# IoT Based Weather station with Android app

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## 1   INTRODUCTION

Monitoring and displaying weather conditions around the world is made possible by the advanced system proposed. The Internet of Things (IoT) is the technology behind this, which is an advanced and efficient method for connecting things to the internet and connecting the entire world of things on a network. Temperature, humidity, wind speed and direction are all monitored by the system, as well as the amount of rain that has fallen. Real-time readings are shown on android app. Every hour and day, it records the previous day data. It is possible to view this data on mobile app.

Monitoring of temperature and humidity are also required for biomedical industry for drugs and cell culture methods. In healthcare sectors, environment-controlled conditions are also required for patients. The sensor module is a combined module for sensing humidity and temperature which gives a calibrated digital output signal. It gives us very precise values of humidity and temperature.

## 2   METHODOLOGY

The system is a development of weather reporting with an ESP-32 microcontroller. The ESP-32 serves as the central microcontroller, and the sensors are linked to it with digital and analog pins. An ESP-32 microcontroller receives readings from sensors in the environment and process them before displaying their results on the ESP serial monitor. The sensor's data was shown on the android app.

An IoT app like, Weather station through Google Flutter. The heading of the app will consist of 'ESP32 with DHT11 Sensor APP' followed by first 'Temperature' and its reading and then 'Humidity' and its reading with appropriate units. We aim to build an application that will display sensor readings obtained from DHT11 connected with the ESP32 module programmed in Arduino IDE. This transmission of data from the module to the application will occur via Mysql database. These readings will automatically update to new values in real-time when the IoT app receives them.
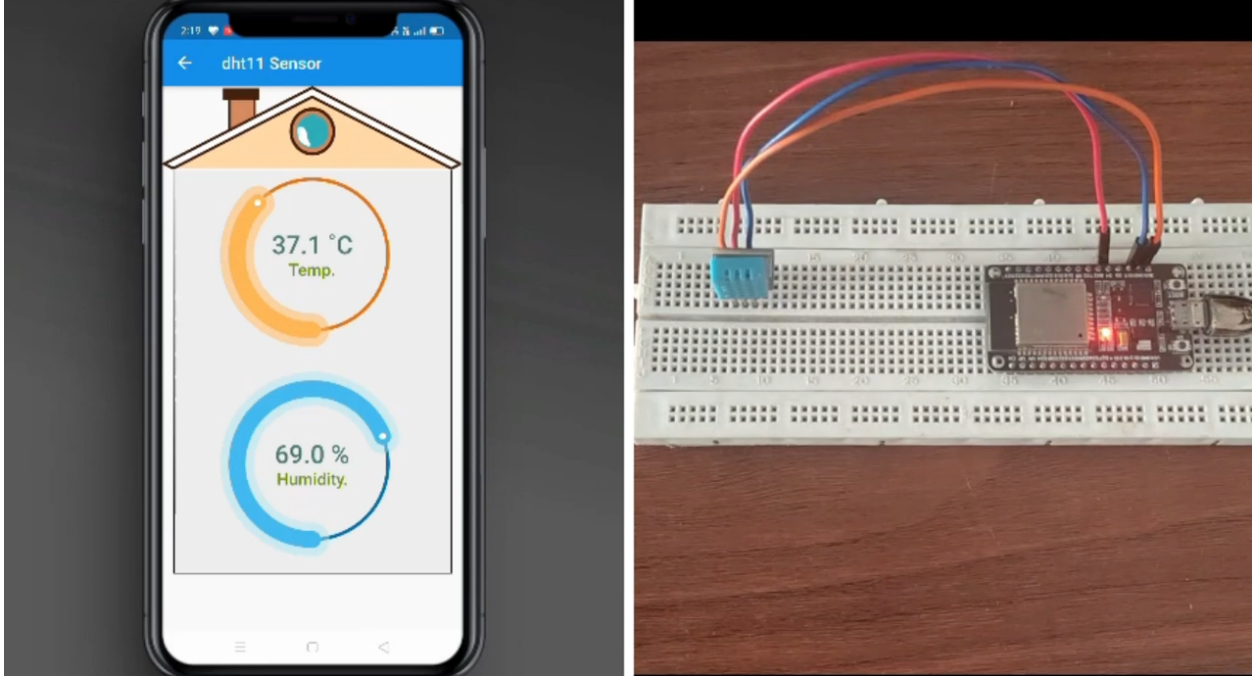
Figure 1: The temperature and humidity data acquisition IoT system

## 2.1   Working Process

- 1. DHT11 sensor will send temperature and humidity reading to the ESP32 development board.

- 2. The ESP32 module will transmit the sensor data to the Web server.

- 3. We will include Mysql database inside our IoT app through Flutter app. Thus, we could access the temperature and humidity readings in a device that has installed on it e.g., our android smartphone/tablet.

- 4. Android app will notify the weather status on users app.

# 3   CONCLUSION

This proposed system can provide a convenient method for effective monitoring of temperature and humidity in real time. This system is compact to an extent and cost effective. When compared to prices of instruments used traditionally to measure the environmental factors. From the above analysis, it is ensured that the nested wired systems can be replaced by the wireless sensor networks to get accurate data as well as to avoid many hazardous issues.