

# **Fire Safety System**

**Professor**

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# Team

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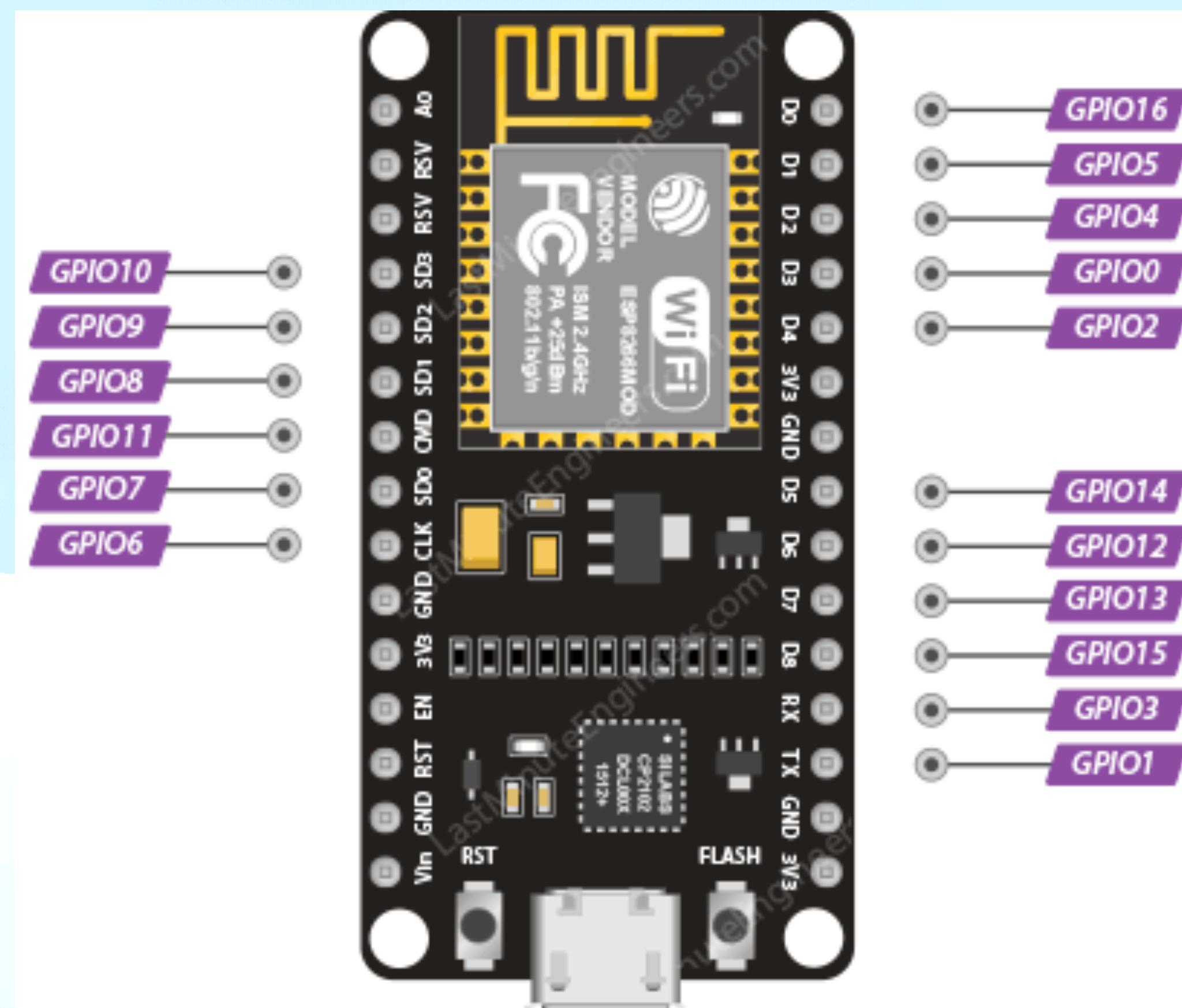
# Introduction

We'll be discussing a fire detection system that uses an AHT10 sensor to detect high temperatures.

