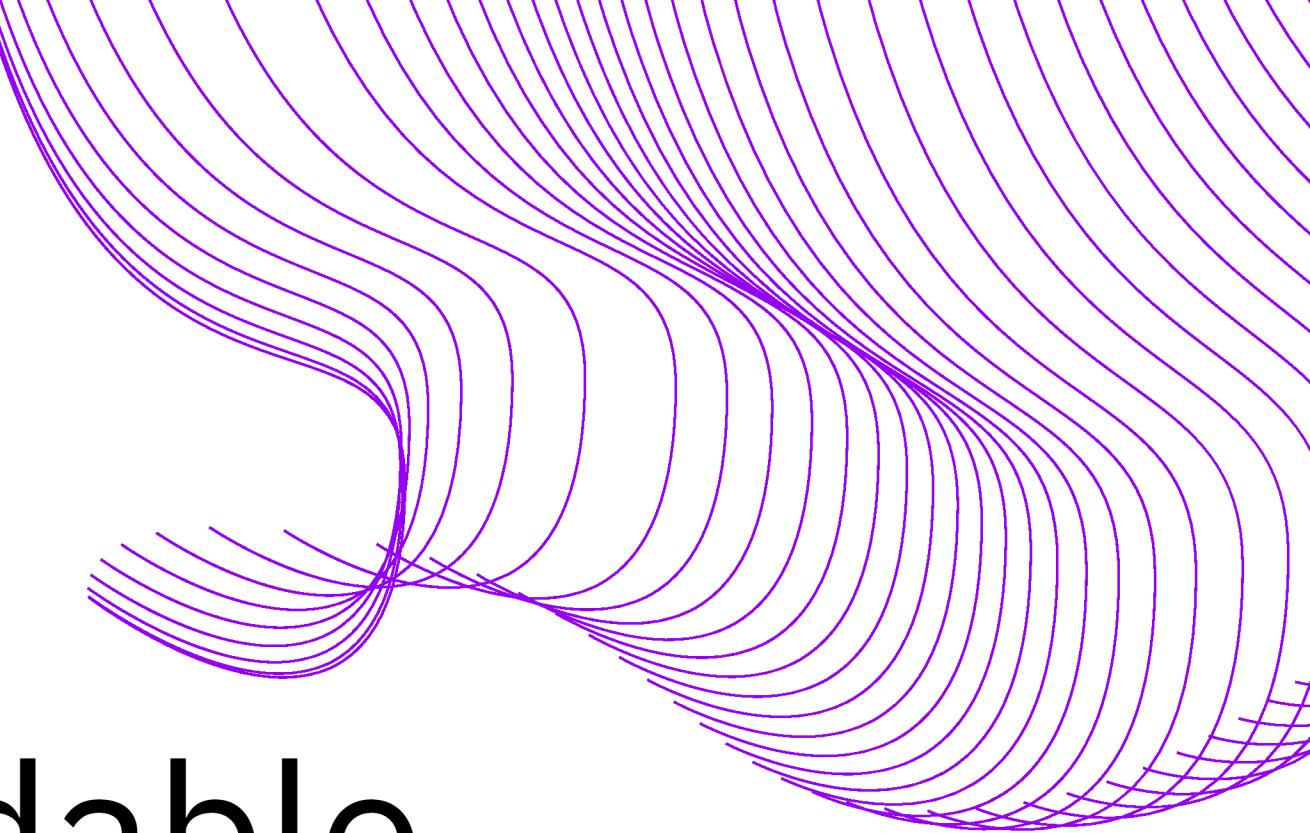


*Team:* Omabedor

# Environmental monitoring node

Low-Cost IoT Sensor Node for Agricultural and Environmental Monitoring

*Team:* Omabedor



# The Need for Affordable Farming Solutions

This affordable IoT sensor node project aims to empower farmers with cost-effective tools to monitor temperature, humidity, and light levels, helping them make better decisions for crop management and improving agricultural productivity.

