



Weather Tracker IoT

Group C

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Weather Tracker IoT

The system receives weather data from KMA(Korea Meteorological Administration) through its API Hub, simulates a custom GPS location, and generates virtual sensors such as temperature, humidity, and light. All collected information will be on the serial monitor in VSCode.

Key Features

- Fetch and parse weather data in XML format from the KMA API
- Simulate GPS coordinates for location-based weather display
- Map weather data to virtual sensors
- Visualize all information on the Serial Monitor



Details

Below are the technologies we will use in the project

01. VSCode + Wokwi

Software-based IoT
using VSCode and Wokwi,
a virtual ESP32 simulator

02. HTTPClient

Get Data from KMA APIhub
<https://apihub.kma.go.kr>

03. Sensors

- GPS
Generate a random location in Korea and convert coordinates to city and district names
- LEDs
Red LED → Sunny
Blue LED → Rainy
Yellow LED → Cloudy
- DHT22
Temperature & Humidity

04. Serial Monitor

- Display weather Info
Location
Weather
Temperature

☀ Weather Tracker IoT

📍 Location: Seoul, Gangnam-gu

☁ Weather: Clear Sky

🌡 Temperature: 22.5 °C

Members' Tasks

Data Communication & Parsing / Virtual Sensors & GPS Simulation / Integration & Serial Output

Jeongmin Park : Data Parsing

- Use ESP32 HTTPClient.h to request KMA API data
- Parse the XML string and extract weather-related information

Jiho Park : Sensors & GPS

- Make a random coordinate in Korea
- Convert GPS coordinates to address format
- Send structured data to the main program

Jiyun Yang : Serial Output

- Merge data codes and sensor codes
- Organize serial monitor output formats
- Oversee project progress and prepare final presentation

Timeline

Timeline to complete this project (Week 9 - Week 16)

week 9 - 10

- Decide on the project
- Set up the environment
- Get KMA API data

week 11 - 12

- Parse and extract weather-related XML data
- Generate simulated GPS coordinates

week 13 - 14

- Write codes for virtual sensors (LEDs, DHT22)

week 15 - 16

- Design the Serial Monitor output
- Debug and fix errors after running the program
- Prepare for the final presentation