# Components

- **ESP8266**
- **AHT10**
- **MG90S**
- **LEDs**
- **Buzzer**

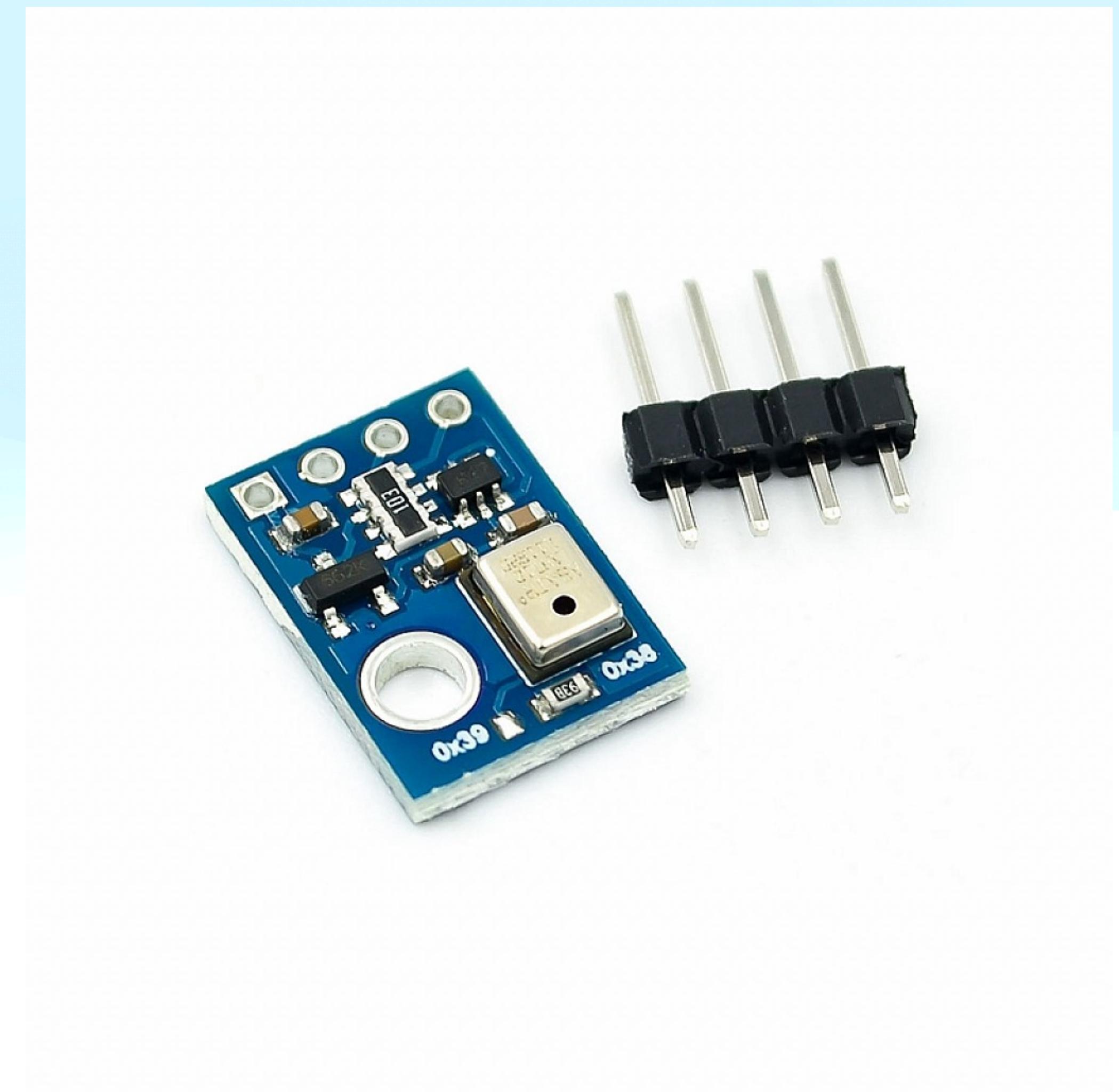
# ESP8266



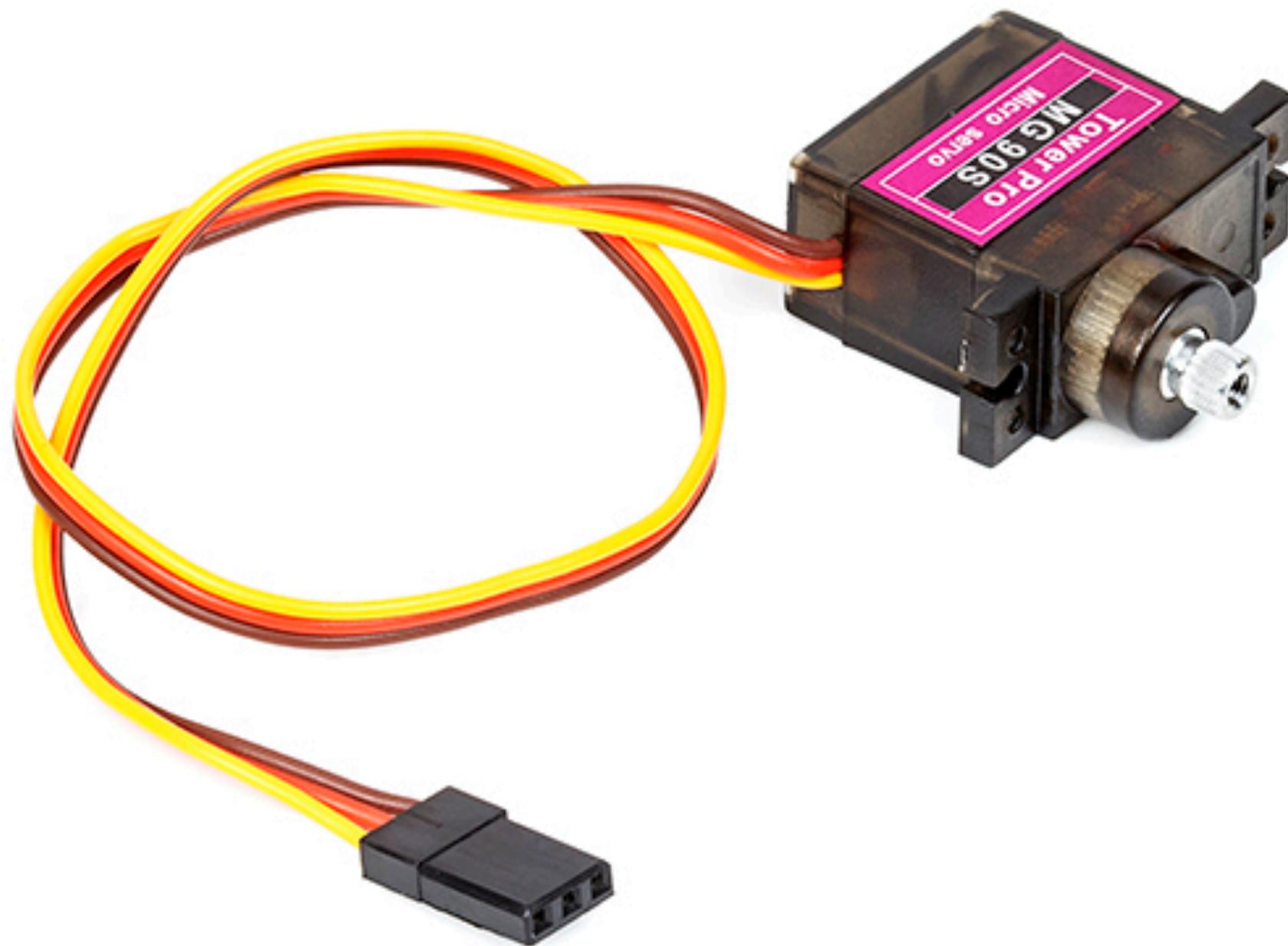
- The ESP8266 is a Wi-Fi module that is used to connect the system to the internet. In our fire detection system, the ESP8266 is used to check if the temperature is higher than 70°C.
  - If the temperature is higher than 70°C, the ESP8266 sends a signal to the servo motor to unlock the door, and the LEDs turn from Green to Red.

