AIR QUALITY MONITORING

USING IOT

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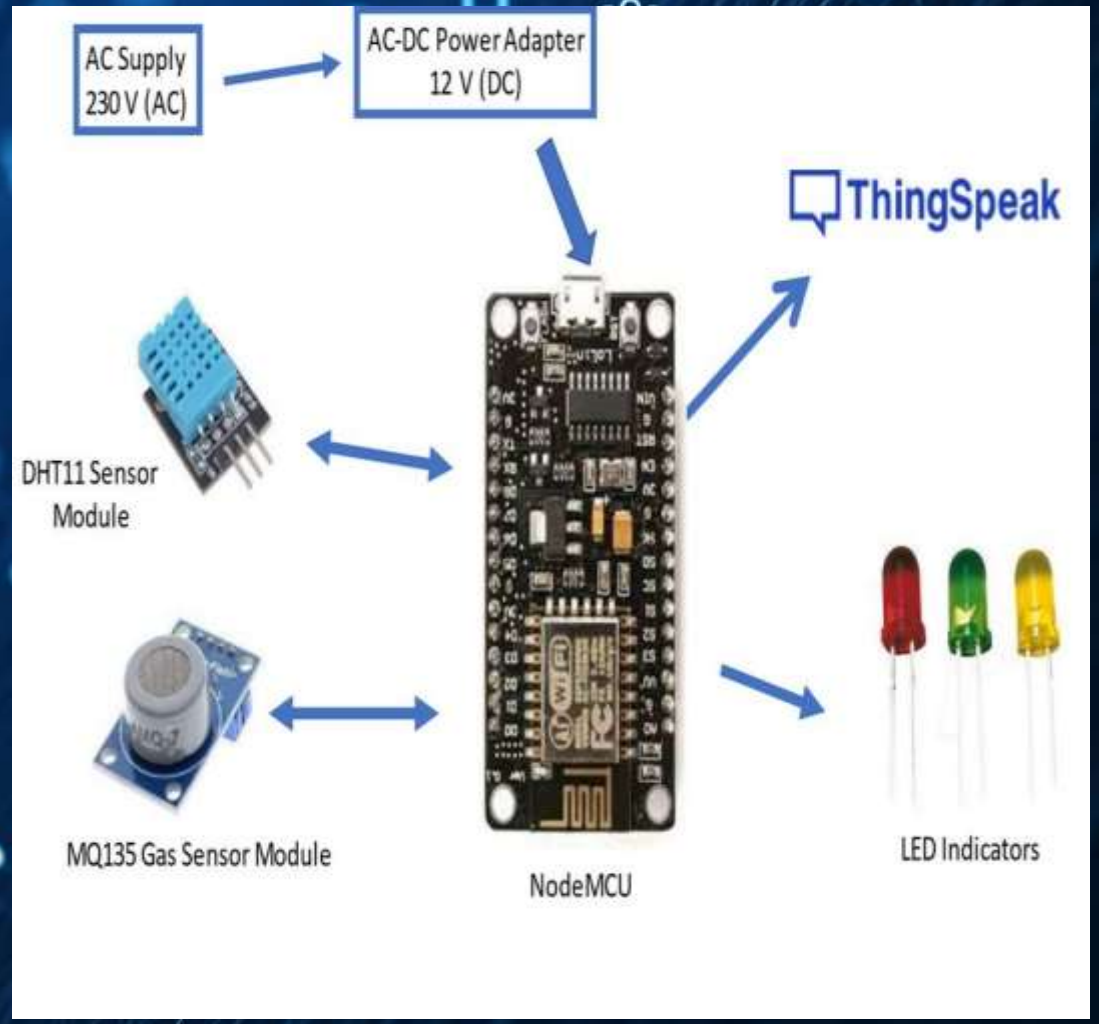
ABSTRACT

- 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.

ABSTRACT

- 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.
- 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.



AIM OF THE PROJECT

- The Internet of Things (IoT)is nowadays finding profound use in each and every sector, and plays a key role in our air quality monitoring system too.
- The setup will show the air quality in PPM on the webpage so that we can monitor it very easily.
- In this IoT project, we can monitor the pollution level from anywhere using your computer or mobile.

