

Smart City App

Contributors

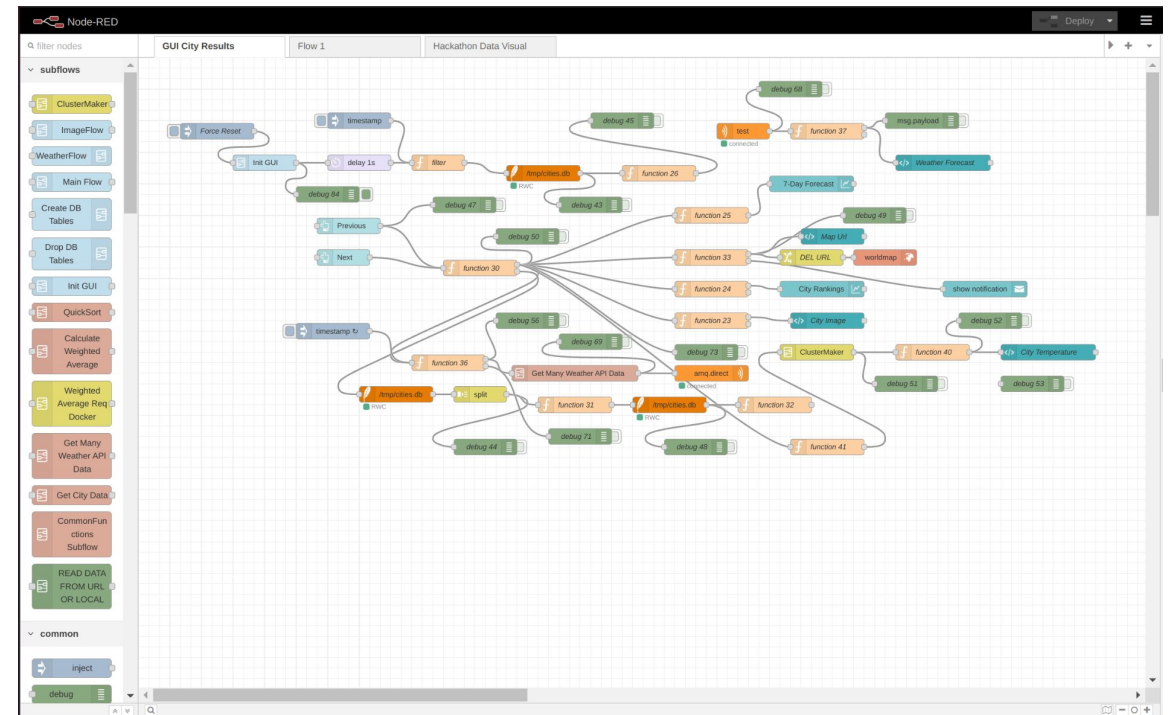
- Manousos Linardakis, it22064
- Christos Kazakos, it22033

Project Description

This project displays weather, ranking and location data from 70+ countries (and their available cities)!

Feats:

- Aggregation of 4 different weather APIs.
- Data Visualization.
- Complex Subflows.
- Hackathon Submission.