# AHT10

- The AHT10 sensor is a digital temperature and humidity sensor that can detect temperature in the range of -40°C to 80°C with an accuracy of  $\pm 0.3^\circ\text{C}$ .
- The sensor works by converting temperature and humidity readings into digital signals that can be read by the ESP8266. In our fire detection system, the AHT10 sensor is connected to the ESP8266 to detect high temperatures



# MG90S



This is a micro servo motor that can rotate up to 90 degrees. It could be suitable for your system as it can be triggered to rotate by 90° when the temperature is higher than 70°C, which unlocks the door

# LEDs



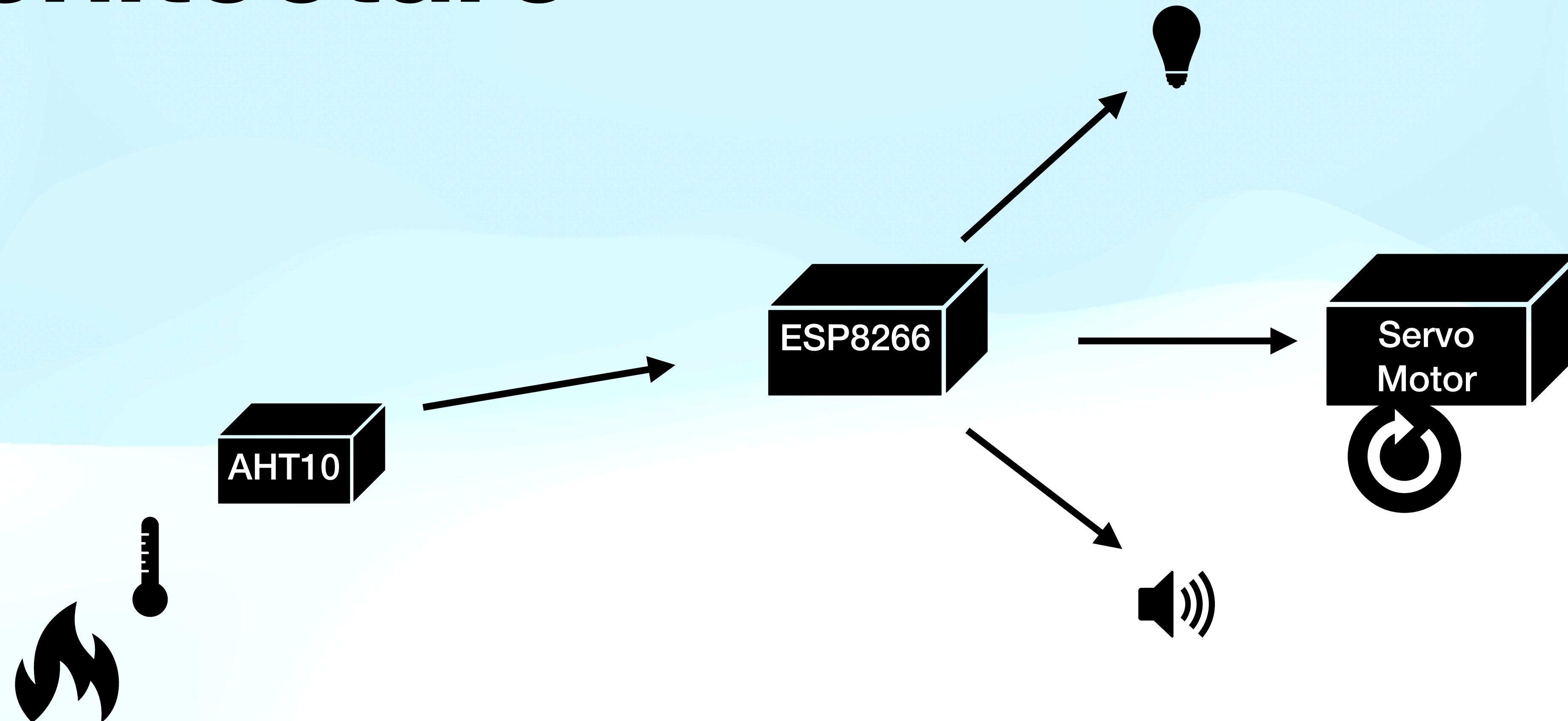
LEDs are light-emitting diodes that can be used to indicate different states in a system. In our fire detection system, the LEDs turn from Green to Red when the temperature is higher than 70°C, indicating that a fire has been detected.

# Buzzer



An alarm is an important component of a fire detection system that alerts people of a fire. In our fire detection system, an alarm is triggered when the temperature is higher than 80°C. The alarm is connected to the ESP8266.

