

Embedded Systems Workshop

IoT System

Sanchit Arora
(2019101047)

Overview

The project is a Smart Home Mini system with lots of small features, realtime updates on WhatsApp, and an android app to visualize the data and tweak settings (explained below).

- Temperature & Humidity sensing
 - View corresponding charts in the android app.
 - Optionally send the values as WhatsApp message, the phone number can be changed from the app.
 - Further analysis can be done through ThingSpeak dashboard.
- Alarm
 - Use the app to set (or cancel) alarm.
 - Buzzer will turn on on the specified time.
 - Touch sensor to stop the buzzer noise.
 - Real time tracking even without constant power supply (using RTC & coin cell).
- LEDs
 - RGB LED used to denote temperature.
 - Green: Perfect temperature ($27 \pm 0.5^{\circ} \text{C}$)
 - Blue: Lower Temperature (Colder)
 - Red: Higher Temperature (Hotter)
 - Red LED to signal temperature sensing by sensor and data uploading.
 - Blue LED (Built in ESP32) to signal data fetching.

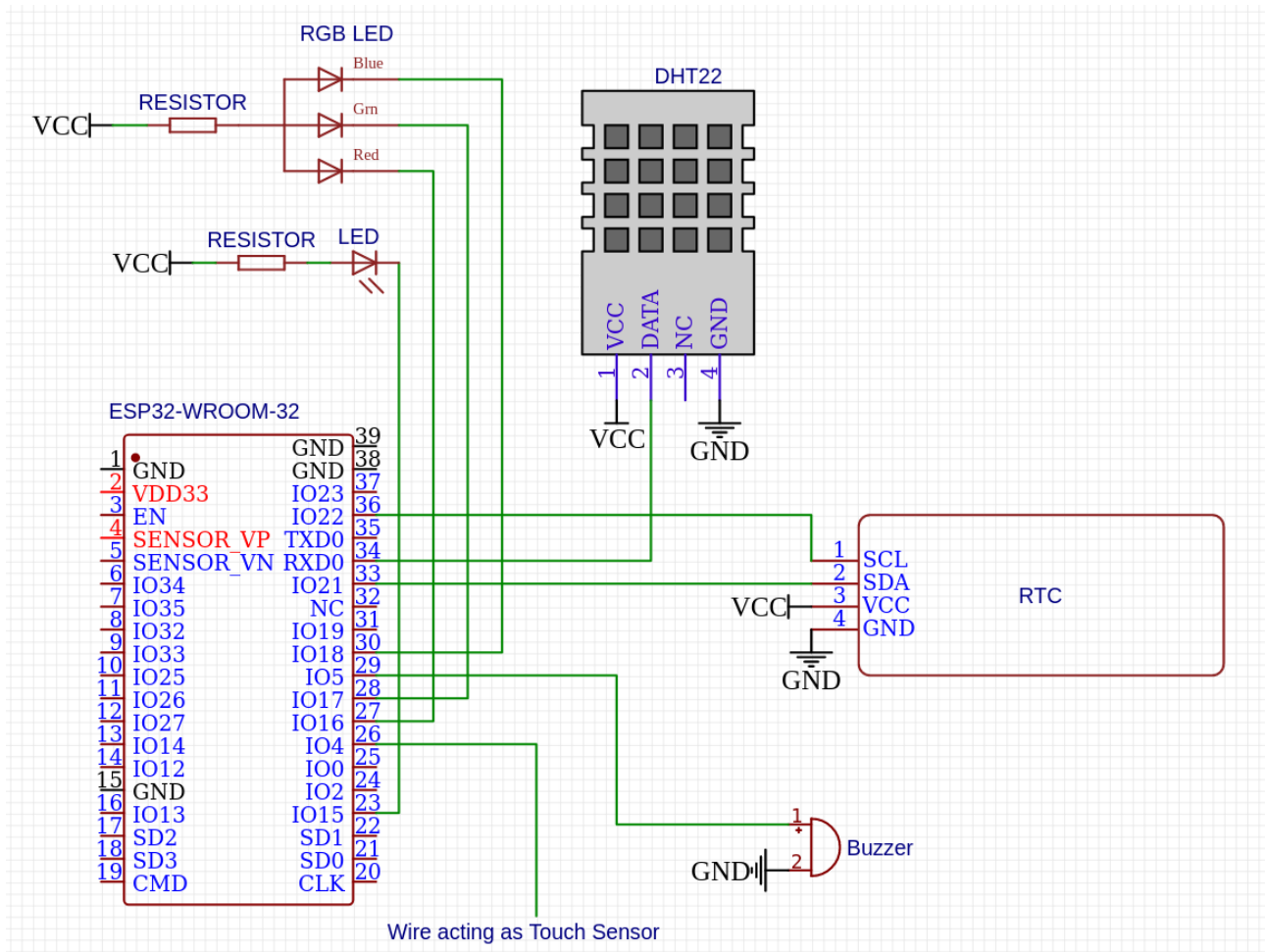
Hardware Used

- ESP32 Wroom board
- DHT22 Sensor
- Buzzer B10
- DS3231 AT24C32 IIC Precision RTC
- CR2032 coin cell (for RTC)
- RGB LED
- Red LED
- 1000Ω Resistor X2
- MicroUSB to USB wire to power ESP32
- Breadboard & Jumper wires

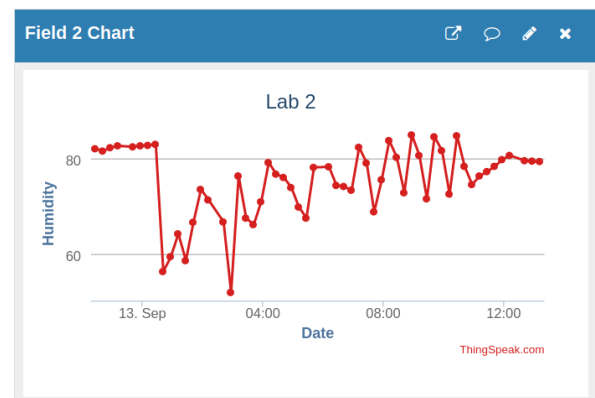
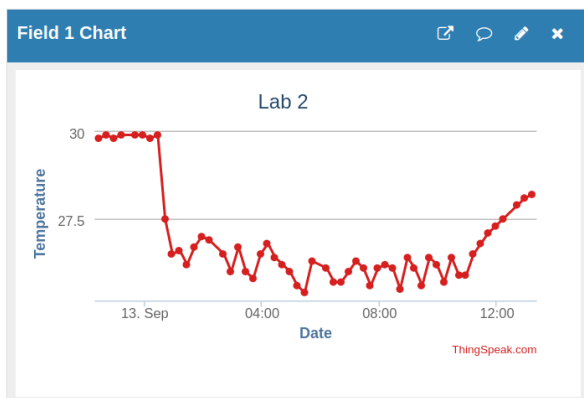
Code & Video

- Code (including the android app) is supplied in *Code/* folder.
- Video: <https://www.youtube.com/watch?v=xkNhLz0SS4k>

Circuit Diagram



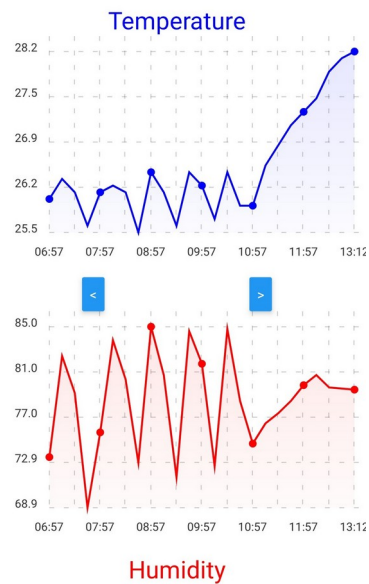
Data Analysis on ThingSpeak



Note: Phone number for WhatsApp messaging and Alarm time are also sent to ThingSpeak.

App Working

Temperature & Humidity



Alarm

TURN OFF ALARM

22 : 49

SAVE

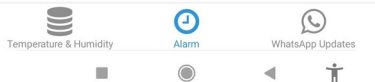


Alarm

Alarm is turned OFF!

12 : 3

SAVE



WhatsApp Updates

TURN OFF WHATSAPP NOTIFICATIONS

9582009551

8368231268