Main APIs Used

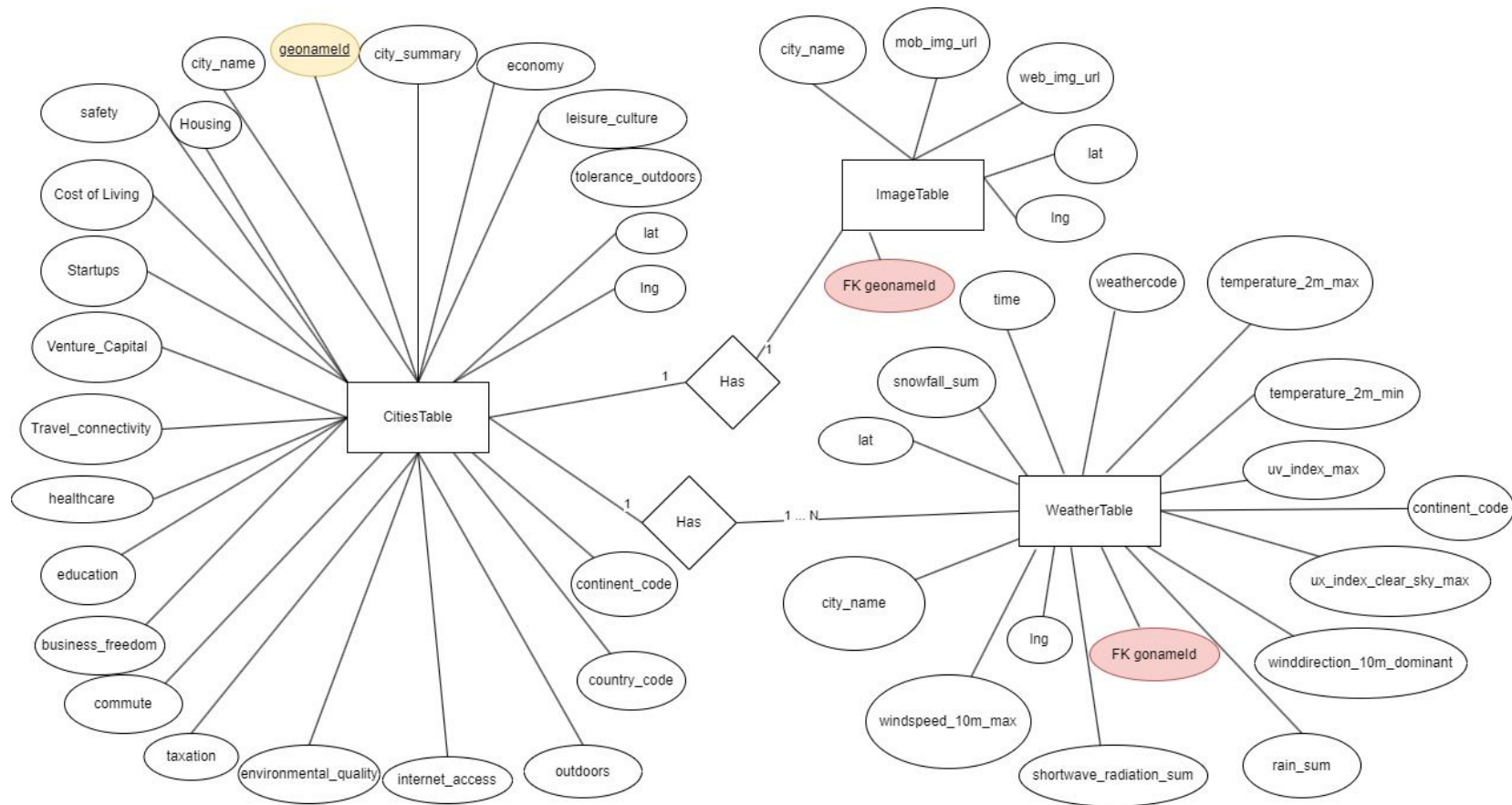
Description	API	Input	Output
Used to get the cities of a requested country.	https://www.geonames.org/	country code, geonames_username	cities (of the country code)
The API endpoint forecast accepts a geographical coordinate, a list of weather variables and responds with a JSON weather forecast for 7 days.	https://open-meteo.com/	geographical coordinate (lat, lon), time interval (hourly, daily, ...), list of weather variables that they are interested in (see this link)	temperature, weather (in general like rain, wind, humidity, soil, etc)
Gets the quality of life of a requested city.	https://developers.teleport.org/api/getting_started/#life_quality_ua	city_name	Quality of life (education, environmental quality, etc – Life Quality Data for Cities)
Gets a photo of a requested city.	https://developers.teleport.org/api/getting_started/#photos_ua	city_name	Photos of cities (City Photos)
Openweathermap API	https://openweathermap.org/current	api key, latitude, longitude	Current weather data for a city



APIs Used for Aggregation

API	Input	Output
https://www.weatherapi.com/docs/	Latitude, Longitude, API key	Current Weather data for given latitude, longitude.
https://docs.tomorrow.io/reference/realtime-weather	Latitude, Longitude, API key	Current Weather data for given latitude, longitude.
https://api.open-meteo.com/v1/forecast?latitude=52.52&longitude=13.41&current_weather=true	Latitude, Longitude, API key	Current Weather data for given latitude, longitude.
https://openweathermap.org/current	Latitude, Longitude, API key	Current Weather data for given latitude, longitude.

