

WEATHERSENSE PROJECT

WEATHER SENSE

Presentation, April 2024

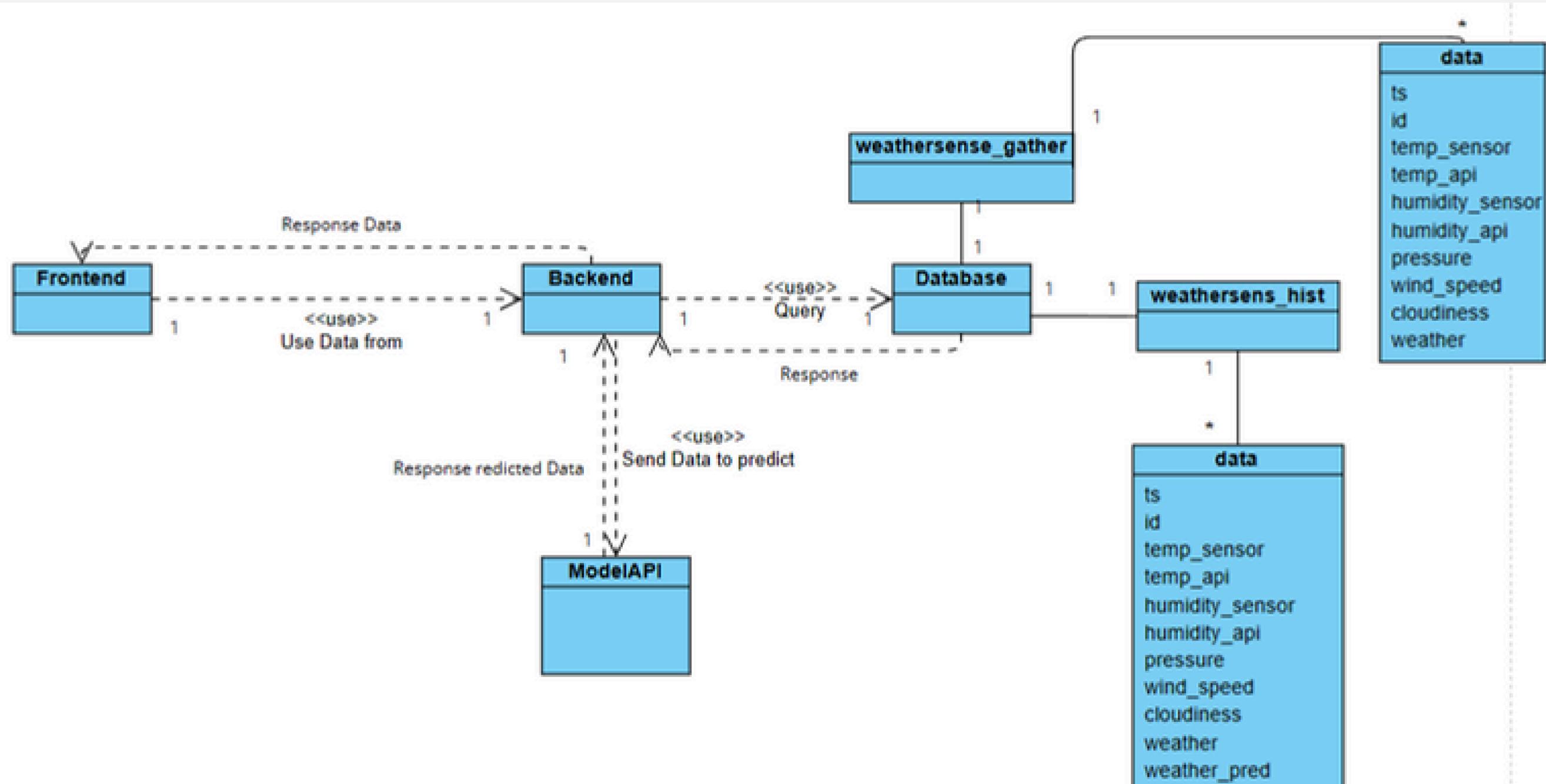
PRESENTATION



About Project

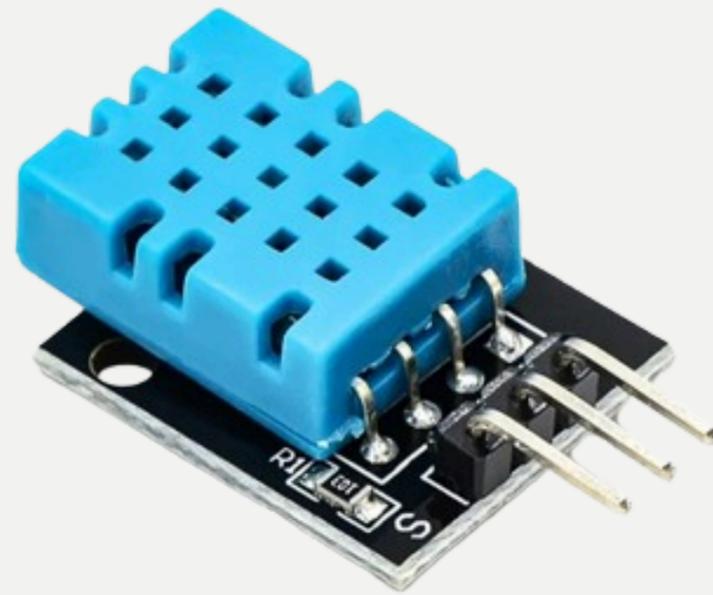
WeatherSense is a weather tracking website that updates weather data and classification every 10 minutes. Leveraging our trained random forest classification model, WeatherSense provides accurate classification and historical weather information.

