

## **AIR QUALITY MONITORING**

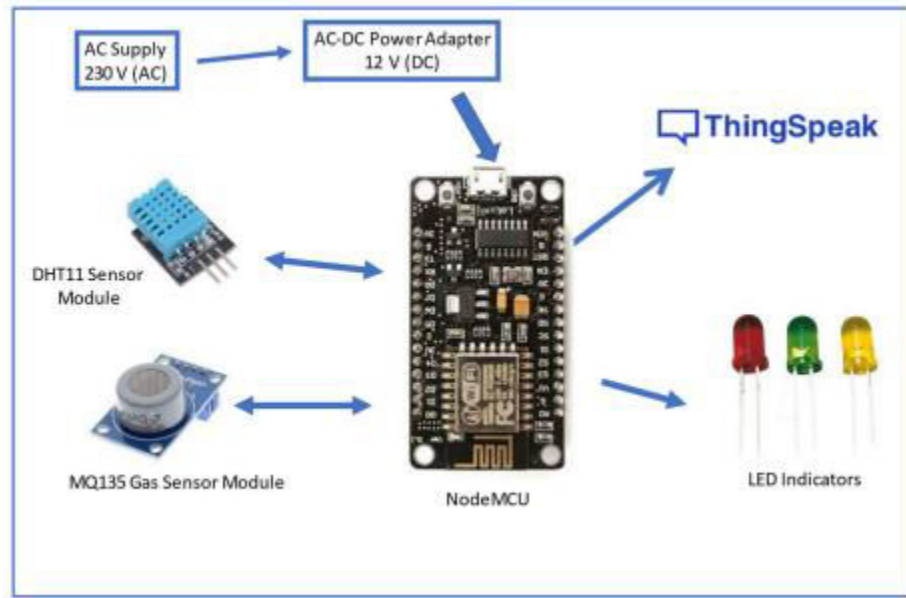
### **OBJECTIVE:**

- To measure and display temperature and humidity level of the environment.
- To combine advanced detection technologies to produce an air quality sensing system
- with advanced capabilities to provide low cost comprehensive monitoring.
- To display the sensed data in user friendly format in LCD display panel.

### **IoT Devices Designs:**

Air pollution is one of the biggest threats to the present-day environment. Everyone is being affected by air pollution day by day including humans, animals, crops, cities, forests and aquatic ecosystems. Besides that, it should be controlled at a certain level to prevent the increasing rate of global warming. This project aims to design an IOT-based air pollution monitoring system using the internet from anywhere using a computer or mobile to monitor the air quality of the surroundings and environment. There are various methods and instruments available for the measurement and monitoring quality of air. The IoT-based air pollution monitoring system would not only help us to monitor the air quality but also be able to send alert signals whenever the air quality deteriorates and goes down beyond a certain level.

In this system, NodeMCU plays the main controlling role. It has been programmed in a manner, such that, it senses the sensory signals from the sensors and shows the quality level via led indicators. Besides the harmful gases (such as CO<sub>2</sub>, CO, smoke, etc) temperature and humidity can be monitored through the temperature and humidity sensor by this system. Sensor responses are fed to the NodeMCU which displays the monitored data in the ThingSpeak cloud which can be utilized for analyzing the air quality of that area. The following simple flow diagram (as shown in Fig. 1) indicates the working mechanism of the IoT-based Air Pollution Monitoring System.



#### Hardware Model to Preheat DHT11 Sensor Module

As discussed earlier, we need to preheat the DHT11 sensor so that it can work accurately.

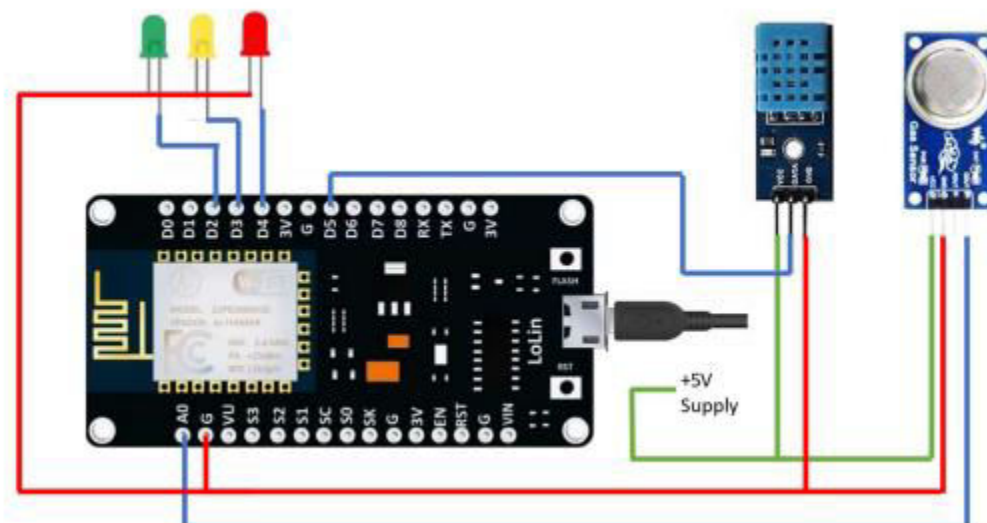
The following steps were performed to preheat the DHT11 sensor module:

