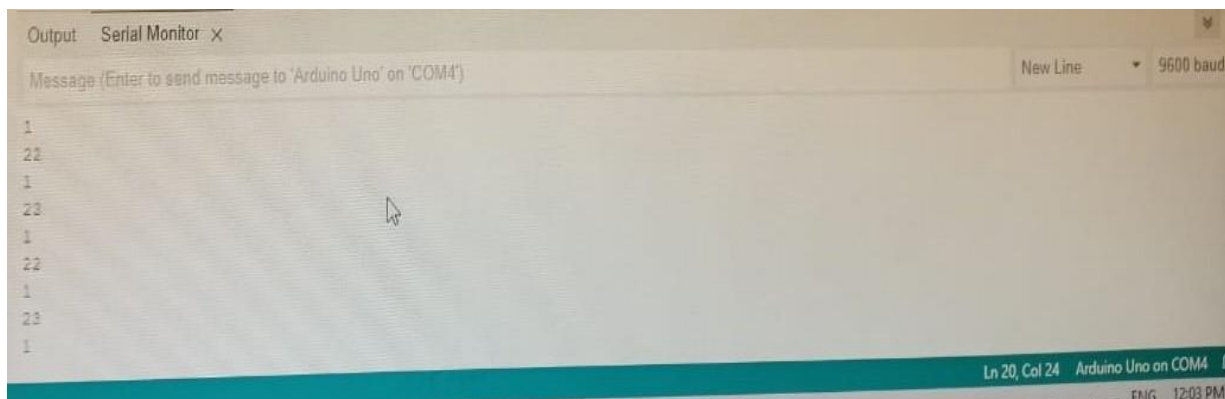


Figure: MQ 135 Sensor

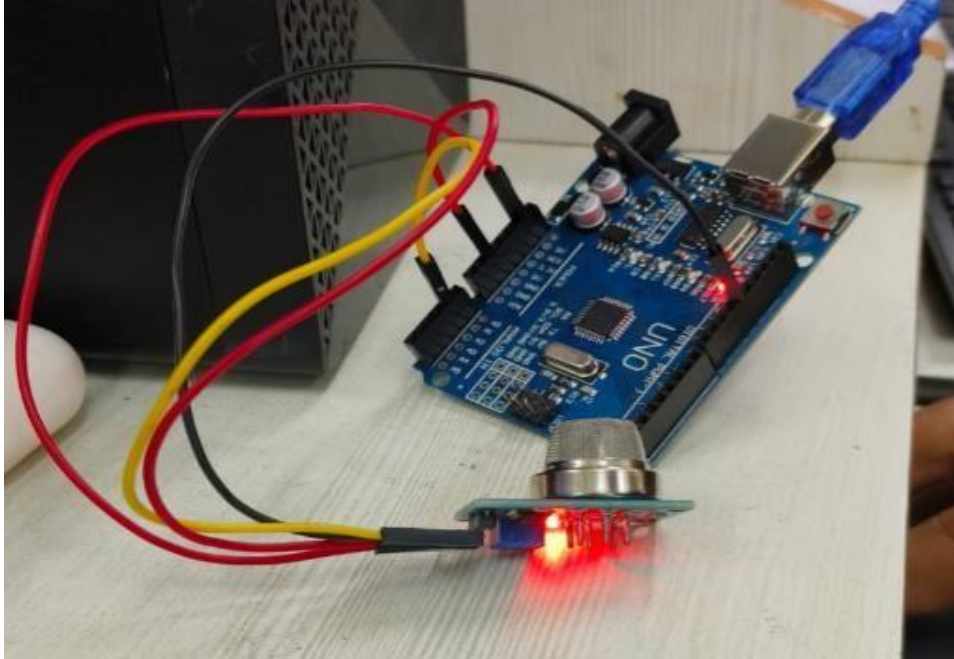
4.Code:

```
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 100ms for next reading  
}
```

5.Output:



Stimulation Images:



6.Learning Outcome:-

- Learned about IoT programming.
- Learned about air quality sensor MQ-135.
- Learn how to process and analyze real-time sensor data
- Learn techniques for optimizing power consumption in IoT-based weather stations