GOVERNMENT COLLEGE OF ENGINEERING ERODE

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Government College of Engineering, Erode
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

B.E Electronics and Communication Engineering

AIR QUALITY MONITORING

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TECHNOLOGY NAME: AIR QUALITY MONITORING

INTRODUCTION:

Continued exposure to environments with poor air quality is a major public health concern in developed and developing countries. It is estimated that the pollutants responsible for poor air quality cause nearly 2.5 million premature deaths per year world-wide. Significantly, around 1.5 million of these deaths are due to polluted indoor air, and it is suggested that poor indoor air quality may pose a significant health risk to more than half of the world's population. Due to its link with industrialisation, societal health problems associated with poor air quality disproportionately affects developed and developing nations – it is estimated that air pollution is responsible for the premature deaths. Remedial action to improve air quality is often easy to implement once airborne pollutants have been detected.

OVERVIEW OF PROJECT:

- This project provides a combination of process of sensing several gas levels in the air and also the ambient temperature and humidity, thus sensing the quality of the air.

- The levels of the gases and the temperature is displayed in a LCD display panel , which continuously shows the real time output values of the gas sensors , temperature and humidity sensor.

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.

BLOCK DIAGRAM:

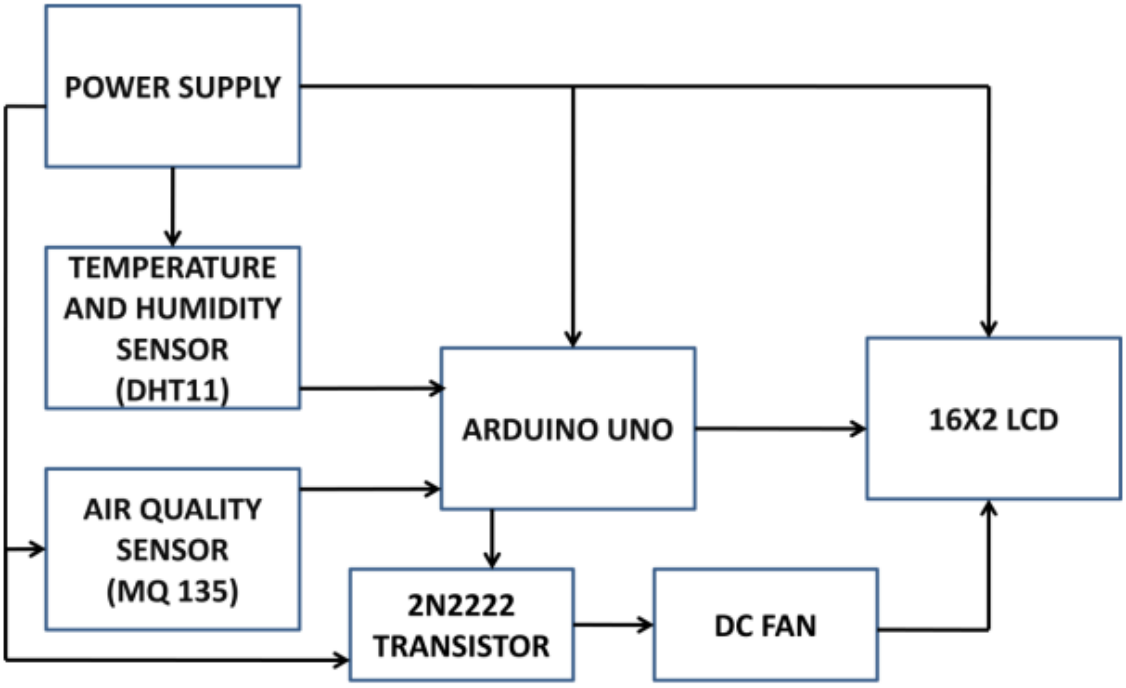


Fig 1(a): Block Diagram of Air Quality Monitoring and Sensing

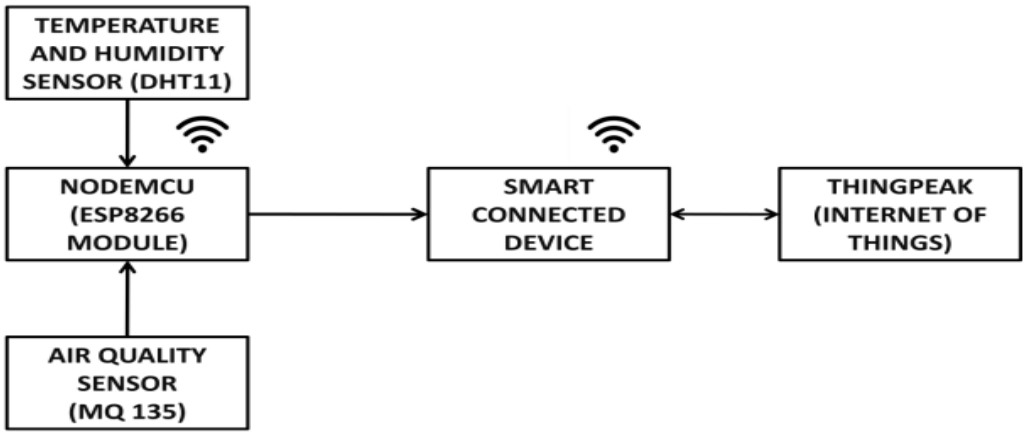


Fig 1(b): Block Diagram of sending the data to THINGSPEAK using NodeMCU

HARDWARE REQUIREMENTS:

For Different Parameter Sensing:-

- Temperature and Humidity sensor (DHT11)
- Air Quality sensor (MQ 135)
- 2n2222 Transisitor
- DC Fan
- Potentiometer
- 16x2 LCD Panel
- NodeMCU
- Arduino Uno

For Power Supply:-

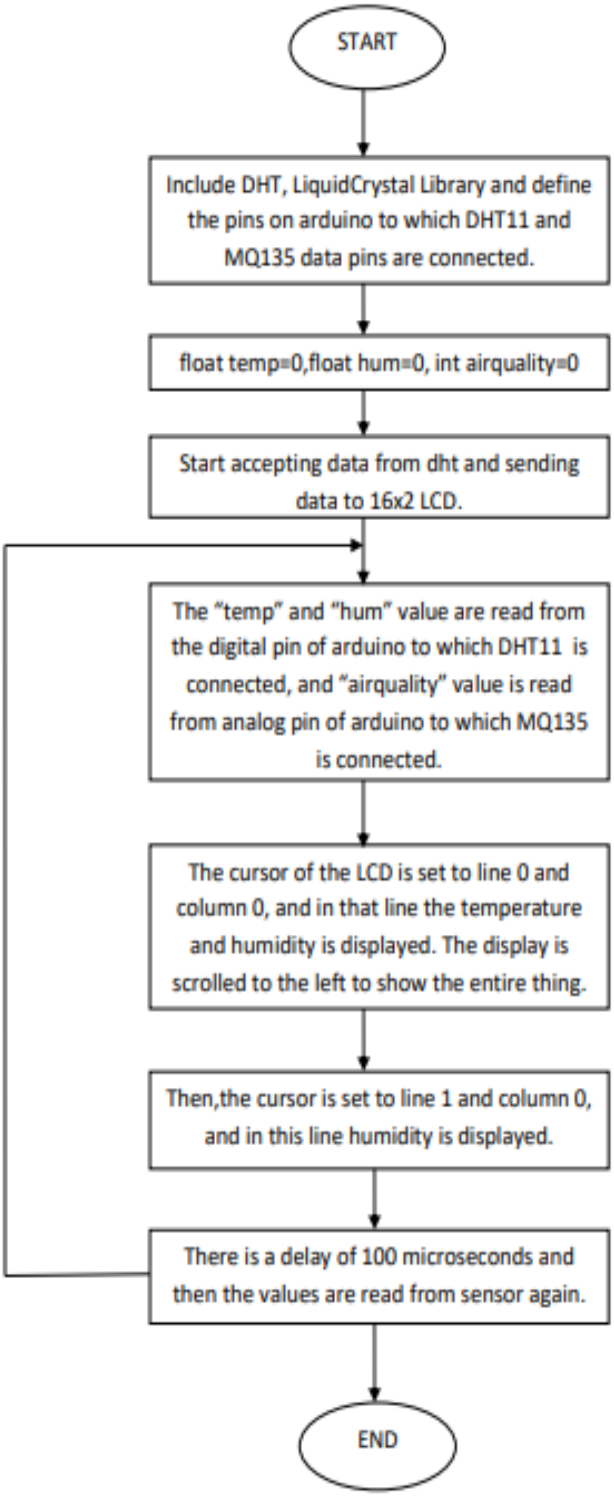
- Step down transformer (12-0-12 V,1 A)
- Diodes
- Voltage Regulator (7805)
- Capacitors (0.01 micro Farad, 470 micro Farad)
- Wires