ARCHITECTURE



PRIMARY DATA

OUR PRIMARY DATA IS COLLECTED BY THE KIDBRIGHT BOARD, INCORPORATING A TEMPERATURE AND HUMIDITY SENSOR FROM THE KY-015 MODULE, AND USING MQTT TO SEND A DATA TO NODERED



SECONDARY DATA

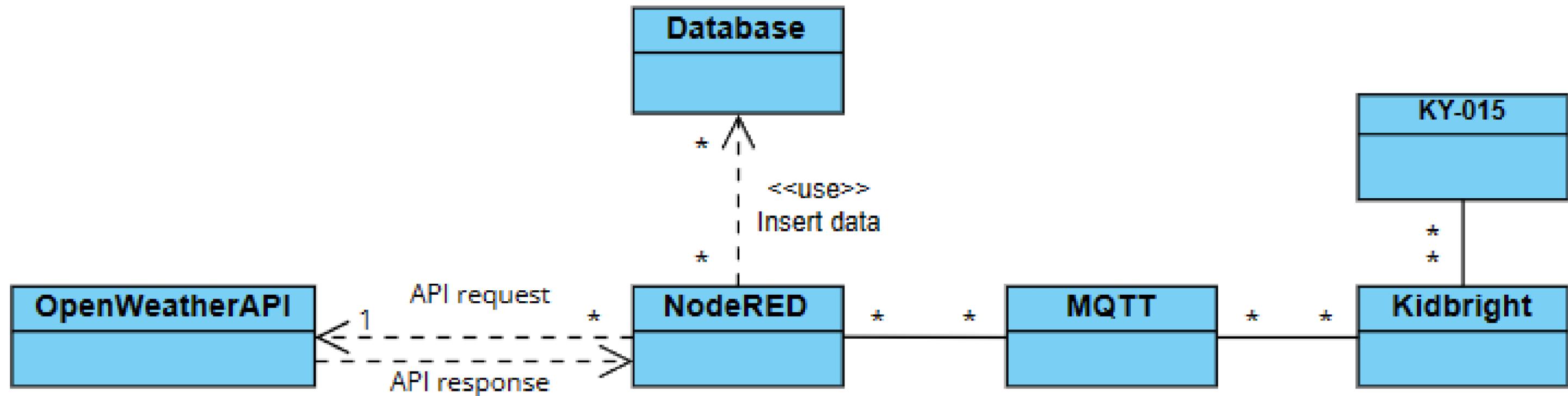
OUR SECONDARY DATA IS COLLECTED BY CALL API FROM OPENWEATHERMAP API (CURRENT WEATHER) USING NODERED TO FETCH DATA FROM API

ATTRIBUTE SELECT:

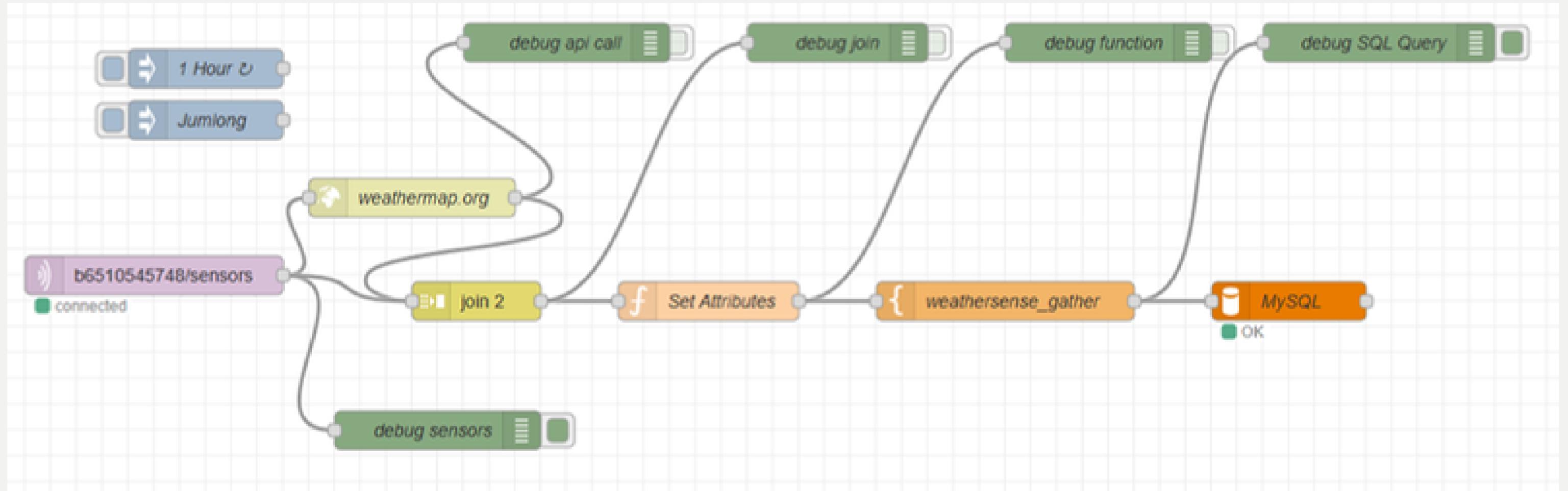
- HUMIDITY (%)
- TEMPERATURE (DEGREE CELSIUS)
- PRESSURE (HPA)
- CLOUDINESS (%)
- WEATHER: SUCH AS CLOUD, FEW CLOUDS ETC.



