9512 JP COLLEGE OF ENGINEERING

AIR QUALITY MONITORING SYSTEM

Proj_21193_TEAM_1

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PHASE :2 (Design into innovation to solve the problem)

DESIGN IDEAS:

Air quality sensors are installed in the targetted area on top of buildings,industrial areas ,traffic and residential areas .These sensors are connected to microcontroller to control the sensors network.The data collected by the microcontroller is transmitted to the cloud for analysis.The analysed data is shared to the public through a smartphone app .

WHAT MAKES IT INNOVATIVE ?

This project propose an idea to install monitoring application on smartphones .It is innovative because it provides easy access to the public to monitor real time air quality in their area .It uses low cost and readily available devices such as dust sensor ,carbon monoxide gas sensor , carbon dioxide gas sensor and nitrogen dioxide gas sensor.For controlling these sensors , microcontrollers are used and the microcontroller also act as transmit the data to the cloud data base .The information on air quality can be accessed through a smartphone app in real time.

CONCLUSION :

There are many cities around the world facing air quality issues.The contaminated air results in death every year and decline in health conditions as people are exposed to unhealthy air quality.Awareness of the contaminated air enables the community to take precautionary steps .This steps will also enable the relevant authority to make remidial action .With this project the community can enjoy cleaner air and improved health condition

STEPS FOR FLOWCHART:

STEP 1: Start the program.

STEP 2: Turn on the Gas, Temperature and Humidity sensors.

STEP 3: Collect the data:

i. Read gas concentration.
ii. Measure temperature and humidity level.

STEP 4: Analyze Data:

i. Check if gas concentration is within safe limits.
ii. Check if temperature and humidity is within comfort range.

STEP 4: Display results:

i. Show gas concentration on display.
ii. Show temperature value on display.
iii. Show humidity percentage.

STEP 5: Take action (if necessary):

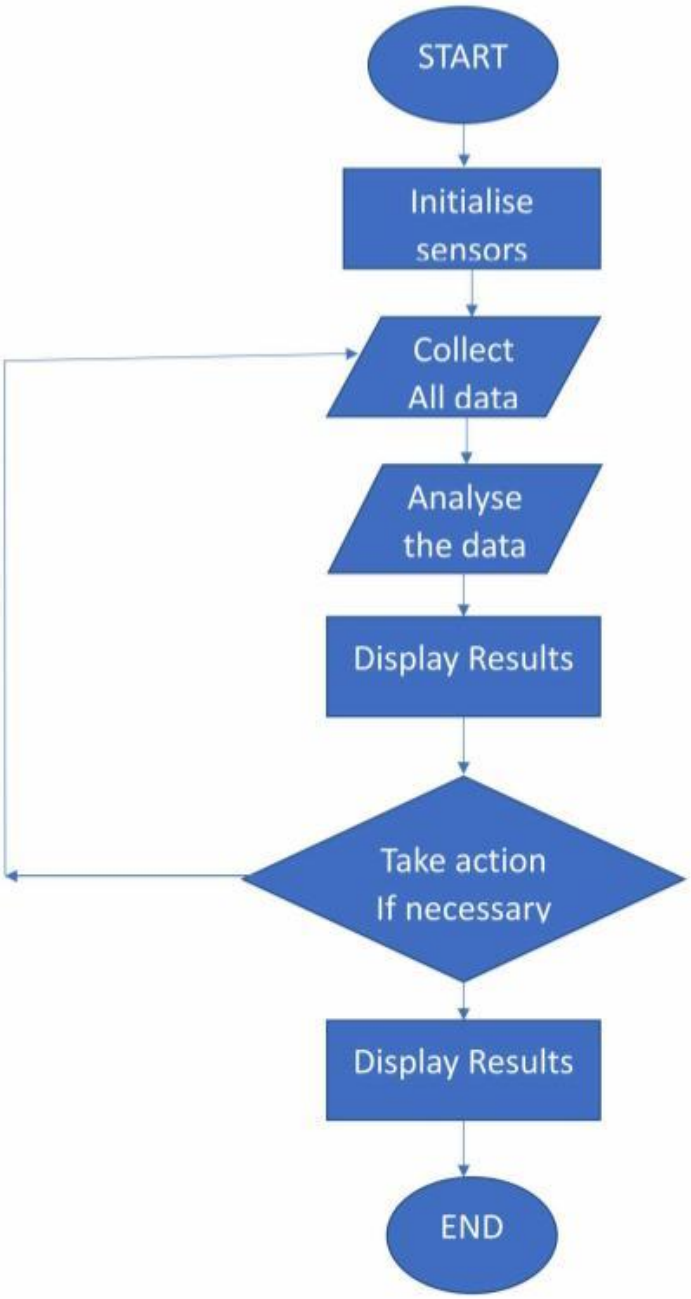
i. If gas concentration is high, activate alarm or ventilation.
ii. If temperature is too high or low, adjust heating or cooling system.
iii. If humidity is too high or low, activate dehumidifier or humidifier.

