

# Mini Project 2

## Real-Time IoT Dashboard with Graphs

### ***Project Title:***

Real-Time IoT Dashboard with Graphs using ESP32, DHT22, Wokwi Simulator, ThingSpeak, and HTML/JavaScript

### ***Objective:***

To create a real-time IoT system that reads temperature and humidity from a sensor and displays it on a custom-designed web dashboard with live graphs.

### ***Components/Tools Used:***

<b><i>Component</i></b>	<b>Use</b>
ESP32 (Wokwi)	Microcontroller to read sensor and send data
DHT22 Sensor	Measures Temperature and Humidity
Wokwi Simulator	Simulates ESP32 and DHT22 circuit virtually
ThingSpeak	IoT cloud platform to store and graph data
HTML + CSS + JS	For building custom real-time dashboard
CodePen	Platform to write and test web code live

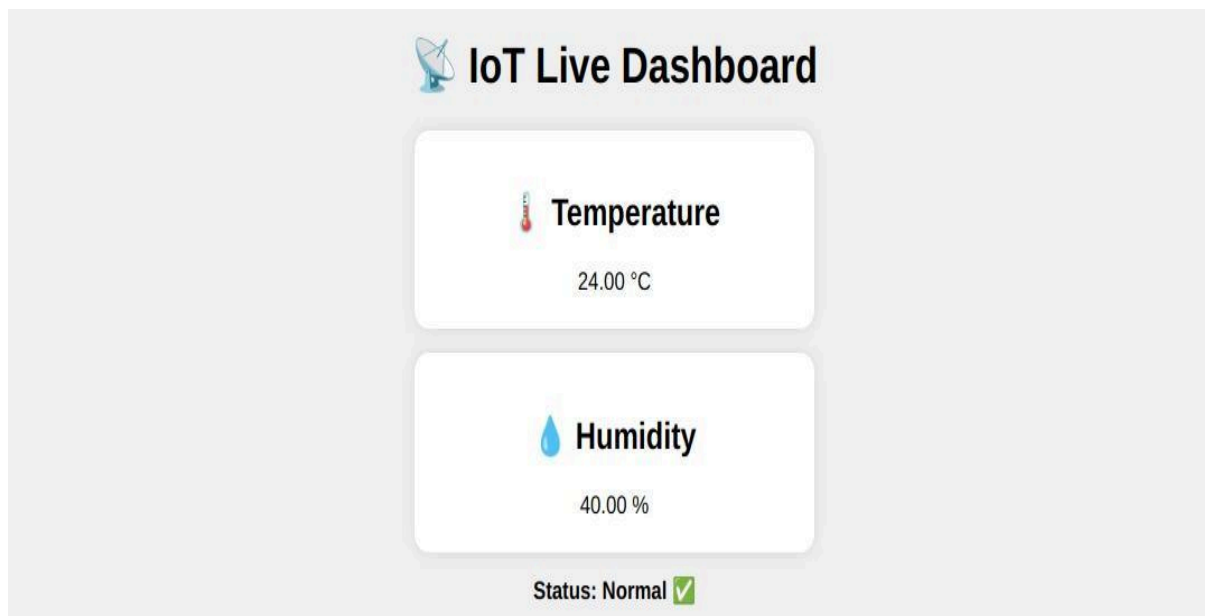
## ***Steps Followed:***

### 1. Circuit Design on Wokwi

- Used Wokwi.com to simulate ESP32 and DHT22 sensor.
- Connected:
  - VCC to 3.3V
  - GND to GND
  - Data pin to GPIO 15 (DHTPIN)
- No physical components used.

### 2. ESP32 Code (Arduino)

- Used WiFi.h and DHT.h libraries.
- Connected ESP32 to Wokwi-GUEST WiFi (no password).
- Read temperature and humidity values using DHT22.
- Sent the data to ThingSpeak using HTTP POST





## Temperature Graph




## Humidity Graph



Simulation

00:10.965 44%

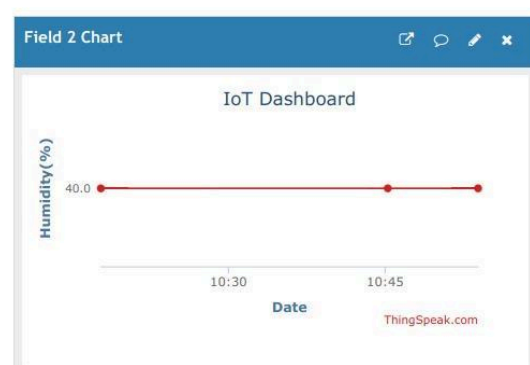
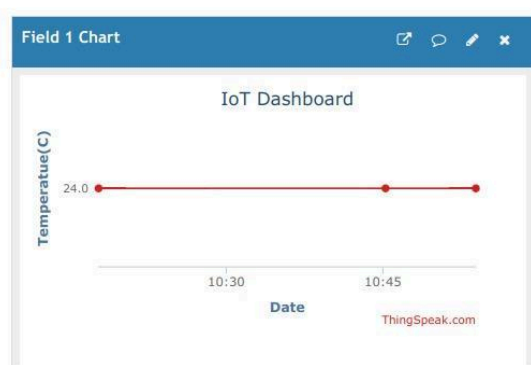


ESP32 pin configuration diagram showing connections for an DHT22 sensor. The DHT22 is connected to the ESP32 via I2C: SDA to GPIO 21, SCL to GPIO 22, and VCC to 5V. The ESP32 pins are configured as follows:

Pin	Configuration
1	IN Floating
2	IN Floating
3	IN Floating
4	IN Floating
5	IN Floating
6	IN Floating
7	IN Floating
8	IN Floating
9	MTMS
10	MTDI
11	MTCK
12	SPI1 HD
13	SPI1 WP
14	SPI1 CS0
15	EN
16	Boot
17	IN Floating
18	IN Floating
19	IN Pull-up
20	IN Floating
21	IN Pull-down
22	IN Pull-down
23	IN Pull-up
24	SPI1 MOSI
25	SPI1 MISO
26	SPI1 CLK
27	IN Floating
28	IN Floating
29	UART0 TX
30	UART0 RX
31	IN Floating

Connecting to WiFi...  
✓ WiFi connected!  
IP Address: 10.10.0.2  
🌡 Temperature: 24.00 °C, 💧 Humidity: 40.00 %  
📶 Data sent to ThingSpeak. Status: 200

📈 ⏸ 🗑



## ***Conclusion:***

This project demonstrates how we can:

- Simulate IoT hardware (Wokwi)
- Use real-time cloud services (ThingSpeak)
- Create custom web dashboards (HTML + JS)

This is a complete working model of **IoT sensing + cloud logging + live visualization.**