IBM NAAN MUDHALVAN PROJECT

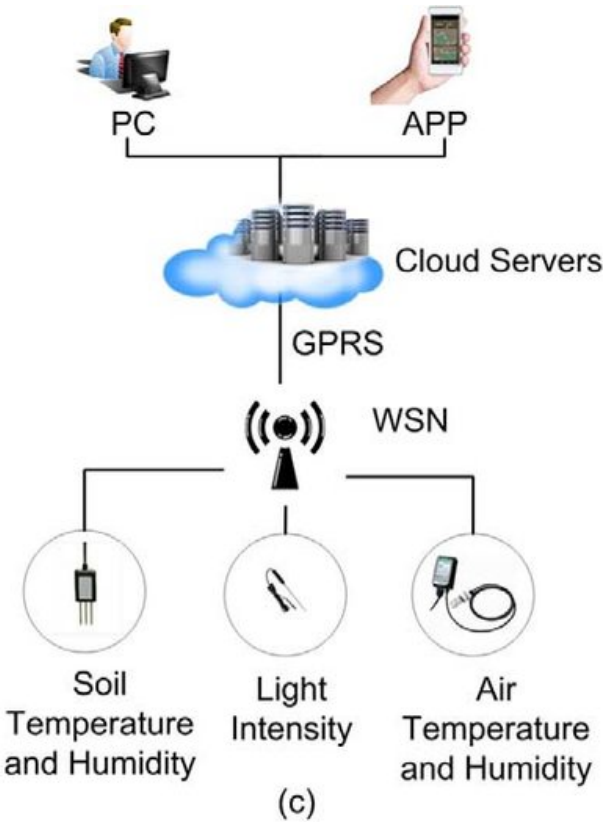
PROJECT TITLE: ENVIRONMENTAL MONITORING

COLLEGE NAME: PERI INSTITUTE OF TECHNOLOGY

DOMAIN: INTERNET OF THINGS (IOT)

(a)

(b)



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Submitted By:

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PHASE 3:

OBJECTIVE:

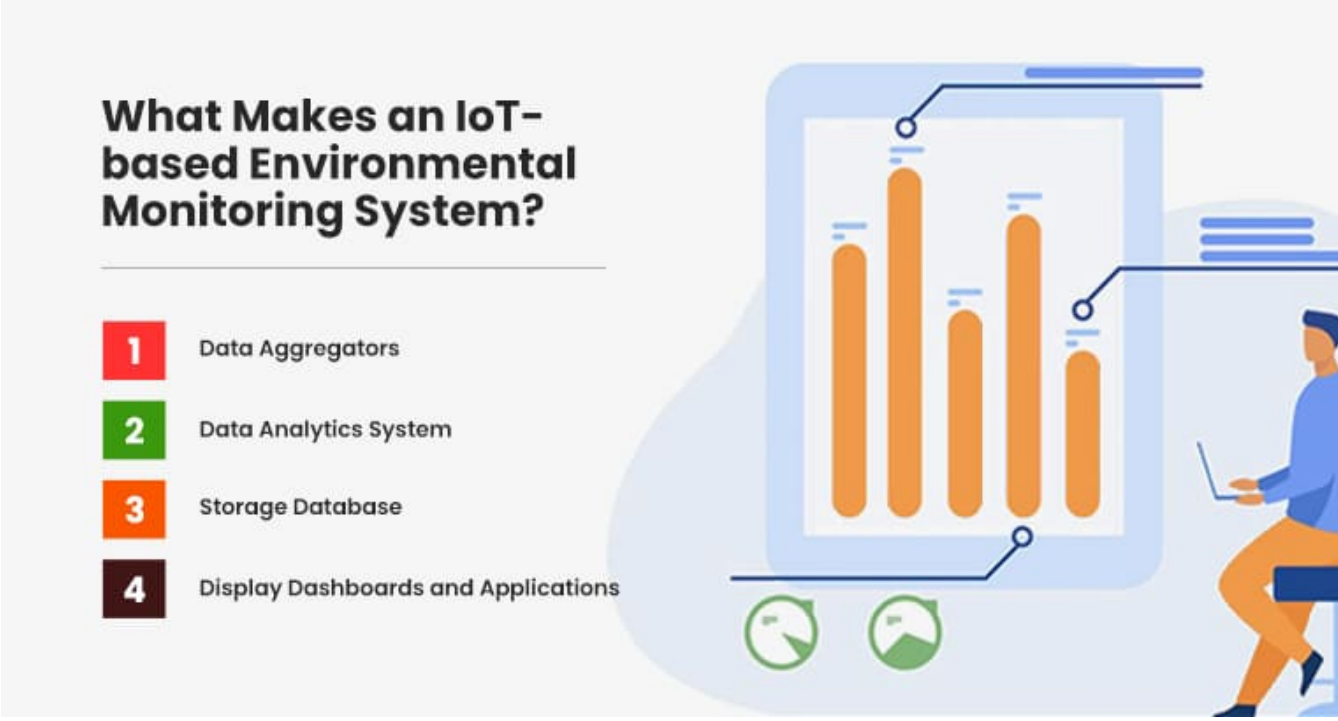
The main objective of environmental monitoring is to manage and minimize the impact an organization's activities have on an environment, either to ensure compliance with laws and regulations or to mitigate risks of harmful effects on the natural environment and protect the health of human beings.