# Architecture

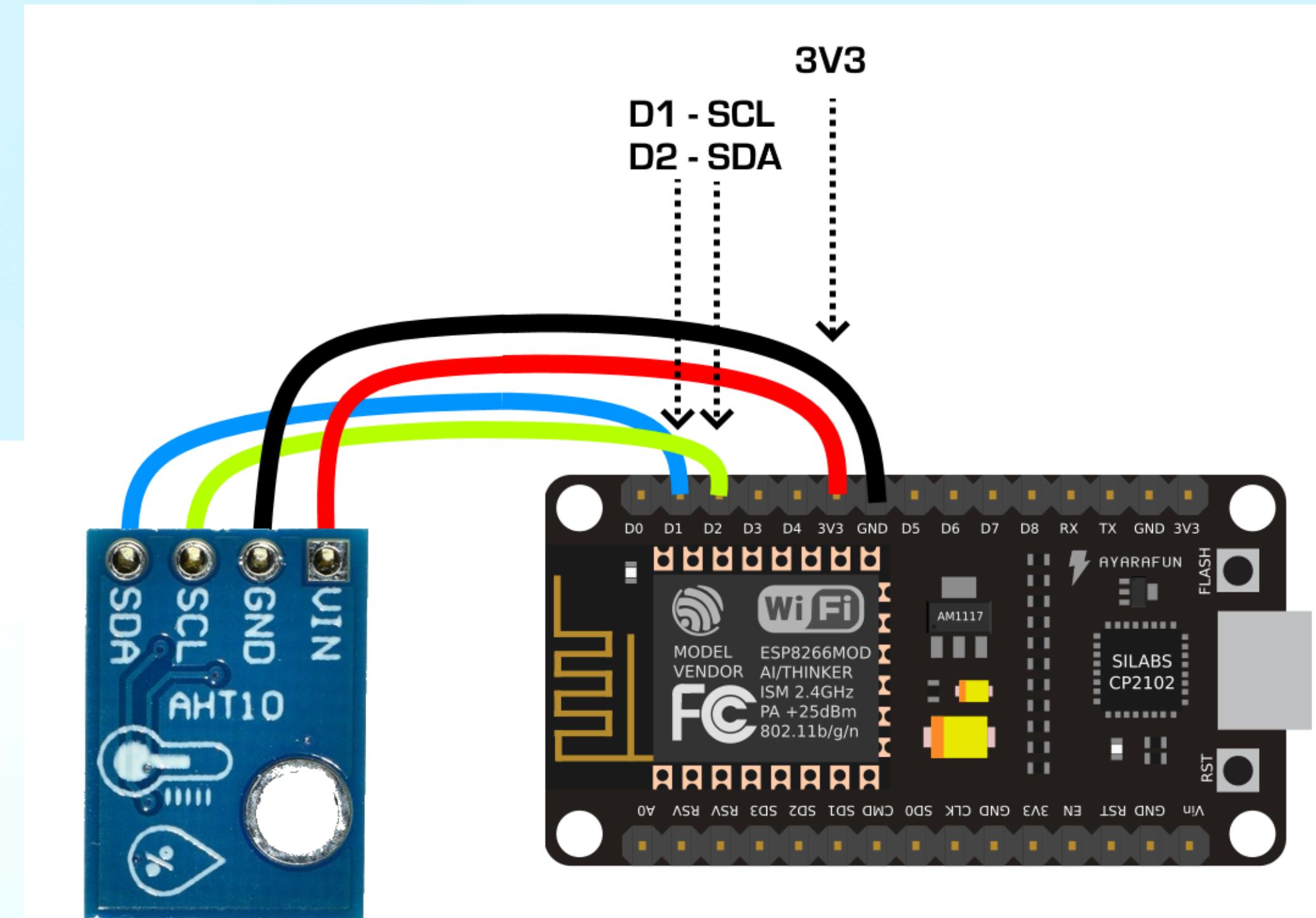


# How it works?

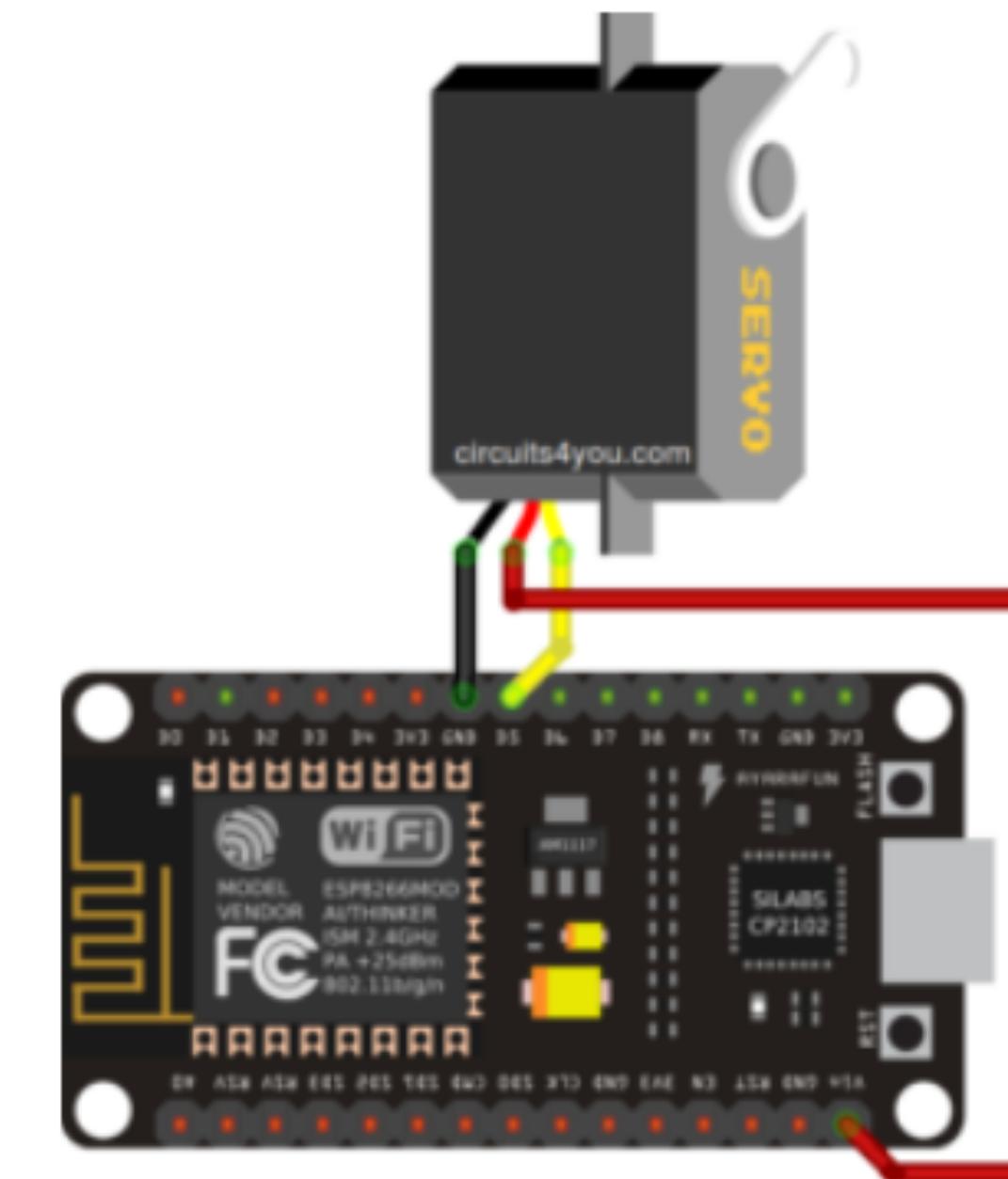
- DHT11 sensor detects the temperature and sends the data to ESP8266.
- ESP8266 receives the data and checks
  - Normal Temperature
    - LED is **GREEN**
  - If the temperature goes above a particular threshold (let's say 70°C)
    - It triggers the servo motor and rotates it by 90°
    - LED turns **RED**
    - Alarm starts ringing
- The servo motor is connected to a lock mechanism, opening the lock when rotated
- For demonstration
  - DHT11 is used instead of AHT10 due to unavailability.
  - the threshold temperature is set to 33°C.