ER Diagram





K-means Clustering

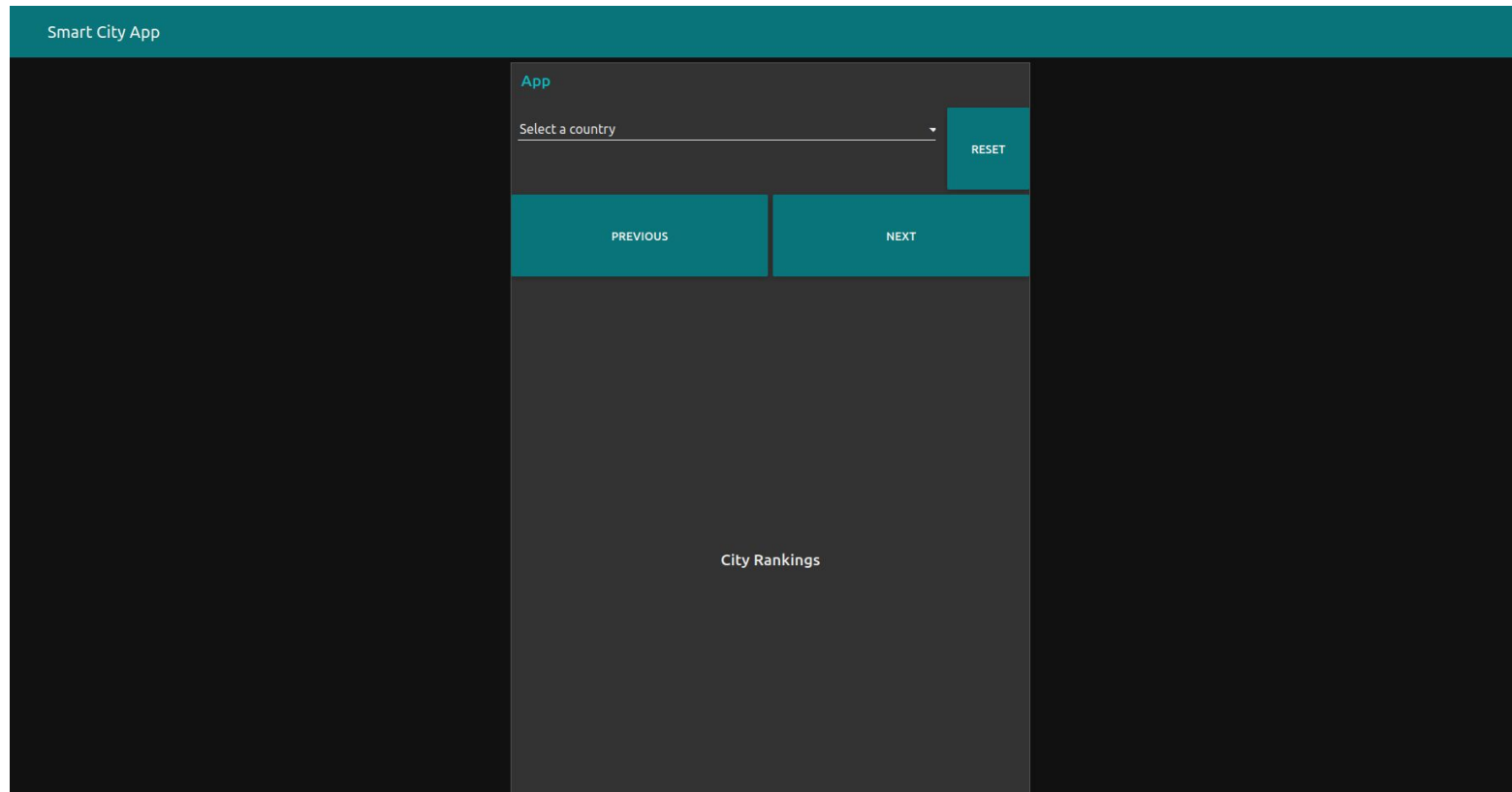
We implemented K-means clustering for grouping temperatures in the database.

