# Air Pollution Monitoring System using IoT

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**Abstract**: *Air pollution affects our day to day activities and quality of life. It poses a threat to the ecosystem and the quality of life on the planet. The dire need to monitor air quality is very glaring, owing to increased industrial activities over five past years. People need to know the extent to which their activities affect air quality. This project proposes an air pollution monitoring system. The system was developed using the Arduino microcontroller. The air pollution monitoring system was designed to monitor and analyze air quality. It can cause adverse health effects such as cancer, cardiovascular diseases and high mortality rates. High population density is a huge contributory factor of air pollution in cities and urbanized areas. The third biggest city of the Czech Republic, Ostaeva the subject of this thesis, is one of the mast densely polluted areas of the country. The main air pollution of concern are suspended particles and poly aromatic hydrocarbons. Ostrava s high proportion of heavy industry is major Bourne of air pollution compared to the rest of the Cozech Republic. Other sources of air pollution are transport, local heating and possibly a pollution transfer from a neighboring industrial region in Poland.*

**Keywords:** A Ardiiino Uno, Temperature and Humidity sensor, Bread Board, Resistor, Jumper wire

## I. INTRODUCTION

Air is one of the essential elements of man*s surroundings. The earth's atmosphere is full of air which contains gases such as Nitrogen, Oxygen, Carbon Monoxide and traces of some rare elements. Humans need an atmosphere of air that is free from contaminants. This is very crucial for human life and health. Any change in the natural composition of air may cause grave harm to life forms on earth. Air pollution is the presence of one or more contaminants in the atmosphere such as gases In a quantity that can harm humans, animals and plant [1]. Air pollutants are measured in Parts per Million (ppm) or ug/m3 [2]. Primary pollutants are released directly into thI2 atmosphere. Secondary pollutants are produced when the primary pollutant reacts with other atmospheric chemicals [3]. Air quality affects public health. The effect of air pollution ranges from difficulty In breathing, coughing, aggravation of asthma and emphysema.

## II. COMPONENT USED

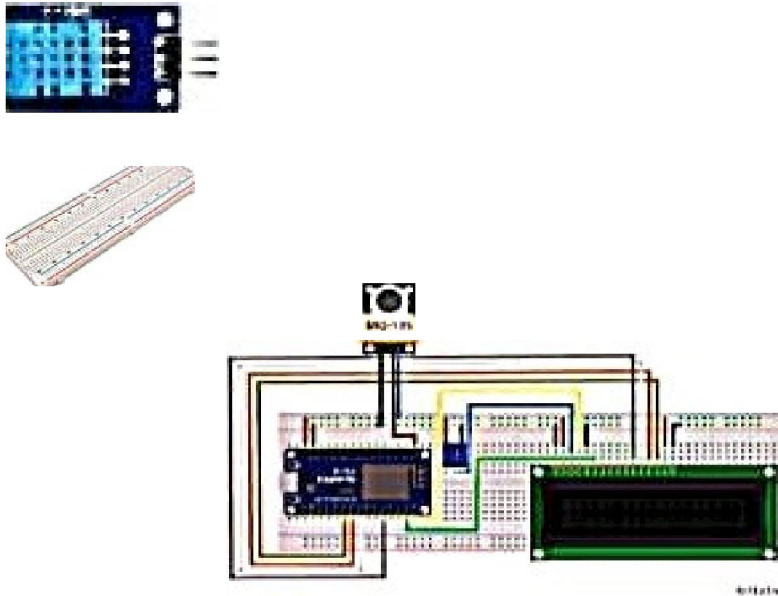Arduino Uno



Node MCU
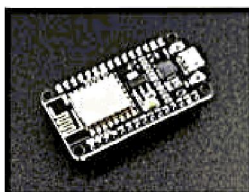
DHT11 Sensor





Fig.1 circuit connectivity

## II. HARDWARE IMPLEMENTATION

Following are the major components of the system's hardware:

Nodes: 1) Monitoring; and 2) Access Point (AP) Node Using a wireless connection, the AP receives real-time data on air quality from the monitoring node. Access points receive wireless signals and correctly

identify air quality data, both of which are the responsibility of the access point.

These two components are described in depth in the following paragraphs A sensor module, a controller module, an LPWA transmitter module, and a power module make up each monitoring node seen in Fig. 2. Data from the sensor module is sent to a controller module through the USART interface, which monitors and transmits information about the quality of the air.

## III. WORKING MODEL
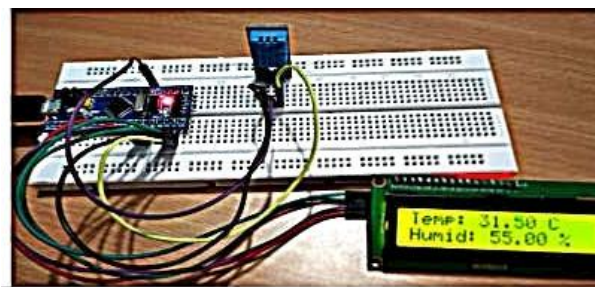


## IV. SOFTWARE IMPLEMENTATION

Many software applications are required on both the cloud and client side in order for users to take full use of services provided by the IoT processing system,

In the IoT cloud, there are primarily three servers with distinct roles, namely, Server for Data Processing Continuously, data On the measured air quality are sent to the IoT cloud. Due to the possibility of transmission mistakes and equipment malfunctions, raw data cannot be used immediately To maintain data integrity and certain pre processing techniques are required to identify and change "dirty" data. The data processing server next analyses the

revised data to determine the air quality trend. As an example, raw data may be replaced with processed data when a uscr wants information on the air quality in a certain geographic location over the past week or even month.



Fig l -Code Implementation

## V. FUTURE SCOPE

The future scope is that device which we are having can be done in an compact way by reducing the size of the device For further implementation or the modifications which can be is thai detecting the vehicles amount of pollution which can be determined.

The impact of increasing air pollution is more dangerous than you think. If air pollution is not controlled. by 2030 the air will become poisonous that ii will be necessary to use an oxygen kill to breathe easily .

## VI. CONCLUSION

In conclusion, an IoT-based air pollution monitoring system is a revolutionary solution that can provide accurate and real-time data about the air quality in a particular area. It can help identify the sources of pollution and rake necessary measures to reduce it, protecting the environment and human health.

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