SOFTWARE REQUIREMENTS:

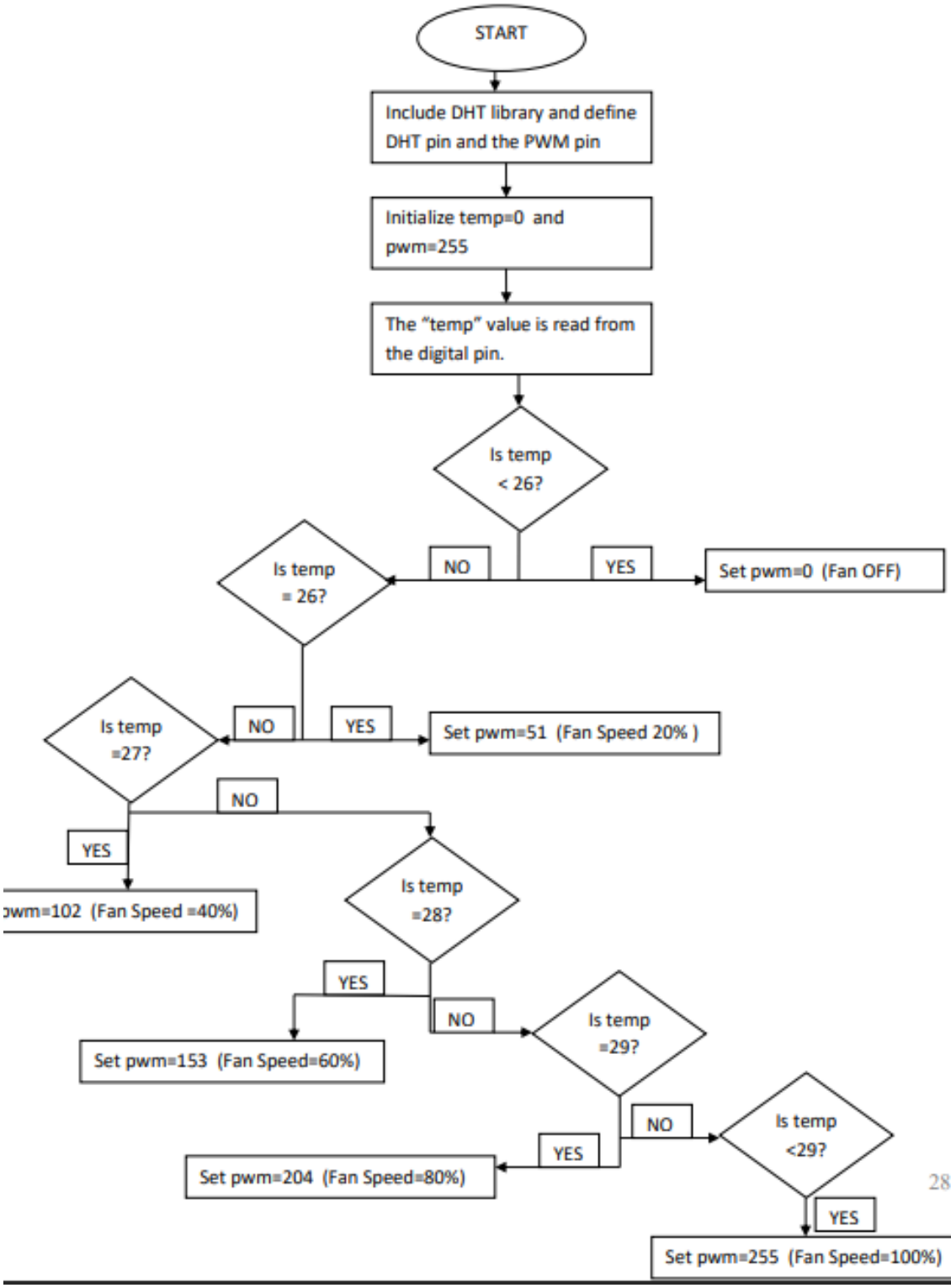
- Arduino (Version 1.8.2)
- THINGSPEAK website