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# Contents

- Components
- Circuit Diagram
- Libraries
- How it Works
- Enclosure
- Estimated cost
- Conclusion



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# Components

## ESP32

Main microcontroller with Wi-Fi functionality for creating an access point and controlling sensors and LEDs.

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## DHT22

Measures temperature and humidity (connected to GPIO 4)

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## LDR

Measures light levels (connected to GPIO 34)

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## LEDs

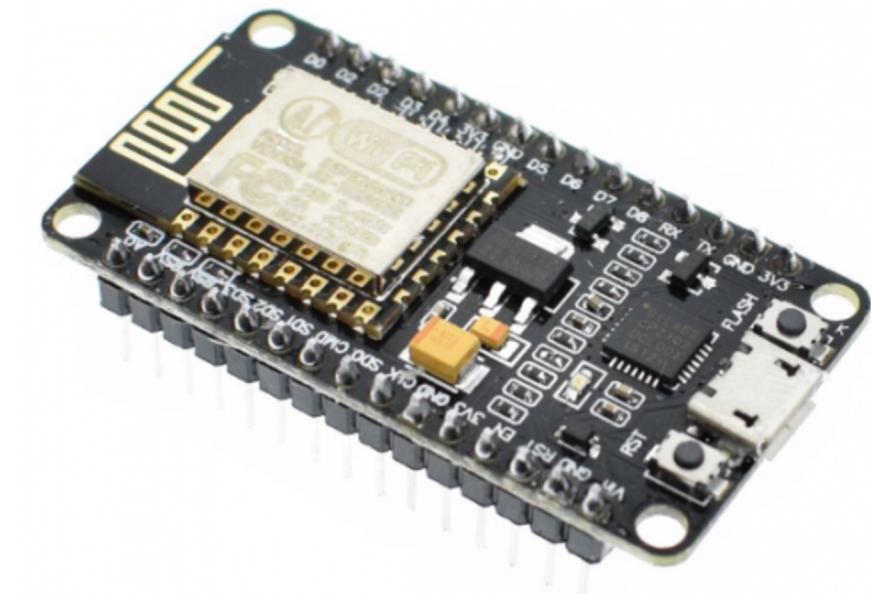
Two LEDs for status indication: one blinks on power, and one lights up when Wi-Fi is connected (GPIO 12 and 13).

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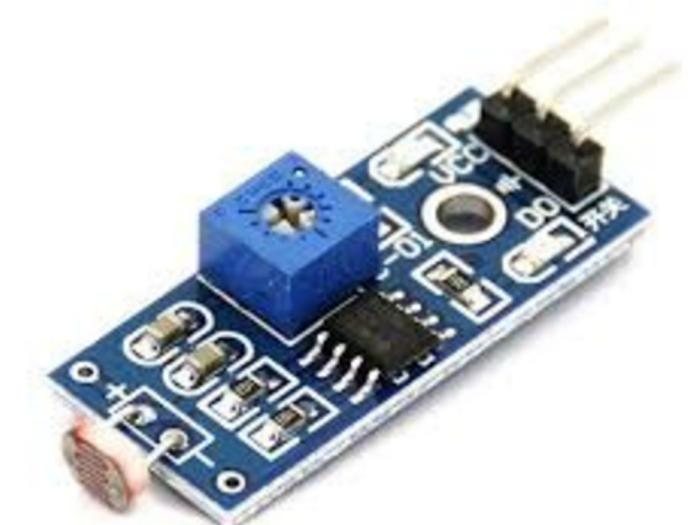
# Components