STEP 6: Wait for a set time.

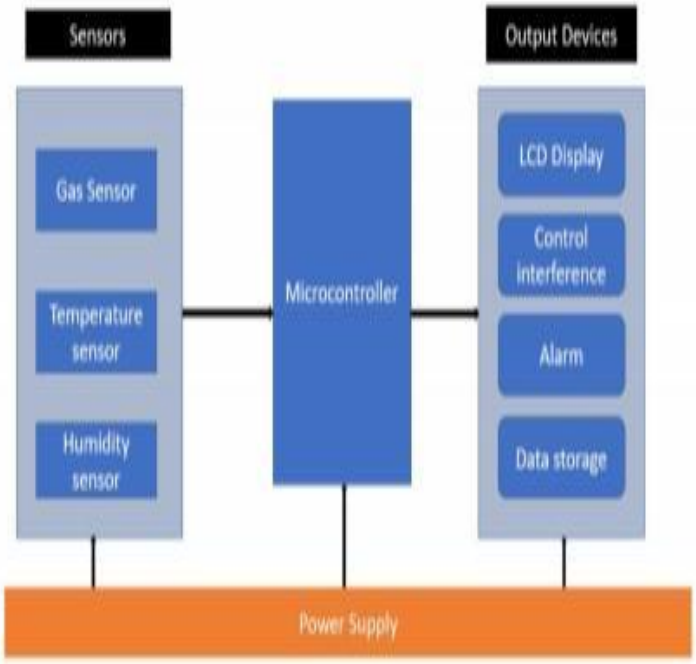
STEP 7: Repeat 3-7 continuously.

STEP 8: End the program.

FLOW CHART:


START
Initialise sensors
Collect All data
Analyse the data
Display Results
Take action If necessary
Display Results
END

BLOCK DIAGRAM:



Block Diagram Description:

1. **Microcontroller/Main Processing Unit**:
   This is the brain of the system, collecting data from sensors and process it and managing output actions and displays.

2. **Sensors:**
   - Gas Sensor: Connects to the microcontroller and detects specific gases.
   - Temperature Sensor: Connects to the microcontroller to measure temperature.
   - Humidity Sensor: Connects to the microcontroller to measure humidity.

3. **Communication Interface:**
   Enables the microcontroller to communicate with external devices or a computer. This can be Wi-Fi, Bluetooth, or wired connections like USB or Ethernet.

4. **Display:**
   Shows real-time data readings, alerts, or system status.

5. **Alarm/Notification System:**
   This can be an audible alarm, LED indicator, or any other signaling device that alerts the user when air quality goes outside the desired range.

6. **Power Supply:**
   Provides power to the entire system. This could be batteries, solar panels, or a direct power source.

7. **Data Storage:**
   Where the data can be logged for historical analysis. This could be an SD card, onboard memory, or cloud storage.

8. **Control Buttons/Interface:**
   Allows the user to interact with the system, set thresholds, or view historical data.