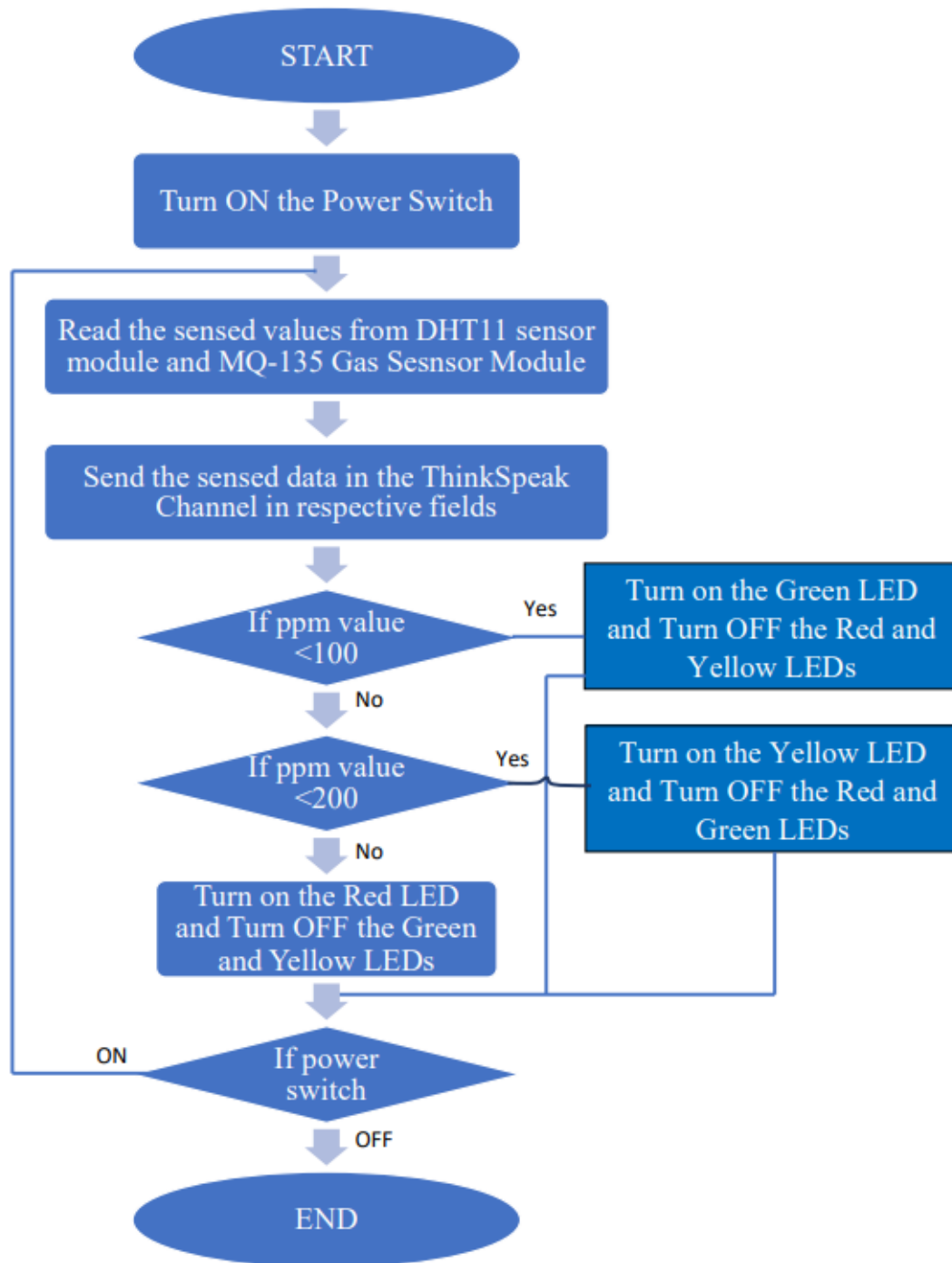
STEP 1 : The Vcc pin of the DHT11 sensor module was connected with the VU pin of NodeMCU.

STEP 2 : The Gnd pin of the DHT11 sensor module was connected with the Gnd pin of NodeMCU.

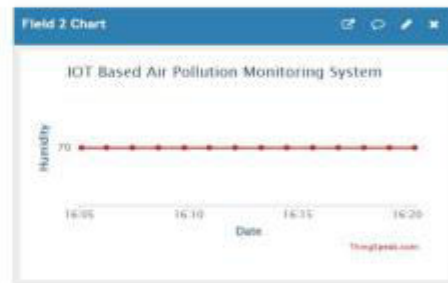
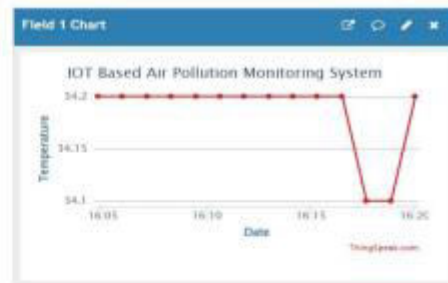
STEP 3 : The NodeMCU is powered with a 12V DC via AC-DC adapter for 20 minutes.

STEP 4 : The setup was then disconnected.





**DATA SHARING PLATFORM:**



## INTEGRATION APPROACH:



