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**DEPARTMENT OF**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IBM - Naan Mudhalvan**

**Internet of Things**

**Group 3**

**Phase 2 – Innovation**

**TITLE: AIR QUALITY MONITORING SYSTEM**

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**YEAR : III**

**INNOVATION:** MOBILE AIR QUALITY MONITORING

**Introduction:**

At present, the humans are unaware of the environmental protection and harmness that caused due to the development in the technology. Mainly, the emission that are caused by the over usage of the vehicles and the gases released from the industrial sector which heavily affects the entire atmosphere including the human’s health. Hence, the main focus of this project is to provide the awareness and affection level of the harmful gases which is very dangerous to human life.

**Existing System:**

The Present Mobile air quality monitoring only provides the data on gas level, temperature and humidity of the surroundings which makes the people to be unaware of harmful gases that endangers their life. This System is used for monitoring and controlling that are extracted from the sensors.

**Proposal System:**

And so, our thought is to provide a improved version of the current existing system by adding danger levels that are allocated for the each individual harmful gases and indicating the people that the danger level of the gases which emits in their surroundings.

**Arduino UNO:**

* The Arduino UNO board is mostly used by the beginners that can use in electronics project and do programming in this board.
* Arduino UNO is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins, 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button.
* Arduino consists of both a physical programmable circuit board IDE that runs on your computer which is used to write and upload computer code to the physical board.
* It uses a variant of the C++ programming language. The code is written in C++ with an addition of special methods and functions.

**Temperature Sensor:**

* + A temperature sensor is a device which is a thermocouple or RTD, that is used for temperature measurement through an electrical signal.
  + A thermocouple is made from two dissimilar metals that generate electrical voltage in direct proportion to changes in temperature.
  + An RTD that stands for Resistance Temperature Detector is a variable resistor that will change its electrical resistance in direct proportion to changes in temperature in a precise, repeatable and nearly linear manner.

**Humidity Sensor(Hygrometer):**

* Humidity sensors are electronic devices enabling you to measure the environment’s humidity and convert the data into a corresponding electrical signal.
* It detects changes in temperature or electrical currents in the air by using a humidity probe connected to a receiving device.

**Gas Sensor(MQ135):**

* + Gas sensor is a device which detects the presence of gases in the atmosphere.
  + The Gas that the sensor could detect depends on the sensing material present inside the sensor.
  + The comparators used in the sensor can be set for a particular threshold value of gas concentration. When the concentration of the gas exceeds this threshold the digital pin goes high. The analog pin can be used to measure the concentration of the gas.

**Wi-fi Module(ESP8266):**

* + ESP8266 is a wi-fi module microchip which has a inbuilt TCP/IP networking software.
  + This is used as a station for connecting the device to the wi-fi network.
  + It can also connect other station to the ESP modules by operating as a access point.

MQ135 Sensor

Sensor

Temperature Sensor

Arduino

ESP8266 Wi-Fi

LCD 16x2

BIynk IOT

**BLOCK DIAGRAM:**

**Blynk IoT:**

* Blynk is an IoT platform which is used to build projects for controlling and monitoring the extracted data by using devices such as android and iOS more quickly.
* By using blynk platform, we can create dashboards for the projects and for promoting various tools.
* It can be performed in Arduino, by using the code “**Blynkrun()**” which is stored in the library and for serial connection between the board and internet, we need to run the **blynk.ser** file that present in the scripts section of the blynk folder.
* The Blynk can run over 400 hardware modules where the popular ones are ESP32, ESP8266, Arduino, Raspberry pi,etc.,
* We can send the processed data from any sensors that is connected to the MCU board where the data flows through a data stream using Blynk protocol when the data is sent to Blynk platform.