COMPONENTS USED:

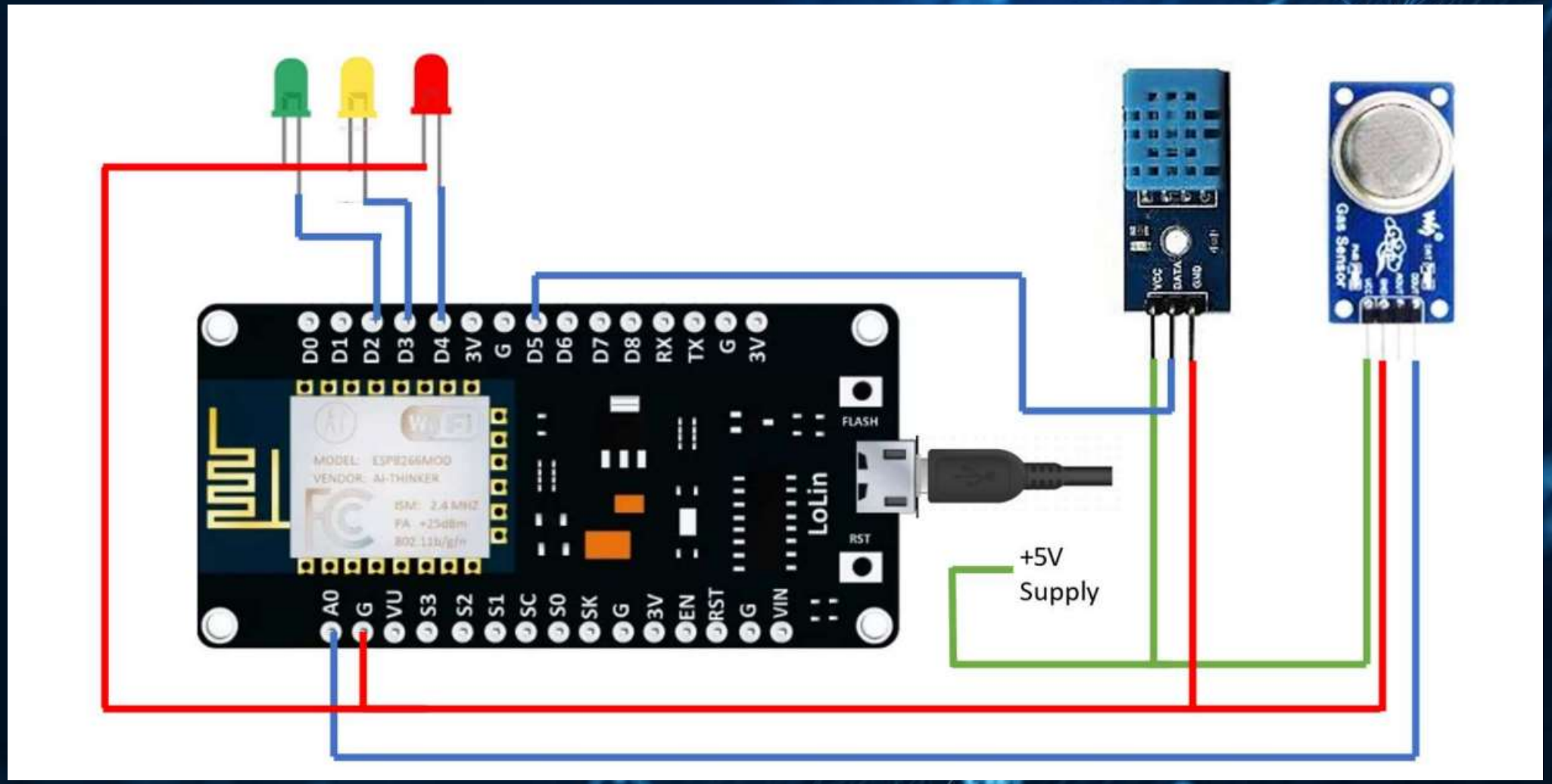
Hardware Components

1.ESP32
2. DHT11 Sensor Module
3. MQ-135 Gas Sensor Module
4. Veroboard(KS100)
5. Breadboard
6. Connecting Wires
7. AC-DC Adapters
8. LEDs emitting green, yellow and red colours
9. Resistors

SOFTWARE COMPONENTS

1. ThinkSpeak Cloud
2. 2. Arduino IDE

SETUP OF THIS MODEL



WORKING PROCEDURE

STEP 1. Firstly, the calibration of the MQ-135 gas sensor module is done. The sensor is set to preheat for 24 minutes. Then the software code is uploaded to the NodeMCU followed by the hardware circuit to calibrate the sensor has been performed.

STEP 2. Then, the DHT11 sensor is set to preheat for 10 minutes.

STEP 3. The result of calibration found in STEP 1 is used to configure the final working code.

STEP 4. The final working code is then uploaded to the NodeMCU.