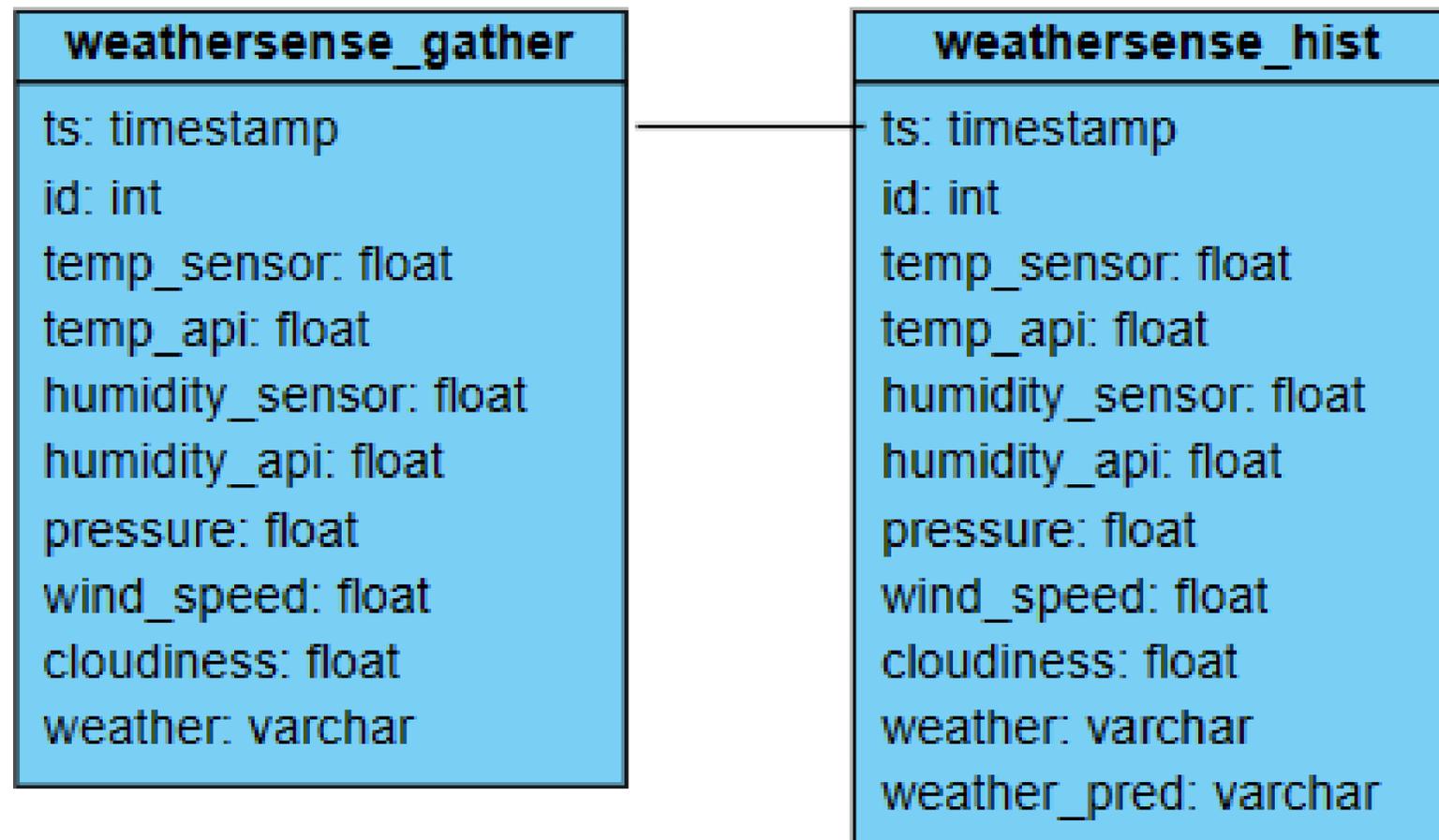
COLLECT MECHANISM



COLLECTING USING NODRED



DATABASE SCHEMA



DATA SHARING API

API

Our data sharing API consists of 2 major server

Backend



ModelAPI



BACKEND

API ENDPOINT

- **/latest: (GET)** This endpoint receives API requests from those who want the latest weather data from our database. In our project, the first page of the website
 - **result:** latest data from **weathersense_hist** table

```
{
  "id": 1422,
  "ts": "2024-05-09T02:39:29.000Z",
  "temp_sensor": 31,
  "humidity_sensor": 77,
  "temp_api": 33.66,
  "humidity_api": 67,
  "pressure": 1011,
  "wind_speed": 0.51,
  "cloudiness": 40,
  "weather": "Clouds",
  "weather_pred": "Clouds"
}
```

BACKEND API ENDPOINT

- **/host/history: (GET)** This endpoint receives API requests from those who want all weather data from our database, ordered from latest to oldest. In our project, the history page and Data visualization page use this endpoint.
 - **result:** All data from **weathersense_hist** table

BACKEND

API ENDPOINT

- **/host/weather/:id: (GET)** This endpoint receives API requests from those who want the weather data by its ID from our database. In our project, the /weather/id endpoint requests this to show specific data.
 - **result:** data with specific data id from **weathersense_hist** table

<http://localhost:3000/weather/1>

```
{  
  "id": 1,  
  "ts": "2024-04-18T10:04:21.000Z",  
  "temp_sensor": 20,  
  "humidity_sensor": 50,  
  "temp_api": 36.88,  
  "humidity_api": 57,  
  "pressure": 1004,  
  "wind_speed": 5.66,  
  "cloudiness": 20,  
  "weather": "Clouds",  
  "weather_pred": "Clouds"  
}
```