Example Output in GUI:

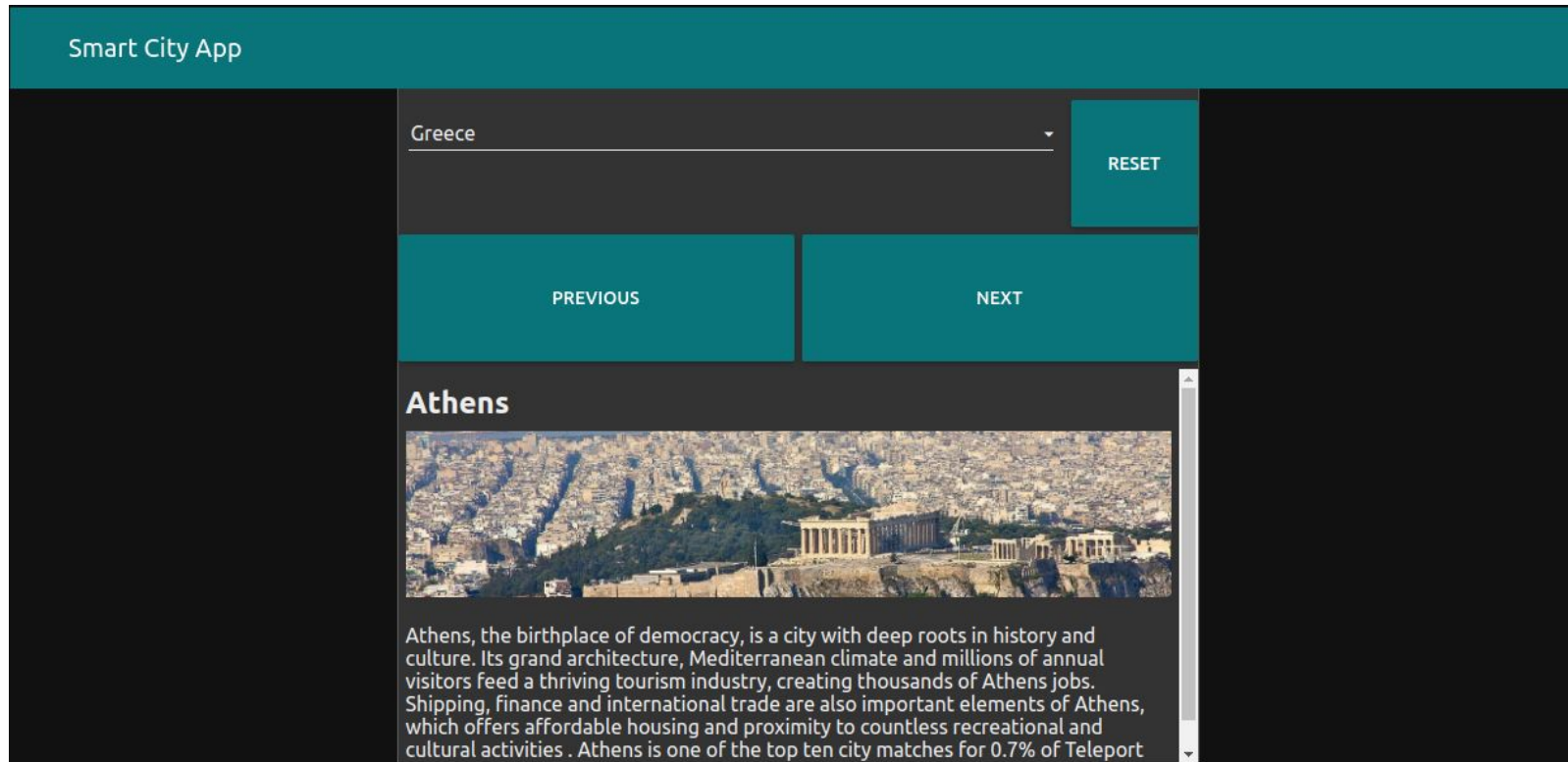
This city has **middle** temperature than other cities in database.