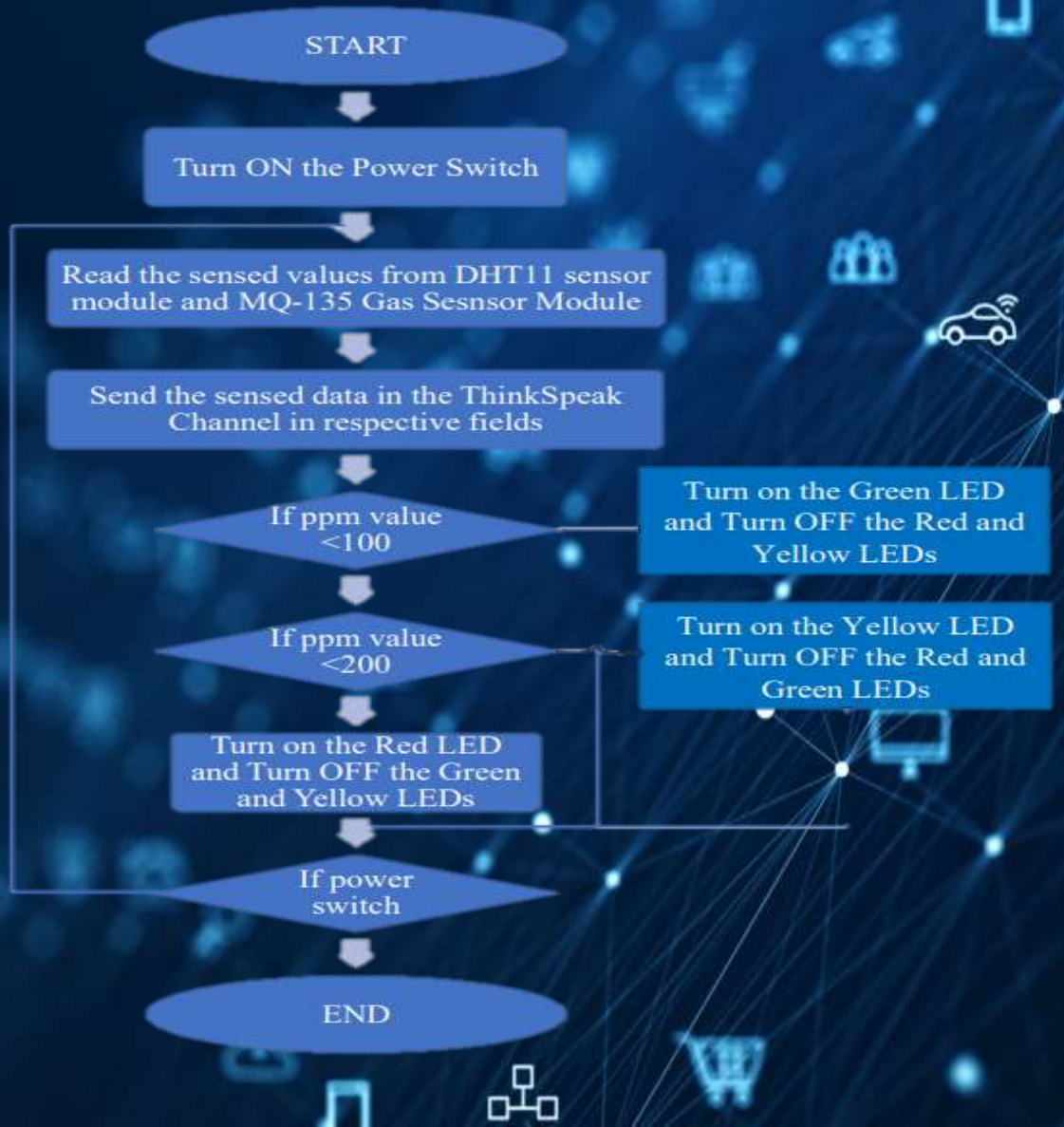
STEP 5. Finally, the complete hardware circuit is implemented.

HARDWARE IMPLEMENTATION

The following steps were performed to execute the project

STEP 1 : The Vcc pin of the MQ-135 gas sensor module and DHT11 sensor module was connected via Veroboard with an adapter delivering around 5V.
STEP 2 : The Gnd pin of the MQ-135 gas sensor module, DHT11 sensor module and the cathode of the LED indicators was connected via Veroboard with the Gnd pin of the NodeMCU.
STEP 3 : The analog DATA pin of the MQ-135 gas sensor module was connected withthe A0 Pin of the NodeMCU.
STEP 4 : The DATA pin of the DHT11 sensor module was connected with the D0 pin of the NodeMCU.
STEP 5 : The anode of the three LED indicators (green, yellow, and red) were connected to the D2, D3, and D4 pins of the NodeMCU respectively.
STEP 6 : The software code to execute the project was then uploaded to the NodeMCU.
STEP 7 : The setup was then powered with 9V DC via AC-DC adapter. It can be now turned ON/OFF as per the requirements.

SOFTWARE IMPLEMENTATION



CONCLUSION

- The project has proposed the idea of an air quality monitoring system using IOT that can used to support a lot of applications.
- An air quality monitoring system contains a connection between wireless communication, sensors and monitoring.

THANK YOU