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ESP32



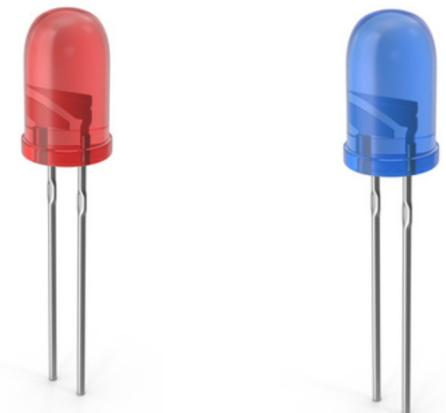
LDR



DHT22

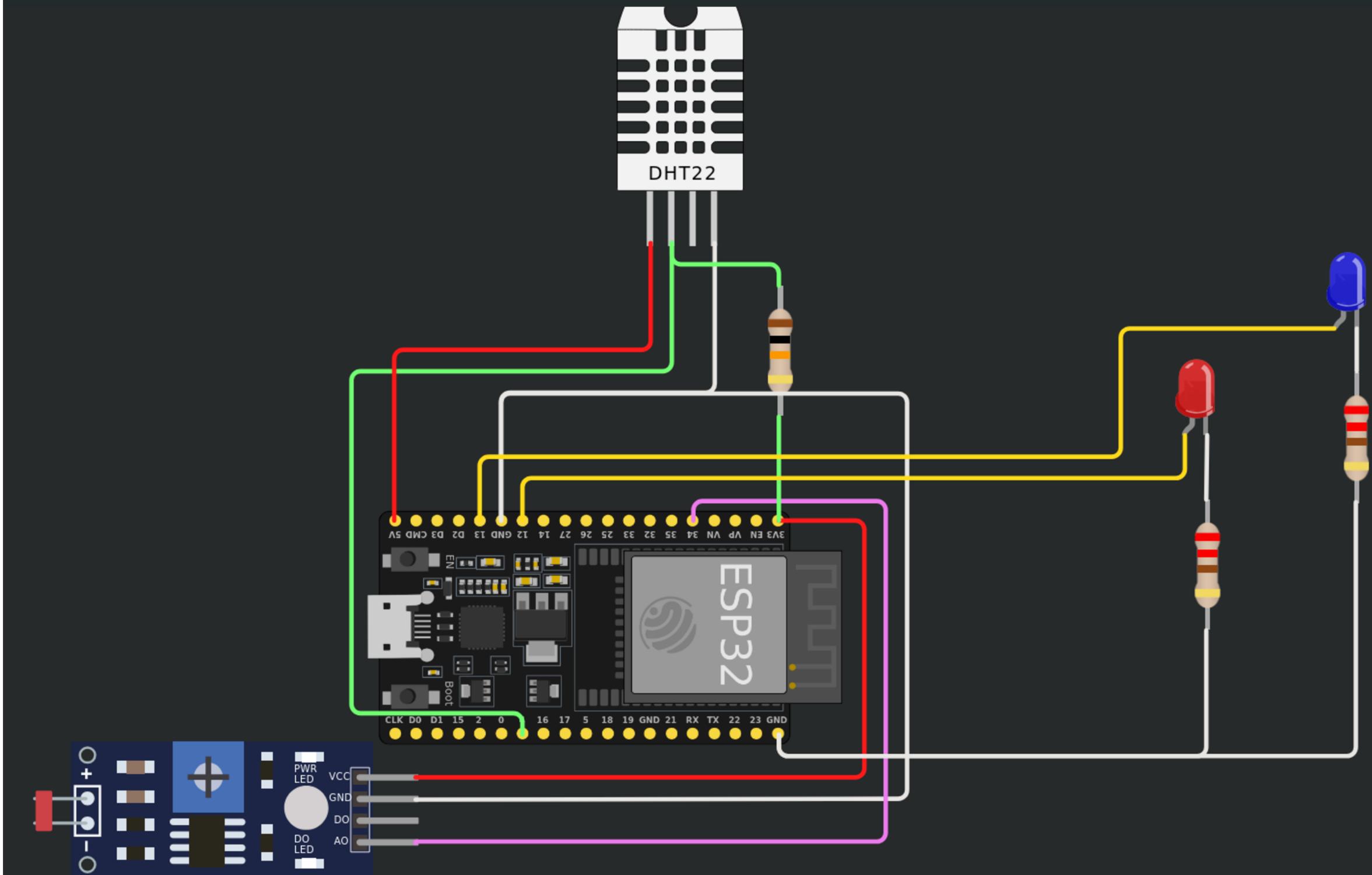


LEDs



# Circuit Diagram

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## **WiFi.h**

Configures ESP32 as an access point and handles connections.