# Circuit Diagrams

## AHT10

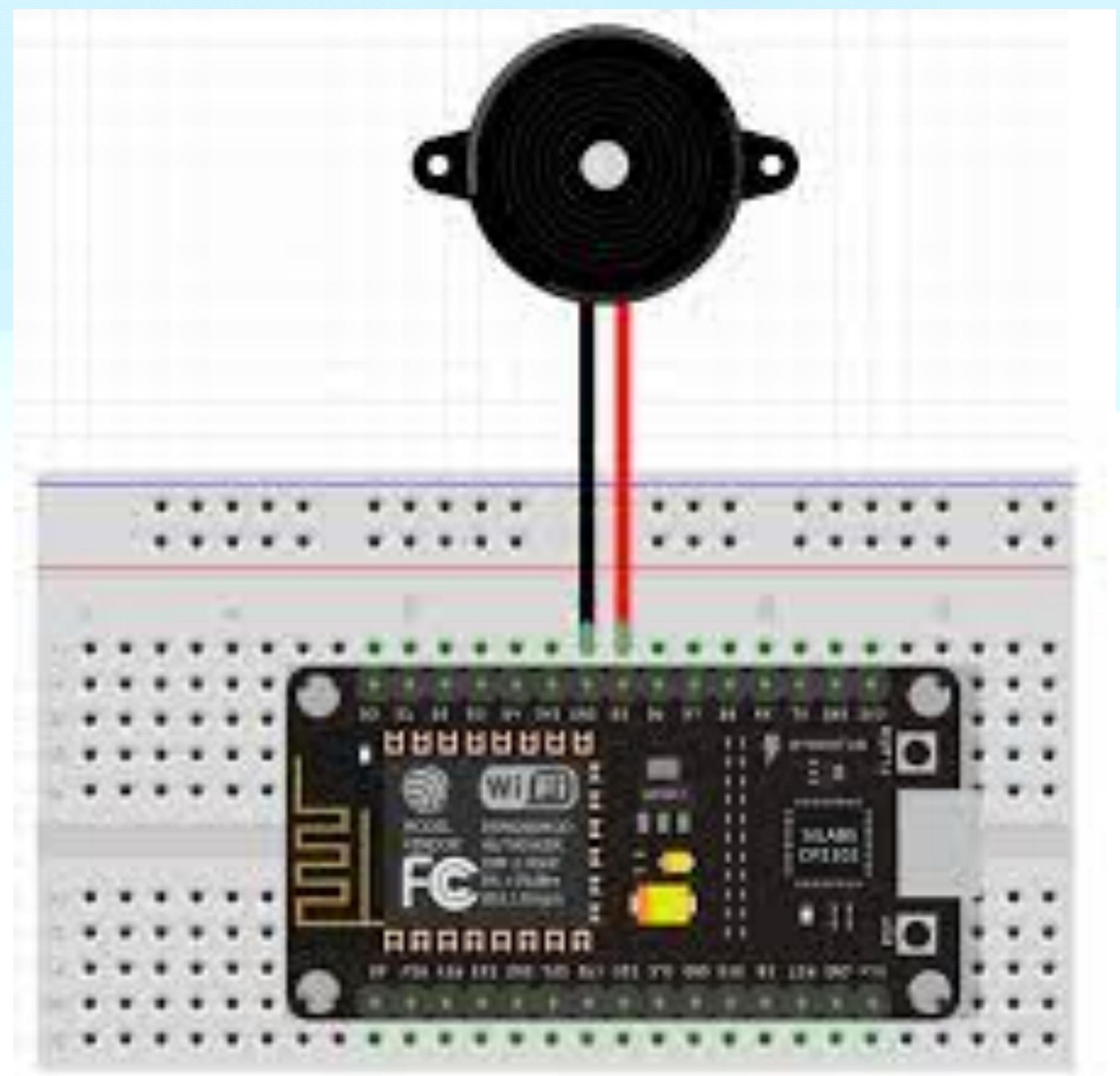


## Servo Motor

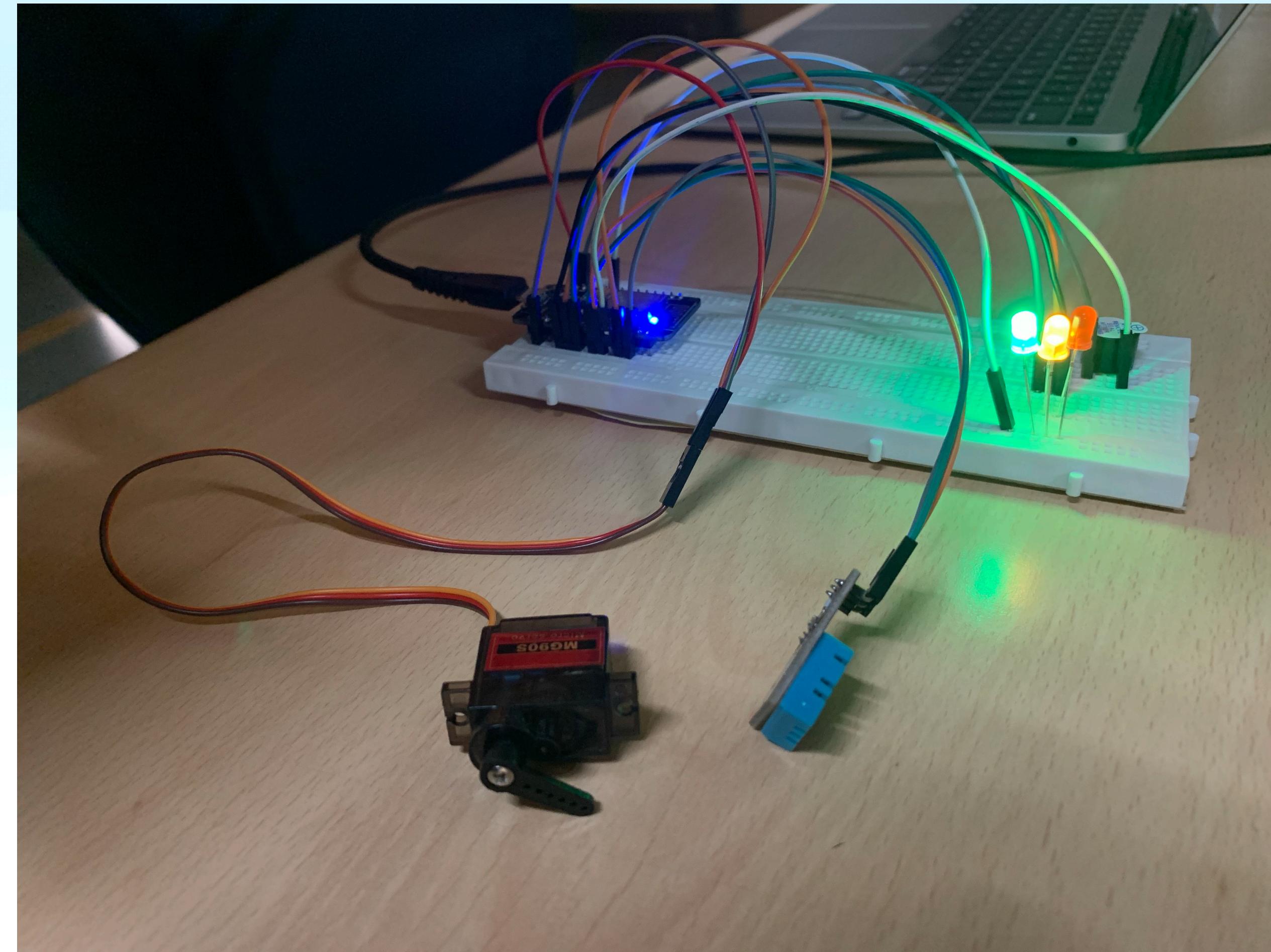
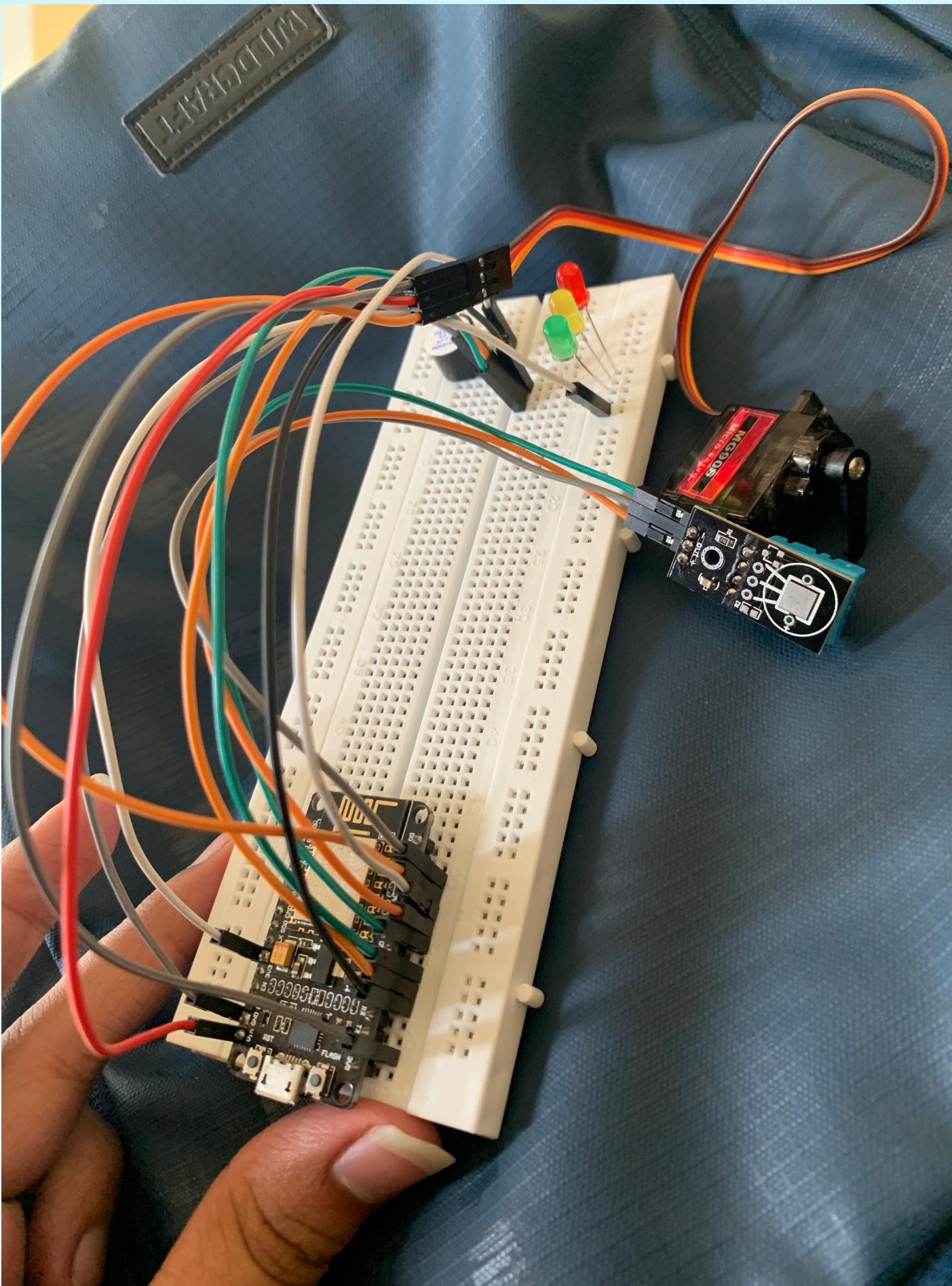


# Circuit Diagrams

Buzzer



# Circuit



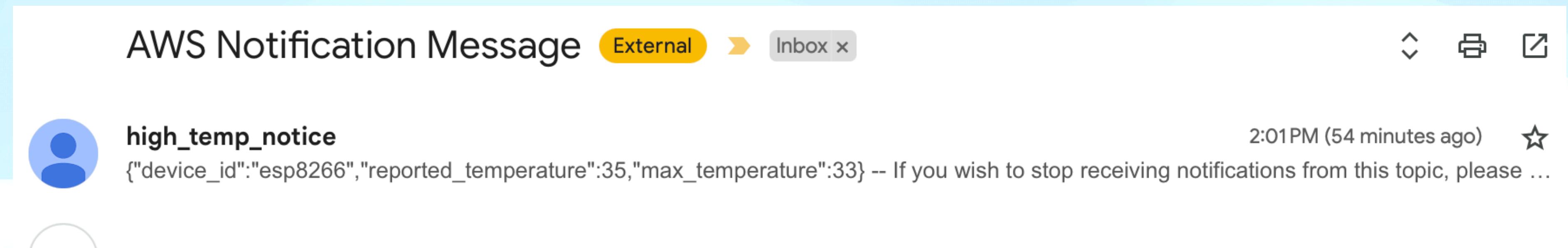
# Data being uploaded to AWS

The screenshot shows the AWS IoT Subscriptions interface. On the left, the navigation menu includes options like Monitor, Connect (with sub-options for one device and many devices), Test (with Device Advisor, Test suites, and Test runs and results), MQTT test client (with Device Location), and Manage (with All devices, Greengrass devices, and LPWAN devices). The main area displays a list of subscriptions. A subscription named "device/+data" is selected, indicated by a blue border. This subscription has two entries:

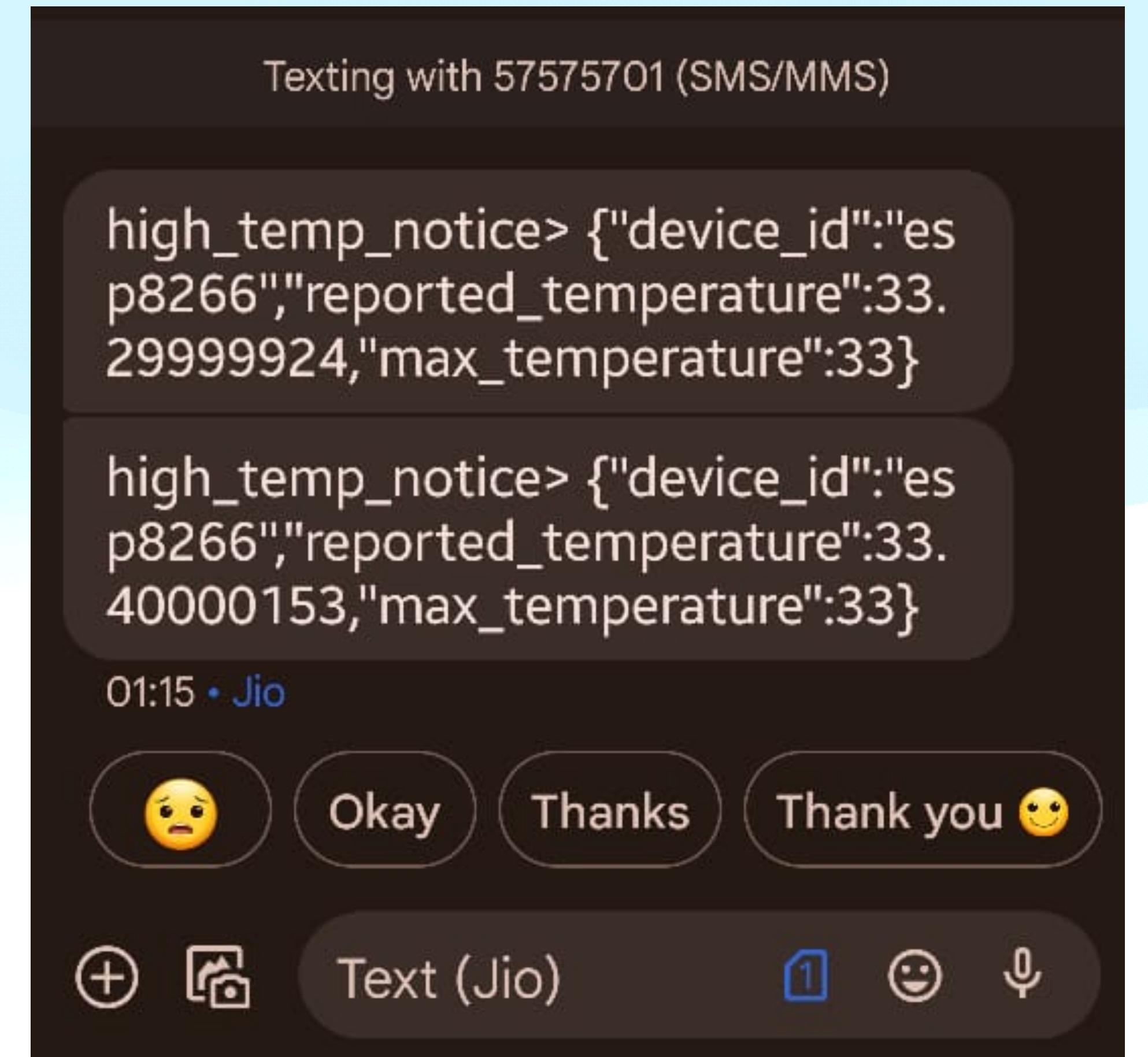
- device/esp8266/data** (Received April 27, 2023, 14:55:13 (UTC+0530))  
{"time": 242782, "humidity": 55, "temperature": 35.29999924}
- device/esp8266/data** (Received April 27, 2023, 14:55:07 (UTC+0530))  
{"time": 237405, "humidity": 56, "temperature": 35.29999924}

At the top right of the main area, there are buttons for Pause, Clear, Export, and Edit.