MODEL

API ENDPOINT

- **host/predict: (POST)** This endpoint receives API requests from those who want to predict data from our model by sending data in json and receiving responses. In our project, NodeJs server sent a data to Model
 - **result: data with label “weather_pred”**

```
1  [
2  →  {
3  →    "id": 1,
4  →    "ts": "2024-04-14 21:51:13",
5  →    "temp_sensor": 25,
6  →    "humidity_sensor": 50,
7  →    "temp_api": 31.03,
8  →    "humidity_api": 73,
9  →    "pressure": 1010,
10 →    "wind_speed": 5.66,
11 →    "cloudiness": 20,
12 →    "weather": "few clouds"
13 →  }
14 ]
```

```
[
  {
    "id": 1,
    "ts": "2024-04-14 21:51:13",
    "temp_sensor": 25,
    "humidity_sensor": 50,
    "temp_api": 31.03,
    "humidity_api": 73,
    "pressure": 1010,
    "wind_speed": 5.66,
    "cloudiness": 20,
    "weather": "few clouds",
    "weather_pred": "Clouds"
  }
]
```

DATA VISUALIZATION

Data Visualization

We are focusing on descriptive of weather dataset to question descriptive problem such

- What's the distribution of numerical weather data
- What is the most weather type?
- What's the relation of temperature and humidity?
- What day of week have high temperature?