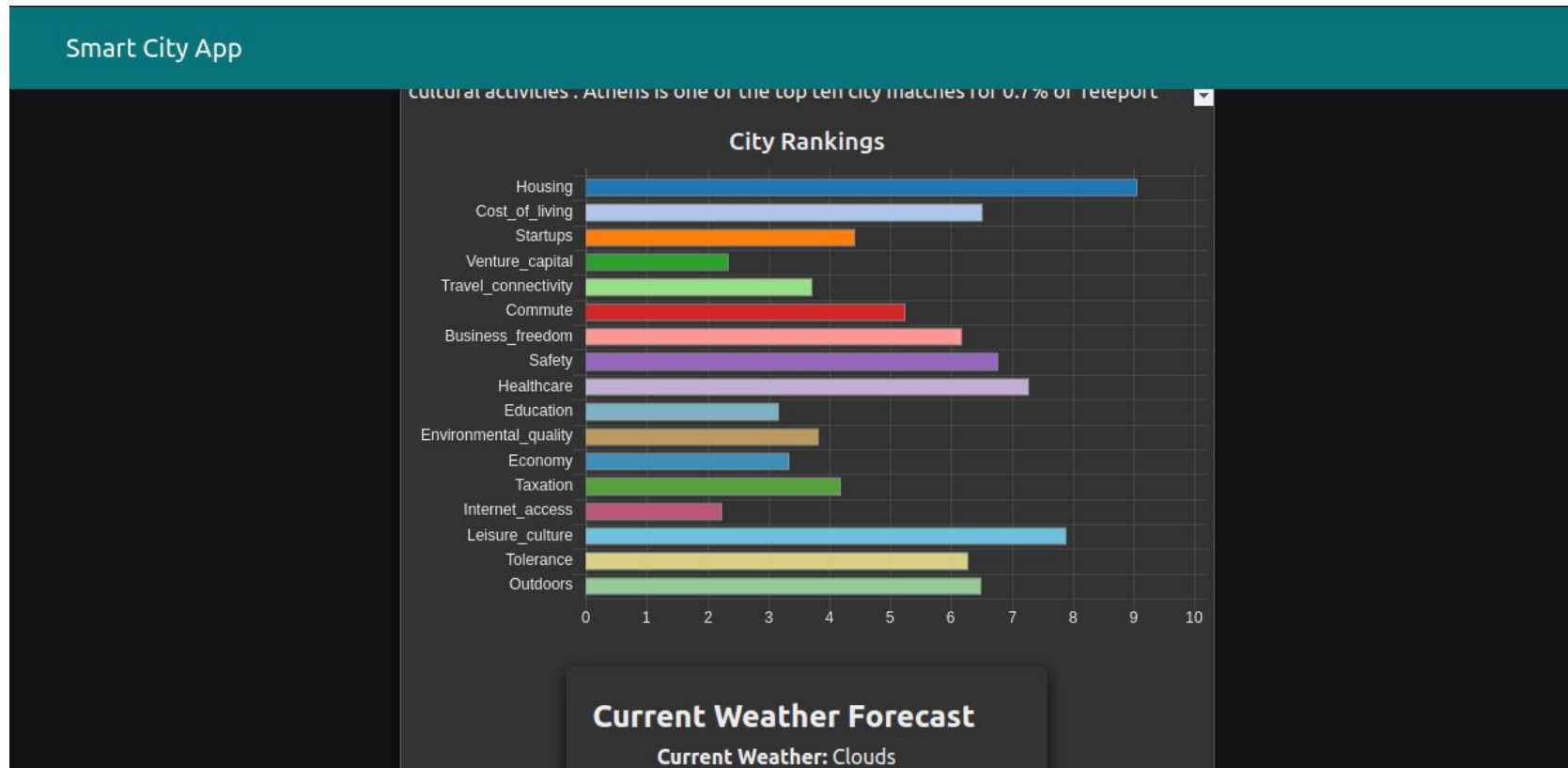
GUI Showcase



