Design an Iot based environmental monitoring system

In our project we are monitoring the temperature and humidity level in children park and theme park , outdoor places

So we need to specify park and them park ,outdoor places setup the system to display the level of temperature and humidity to people

Components:

1.Microcontroller and sensor: Choose a microcontroller with built-in Wi-Fi   connectivity to ESP8266 or ESP32.

2.Temperature and Humidity Sensor: Need to measure temperature and humidity. The DHT11, DHT22, and BME280 sensor are common choices.

3.Power Supply: which can be a used rechargeable battery or adapter

4.Internet Connectivity: Wi-Fi module to connect the sensor to cloud

5.Enclosure: The system will be deployed in a harsh environment, we need an enclosure to protect the electronics.

6.Software Development Tools: To install syder python IDE in our windows laptop

Procedure:

1.Connect the Sensor: Wire up the temperature and humidity sensor to our Arduino Uno,ESP8266,ESP32.

2.Connect the Display: Connect the display to the microcontroller and program it to display the data.

3.Connect the Wi-Fi Module: Configure the Wi-Fi module to connect to our local Wi-Fi network.

4.Write the Code: Write the code for microcontroller to read data from the sensor, display it on the screen, and send it to the IoT platform.

5.Set up the IoT Platform: Create an account on your chosen IoT platform Google cloud IoT. Permissions, and other necessary configurations.

6.Send Data to IoT Platform: Modify our code to send the temperature and humidity data to the IoT platform. Use protocols like MQTT or HTTP.

7.Create a Mobile App or Web Interface: create web page to visualize the data.

 8.Remote Monitoring: Access our temperature and humidity data remotely via web interface.

9.Power Supply: Ensure setup has a reliable power source.

10.Testing and Calibration: Test the system for accuracy, and calibrate the sensors if necessary.

11.Maintenance: Regularly monitor and maintain the system to ensure it continues to work correctly.

Program:

```
Print("Environmental monitoring")

Import machine
Import time
import ujson
Import urequests


 Define the MQTT broker parameters
MQTT_BROKER = "localhost"
MQTT_PORT = 1883
MQTT_TOPIC = "/environment/data"


# Define the DHT22 sensor parameters
DHT22_PIN = 13


# Define the DHTT sensor objects
dhtt = machine .DHTT(DHT22_PIN)


# Connect to the MQTT broker
Client = urequests.clients( )
Client.connect(MQTT_BROKER, MQTT_PORT)


# Publish the environment data to the MQTT topice
Def publish_data(temperature, humidity);
    Data = {"temperature": temperature, "humidity" : humidity}
    json_data = ujson.dump(data)
```

```python
    client.publish(MQTT_TOPIC, json_data)


# Start a loop to read the DHT22 sensor and publish the data to the MQTT broker
While True :
    # Read the temperature and humidity from the DHT22 sensor
    temperature, humidity = DHT22.read()


    # Publish the environment data to the MQTT topic
    publish_data(temperature, humidity)


# Wait for 10 seconds before reading the sensor again
Time.sleep(10)
```