# Added Notification on exceeding temperature



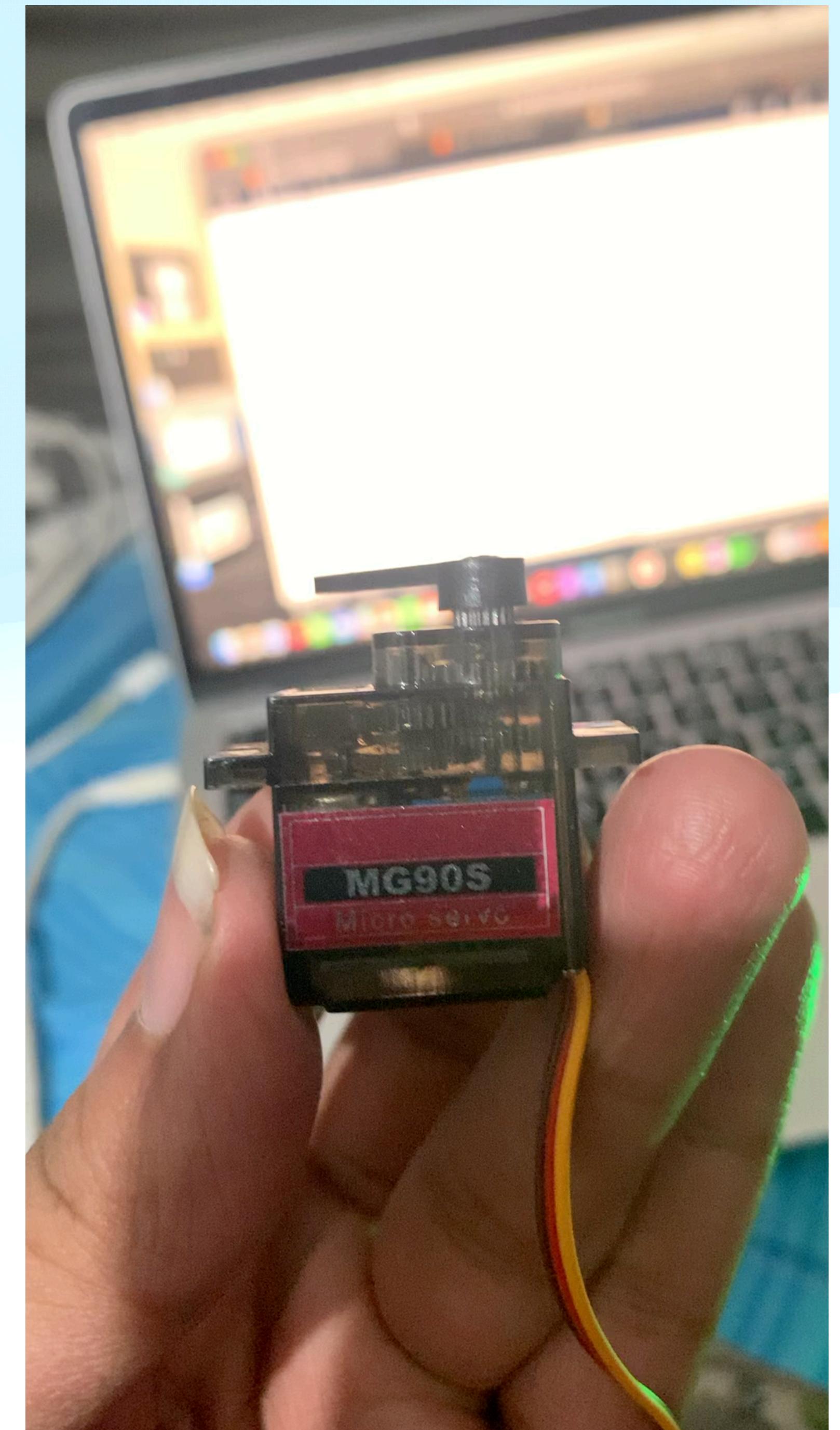
# SMS Notification

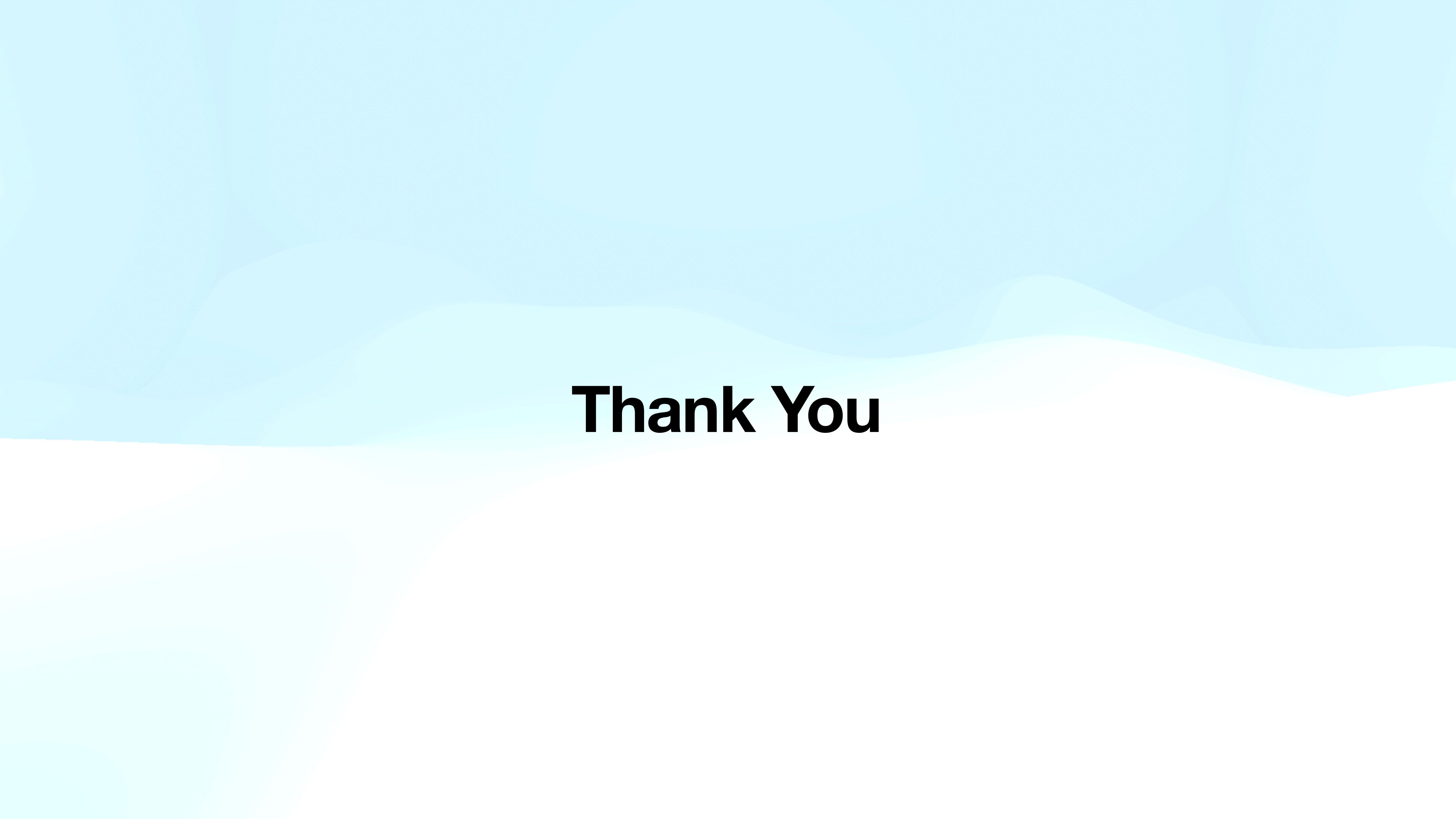


# Demonstration

Watch on [YouTube](#)

Code on [GitHub](#)





# Thank You