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## **DHT.h**

Reads data from the DHT22 sensor.

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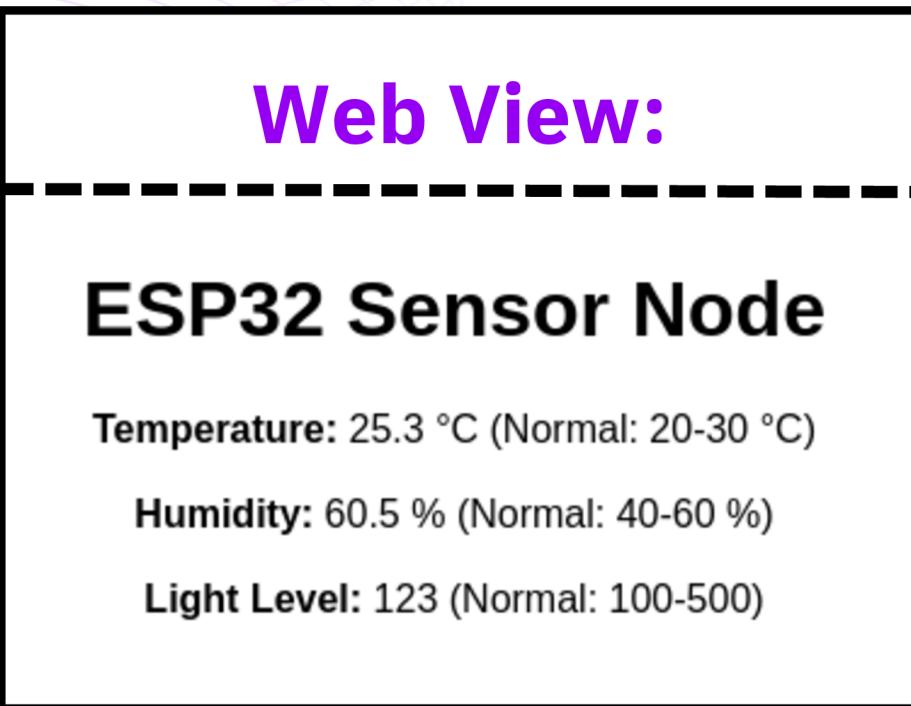
## **WiFiServer.h**

Serves the sensor data via a web server.

# Libraries

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## Wi-Fi Access Point

The ESP32 acts as a Wi-Fi AP, allowing devices to connect directly and view sensor data on a webpage.

## Sensor Data

DHT22 collects temperature and humidity, while the LDR measures light levels. Data is updated every 2 seconds.

## Web Server

The ESP32 serves an HTML page displaying the sensor data. The page is updated every time a client connects.

## LED Indicators

LED1 blinks to indicate power, and LED2 lights up when Wi-Fi is connected.

# How It Works

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# Enclosure

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The enclosure holds the ESP32 and sensors, with holes for the LEDs, DHT22, and LDR. It can be made from plastic, acrylic, or 3D printed for a custom fit.

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# Estimated cost of individual node

Source for all the parts: [robu.in](https://robu.in)

	Cost
ESP32	₹ 382
DHT22 Sensor (Temperature & Humidity)	₹ 154
LDR Sensor	₹ 31
3D Printed Enclosure	₹ 200
Other parts such as LEDs, wires, etc	₹ 50
<b>Net approximate cost</b>	<b>₹ 817</b>