PRESENTATION

WEATHERSENSE PROJECT

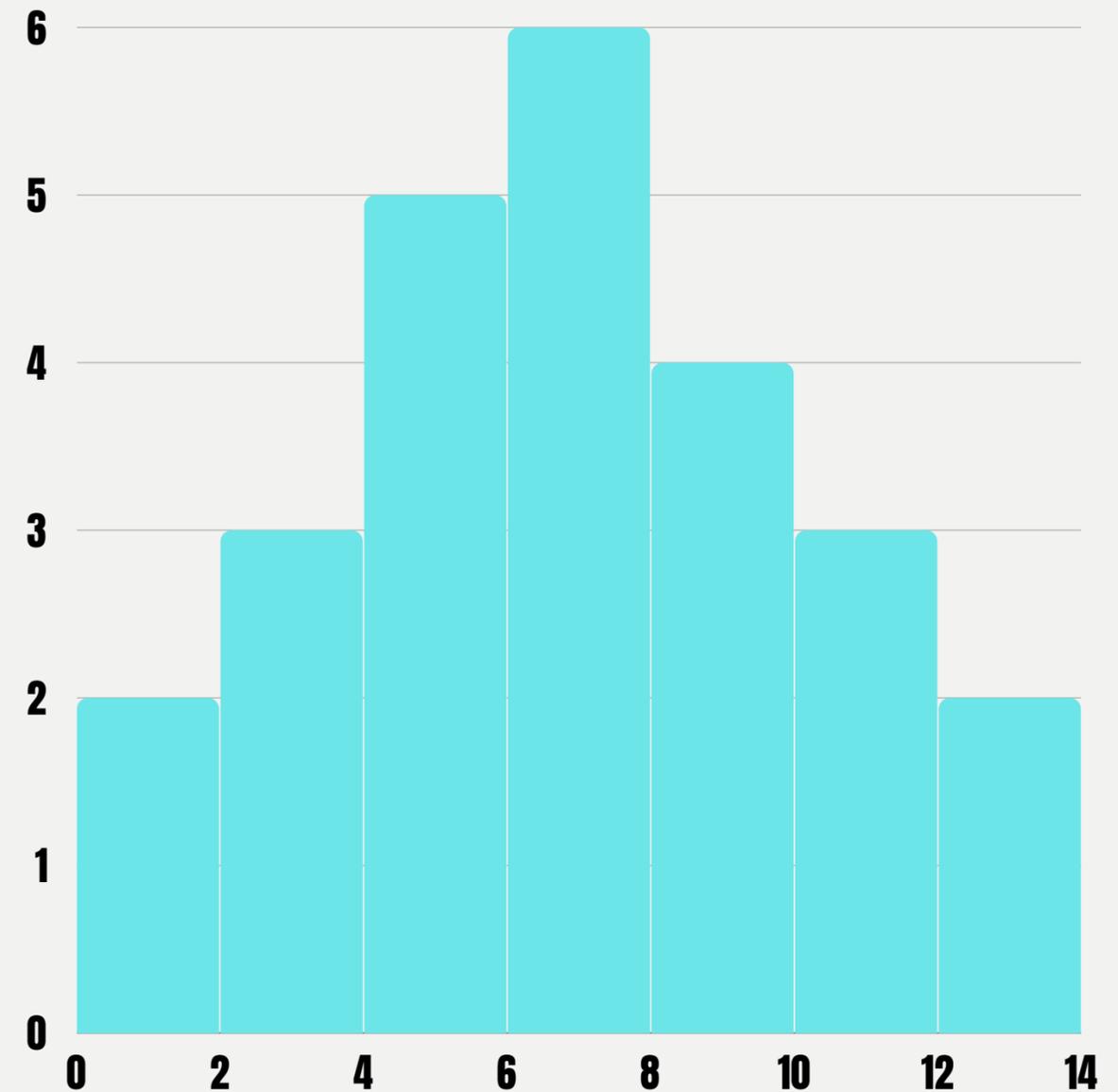


chart.js

Chart.js provides a set of frequently used chart types, plugins, and customization options. In addition to a reasonable set of built-in chart types, you can use additional community-maintained chart types .

PRESENTATION

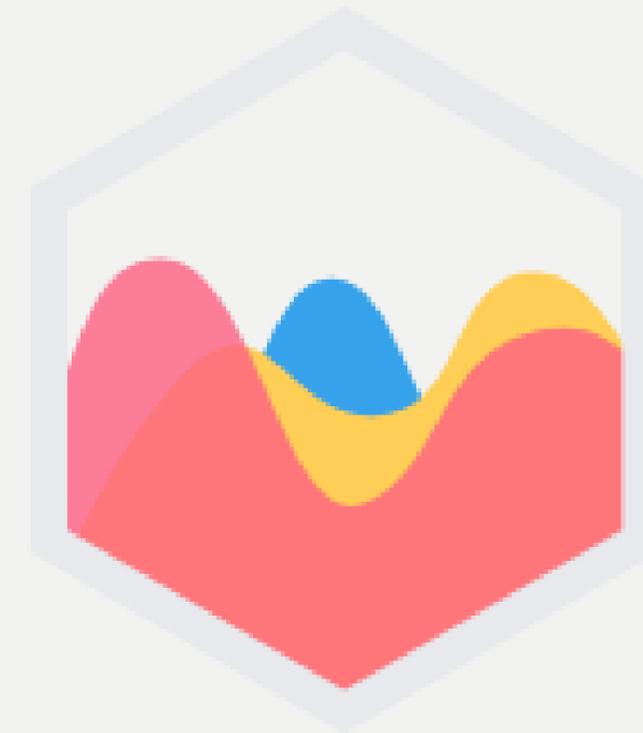
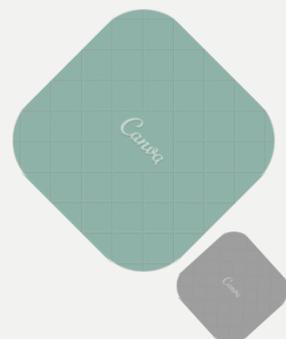
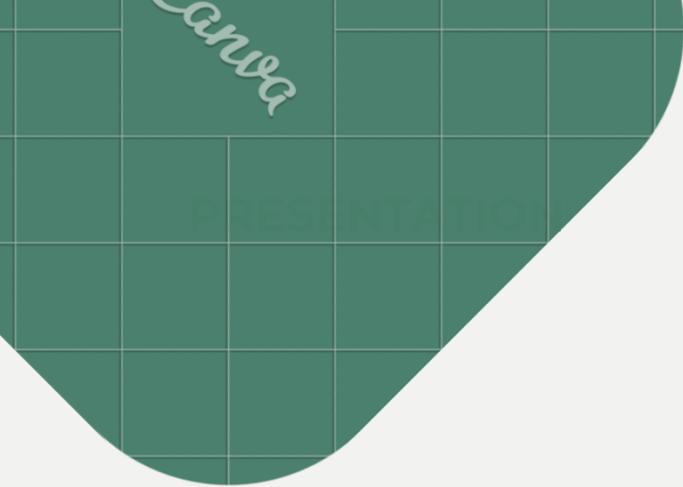


Chart.js

DEMO



PROJECT MEMBER

1. WISSARUT KANASUB

2. SUKPRACHOKE LEELAPISUTH