GUI Showcase

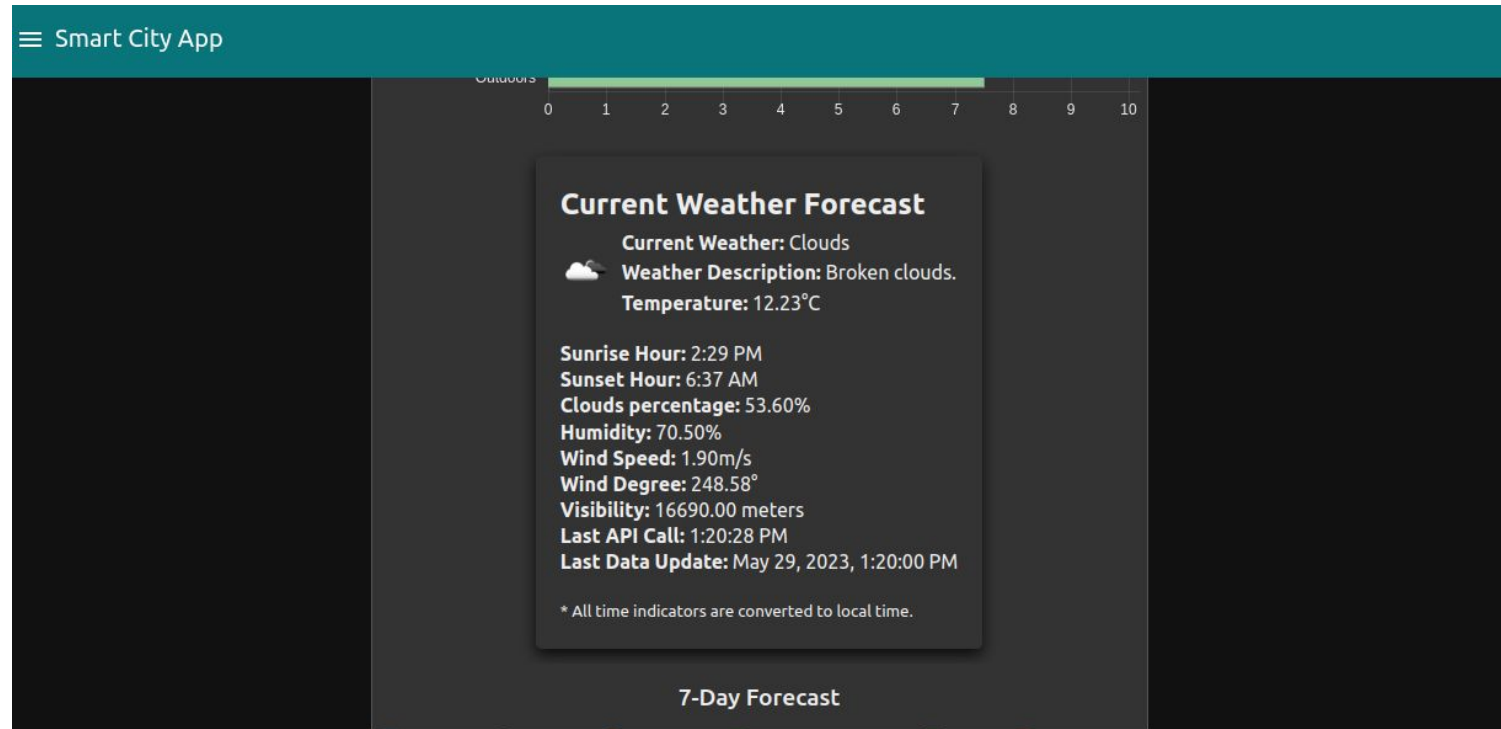