OUTLINE OF THE PROJECT:

Environmental monitoring has become crucial to ensure healthy living.Enterprises for focusing on green technology by capitalising on state of the art environmental monitoring system iot based environmental monitoring system allows supervisor and manager to monitoring current remote site for condition such rain temperature humidity harmful gases etc system are combination of wireless sensor network operation which can be adjusted based on the various parameters. These are small autonomous wireless sensor node and receiver connected over the internet . Once they collect important data transmitted the same to cloud based solution for storage and analysis

This system can be programmed to allert the supervisor is an abnormal environment. For instance, suppose there is a fire in a manufacturing factory since the fire is currently conformed to a small area the work force hasn't realised it yet .however the IOT based environment and monitoring system detect the sudden spike in the room temperature and send an alert to the manager and teams they can check the permisses and take action according to limit the losses in certain cases this system can also send the information to the fire department which can come and put out the fire before it spread beyond control

IMPLEMENTATION :



1. Data Aggregators:

Sensors or data aggregators collect real time data from the connected system. data hence collected is further sent to the analyses.

2. Data analytics system:

To measure environmental and impact, this system must make it possible to evaluate key date of points that can indicate everything from

water and chemical leaks to critical equipment failures. industrial operator and manipulators can use this data to measure the environment footprint and take action to reduced waste ,increase sustainability ,manage valuable resources like water, and prevent environmental disasters.

3.Storage Database:

Data collected is securely stored in the cloud base system. this data is categorised into manipulate forms based on relevance and utilized for analyses.

4. Display dashboards and applications:

Once the data is available in patterns and trends. it is displayed on the dashboards for the shake holders. they can use this insights to make corresponding businesses decisions and even program the iot applications to send alerts and the notifications.

Environmental monitoring of water:

All bodies of water must be monitored, as water is essential to life on earth. Water must be clean, drinkable, safe, and sanitary. Bodies of water must also be clean so that marine life and biodiversity can thrive. Water can be measured in real-time by connecting software to sensors located in bodies of water. These sensors then can communicate when thresholds are reached; for example, dissolved oxygen, turbidity, bioindicators, nitrates, pH, chemical contamination, and water temperature. Water samples can also be collected manually then sent to a lab.

Environmental Monitoring of Air:

Air pollutants harm human health and environmental health. As air quality is essential to human health and national air quality government regulations must be followed by businesses and organizations. Air quality can be monitored in real-time by connecting software to sensors located in an area of choice. These sensors then measure levels and report main pollutants in the air; for instance, particulate matter,

nitrogen dioxide, carbon monoxide, sulfur dioxide, and ozone. Air quality can also be measured manually with stations that collect air particles for a period of time before being measured.

Energy monitoring:

Energy monitors or Vital not just for industrial units but also the municipal corporations to improve the quality of urban life .IOT based solutions help the cutting edge detection of energy wastage and way to improve consumption efficiency. The method majorly realise on the energy grids.

The electric rich refers to the network of Transmission lines substations Transformers and more than the transmission electricity from power plants to the target locations smart director groups represent that grittal transformation of electricity networks . It also here two way flow of electricity they can collect the real time data to detect analyse and proactively react to changes in usage of related issues they also have still feeling kept ability and able consumer to participate proactively.

CODE:

```
import time

import datetime

import requests

import json

import paho.mqtt.client as mqtt
```

```
# Define the MQTT broker address and port
broker_address = "localhost"
broker_port = 1883

# Create a MQTT client
client = mqtt.Client()

# Connect to the MQTT broker
client.connect(broker_address, broker_port)

# Subscribe to the "environment" topic
client.subscribe("environment")

# Define a function to handle received messages
def on_message(client, userdata, message):
  # Print the message
  print("Received message: {}".format(message.payload))

  # Parse the message JSON
```

```
  data = json.loads(message.payload)

  # Get the temperature and humidity values
  temperature = data["temperature"]
  humidity = data["humidity"]

  # Print the temperature and humidity values
  print("Temperature: {}°C".format(temperature))
  print("Humidity: {}%".format(humidity))

# Set a callback for received messages
client.on_message = on_message

# Start a loop to process messages
while True:
  # Wait for messages
  client.wait_msg()

# Disconnect from the MQTT broker
client.disconnect()
```

Conclusion and Future Scope:

Rising environmental contamination is one of the time-consuming tasks because humans are to blame for this dangerous nature that threatens the entire planet. We are accountable for eradicating the pollution issues. Almost all emissions change from time to time. We tracked temperature, smoke and humidity every 50 seconds and used IOT to control the differences. It's a brilliant idea that will carry tracking to a whole new stage. Despite the fact that the general and particular goals are very similar, the technical methods used are very different. The information gathered by the sensors could be used by officials to take effective action, such as sending out emergency warning notices and evacuating people to safe locations. Further, the introduction of pollution monitoring systems would assist in determining how bad air pollution is on a regular basis and protecting the world from more pollution