

# Temperature and Humidity Monitoring System

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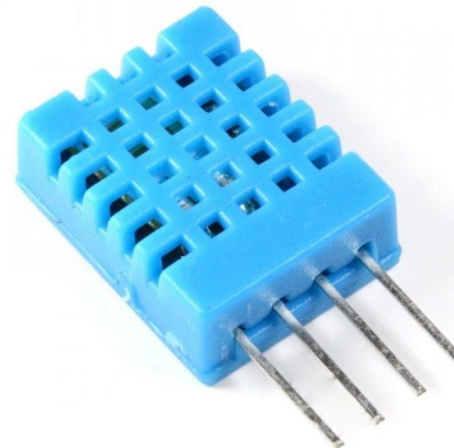
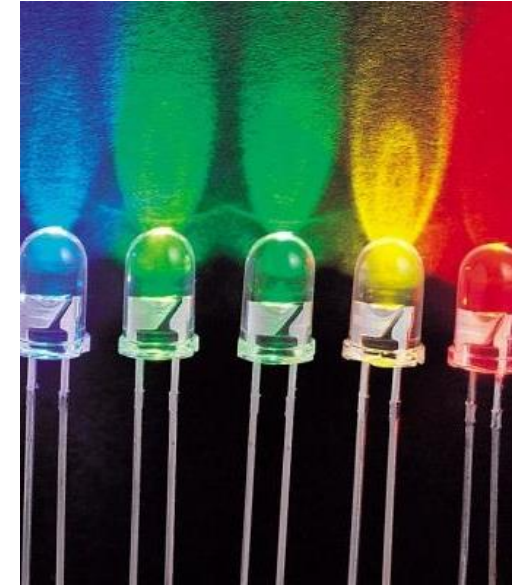
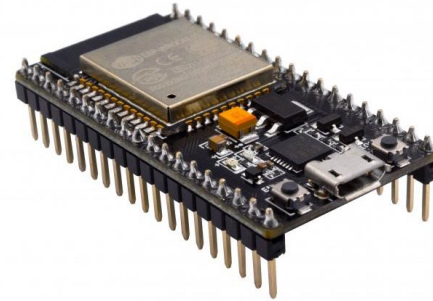


