### **🚀 VeriHarvest IoT Module (Real-Time Monitoring)**

**Role:** IoT Engineer  
 **Module:** **Temperature, Humidity & Gas Level Monitoring using Sensors**

## **📌 1. Overview**

This module **simulates IoT sensors** that send **temperature, humidity, and gas contamination levels** to a **cloud MQTT broker** for **real-time food monitoring**.

✅ **Simulates IoT sensor data** ✅ **Publishes sensor readings to an MQTT broker** ✅ **Works with real ESP32/Raspberry Pi sensors** ✅ **Integrates with Blockchain for Compliance Alerts**

## **📌 2. How to Run**

### **🔹 Prerequisites**

✅ Install **Python 3.8+** ✅ Install MQTT Library:

pip install paho-mqtt

✅ (Optional) If using **real sensors**, connect **ESP32 or Raspberry Pi**.

### **🔹 Steps to Execute**

1️⃣ **Run IoT Sensor Simulation**

python veriharvest\_iot\_module.py

2️⃣ **Expected Output**

Connected to MQTT Broker!

Published: {'temperature': 5.3, 'humidity': 62, 'gas\_level': 1.2}

Published: {'temperature': 3.8, 'humidity': 59, 'gas\_level': 0.9}

* Sends data every 5 seconds.
* Data can be stored on the blockchain if thresholds are exceeded.

## 📌 3. Testing IoT Module

* Run an MQTT client (mqttx or mosquitto\_sub) to listen to data.

mosquitto\_sub -h mqtt.eclipseprojects.io -t "veriharvest/sensor"

Check **sensor values** and trigger alerts for abnormal readings.