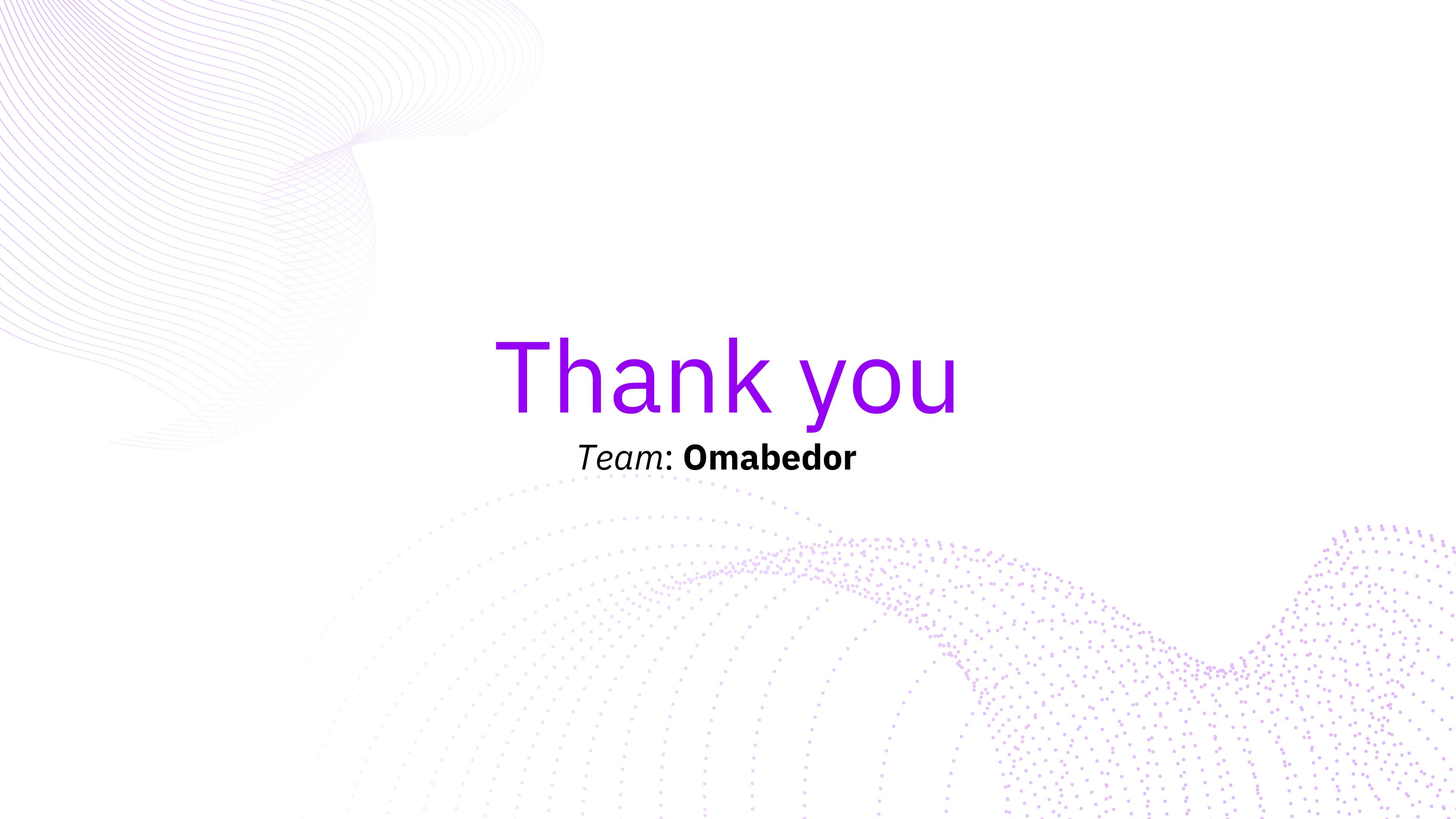
This project offers an affordable IoT solution for farmers, enabling them to monitor key environmental factors like temperature, humidity, and light. By providing real-time data, it helps farmers make informed decisions, improve crop management, and enhance overall productivity.

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**Code on github:**

<https://github.com/localrice/trekathon>

# Conclusion



# Thank you

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