# AIM

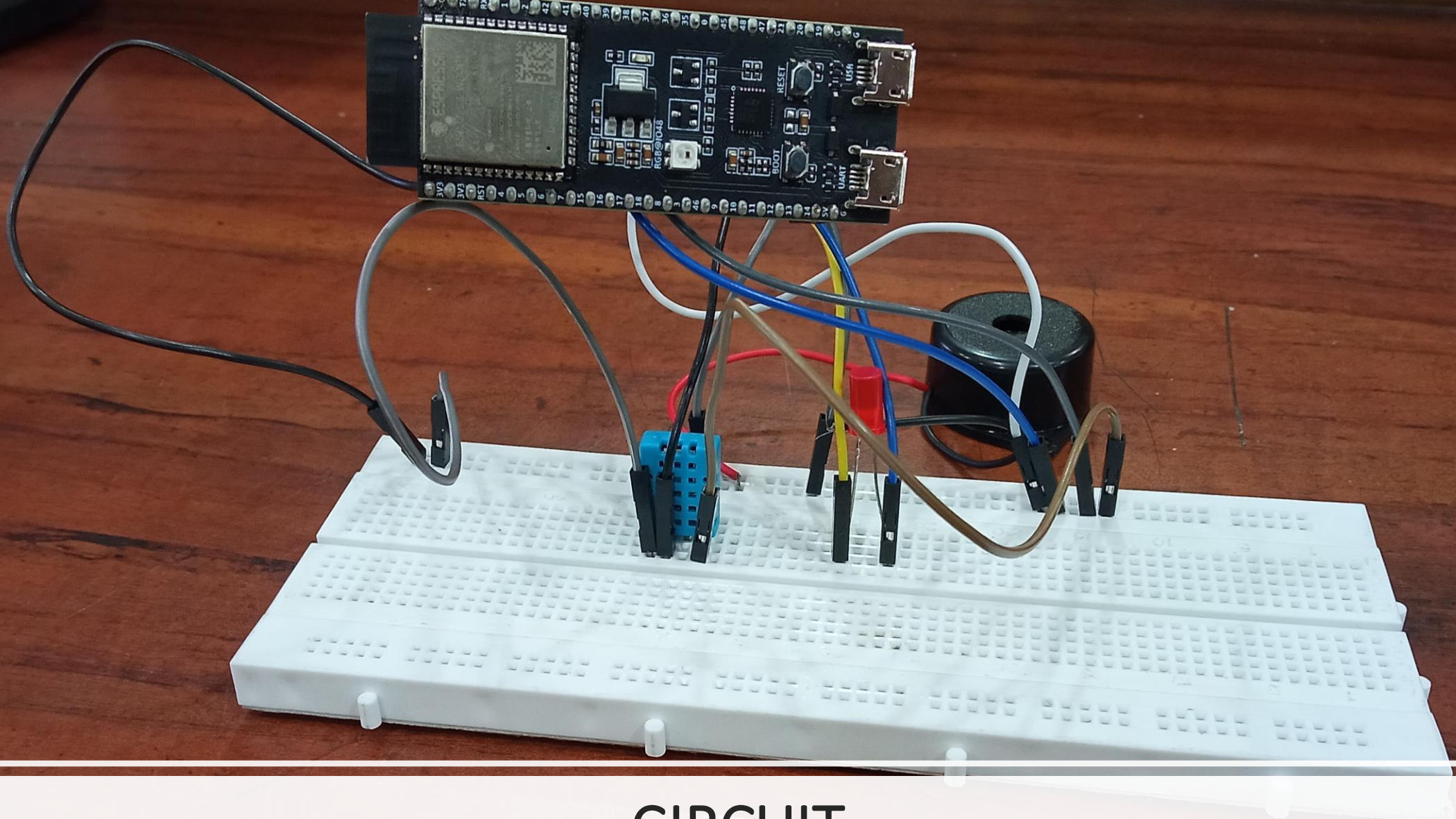
The Temperature and Humidity Monitoring System project aims to develop a comprehensive and versatile system that monitors, records, and analyzes temperature and humidity levels in various environments. This project is designed to address the need for accurate environmental data collection, real-time monitoring, and intelligent analysis for a wide range of applications, including industrial, commercial, agricultural, and healthcare settings.

# HARDWARE COMPONENTS

- **ESP 32-S3:** It is a low-power MCU-based system on a chip (SoC) with integrated 2.4 GHz WiFi and Bluetooth® Low Energy (Bluetooth LE).
- **DHT11 Sensor:** The DHT11 sensor measures temperature from 0°C to 50°C with  $\pm 2^\circ\text{C}$  accuracy and humidity from 20% to 90% RH with  $\pm 5\%$  accuracy, operating at 3.3V to 5.5V.
- **Piezo Buzzer:** The Operating Voltage: 5V DC, Frequency: 3,300Hz, Current: <15mA, Operating Temperature: - 20° to +60°C, Number of pins: 2
- LED
- Jumper Wires
- Bread Board







