Training Day 4 Report:

Date: *30 June,2025(Monday)*

Location:*PG Block HPC Lab*

Guided by:*Training Instructors (Classroom-Based)*

Main Objective:

To practically implement IoT data acquisition using ESP32 and DHT22, cloud connectivity, and data upload to ThingSpeak, enhancing understanding of real-time data monitoring and sensor-cloud integration.

Summary of the Day's Work

Today’s session focused on hands-on simulation and coding for IoT data acquisition, sending sensor data to the cloud, and verifying live results with graphs and HTTP responses.

Topics/Areas Covered:

- Data Acquisition in IoT
- Interfacing ESP32 with DHT22 Sensor
- Reading Temperature & Humidity using Arduino Code
- Connecting ESP32 to Wi-Fi in Wokwi Simulator
- Sending Data to ThingSpeak using HTTP GET Request
- Viewing Sensor Data on ThingSpeak (Graph View)

Concepts Learned:

- Data acquisition means collecting sensor data for cloud use.
- DHT22 is used for accurate temperature & humidity readings.
- ESP32 helps connect to Wi-Fi and send data to the cloud.

- HTTP GET method is used to push sensor values to ThingSpeak.
- API keys are required to write data securely to cloud channels.
- HTTP status code 200 = success, confirming data upload.

Tools / Platforms Used

- Wokwi Simulator
- ESP32 + DHT22
- ThingSpeak Cloud
- Arduino IDE (Code logic)

Tasks Performed:

- Simulated ESP32 + DHT22 in Wokwi.
- Wrote Arduino code to read sensor data.
- Sent data to ThingSpeak using correct API key.
- Verified output using HTTP response and live graph.

Observations / Reflections

Today's class was really practical. Sending real-time data to ThingSpeak felt like a proper IoT setup. It helped me understand how cloud and sensor devices actually communicate with each other.

Key Takeaways

- Gained hands-on experience in IoT cloud data acquisition and verification.
- Built confidence in integrating sensors with microcontrollers and cloud platforms.
- Understood the workflow of real-time data transfer, monitoring, and visualization.