FLOWCHART:

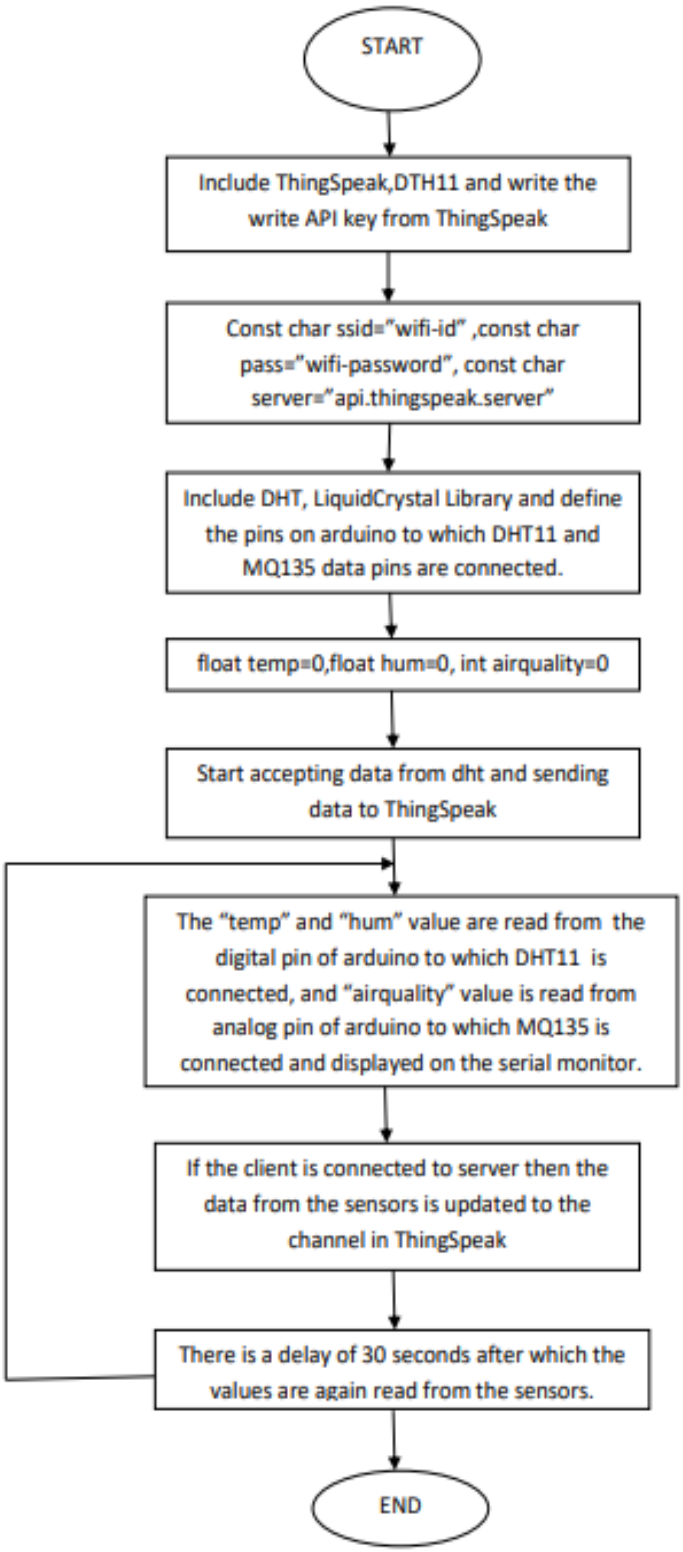
Flowchart for Displaying the Temperature, Humidity and Air Quality on LCD:



Flowchart for Controlling the Speed of Fan Based on Temperature:



Flowchart for Sending the Temperature, Humidity and Air Quality on THINGSPEAK:



APPLICATIONS:

- Indoor air quality monitoring.
- Industrial perimeter monitoring.
- Roadside pollution monitoring.
- To make this data available to common man