CIRCUIT





# APPLICATIONS

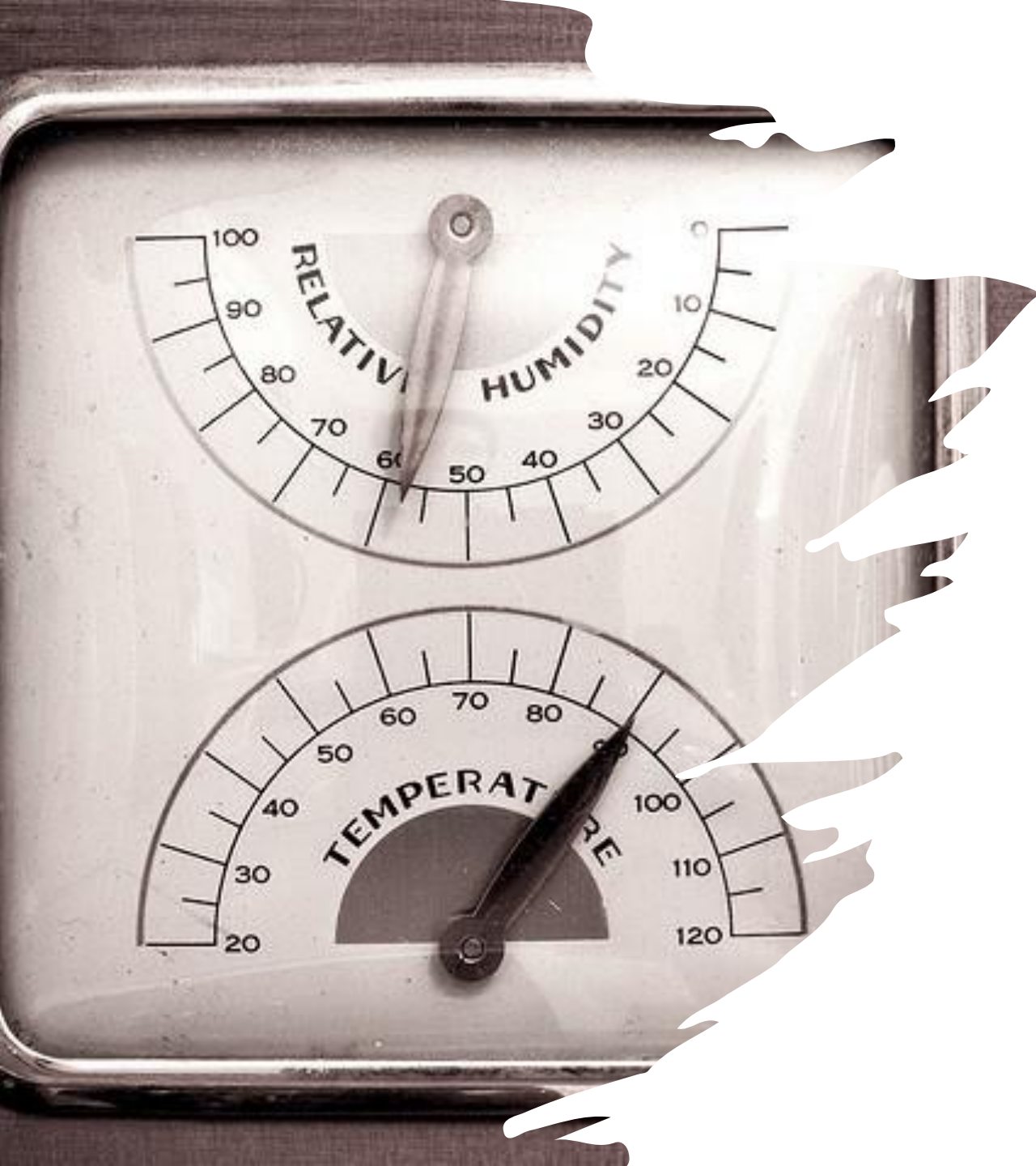
**1) Home Climate Monitoring:** The DHT11 sensor can be used to monitor temperature and humidity levels in homes, allowing for effective climate control and comfort management.

**2) Weather Stations:** It can be integrated into DIY weather stations to collect local temperature and humidity data, contributing to accurate weather monitoring and reporting.

**3) Agricultural Management:** In greenhouses and farms, the sensor helps optimize plant growth by ensuring optimal environmental conditions for crops.

**4) Industrial Environments:** Basic humidity and temperature sensing in industrial settings can aid in maintaining appropriate conditions for equipment operation and product quality.





# CONCLUSION

- The Temperature and Humidity Monitoring System project successfully created a user friendly solution to track temperature and humidity in real-time. By combining sensors, data collection, and easy-to-understand displays, it helps people make smart choices, respond to changes, and improve processes. The project's real-world examples and dependable data insights highlight its importance for better quality control, efficiency, and resource use in different areas. Ready for growth and improvements, this project sets the stage for ongoing advancements in smart environmental monitoring, making it a key player in shaping a more sustainable future.