GUI Showcase

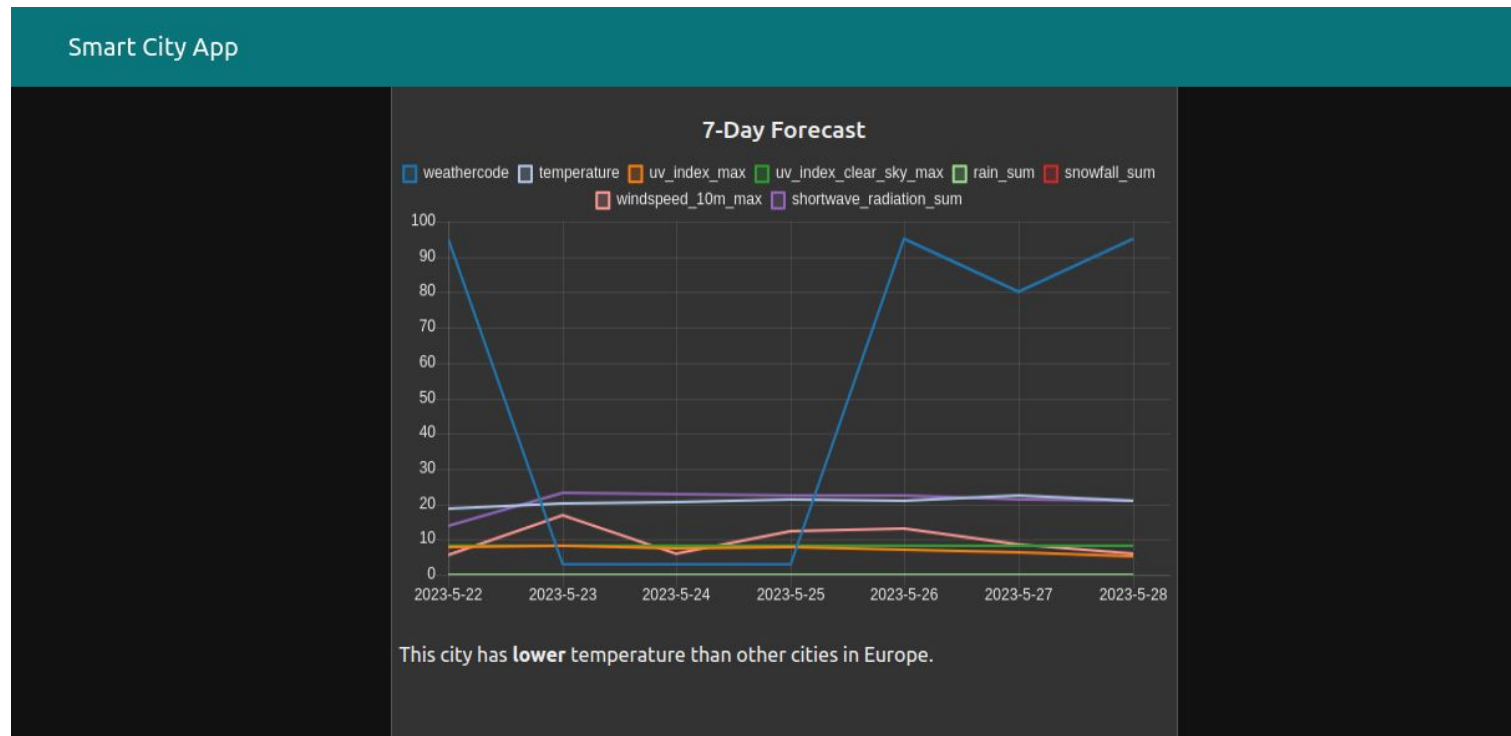




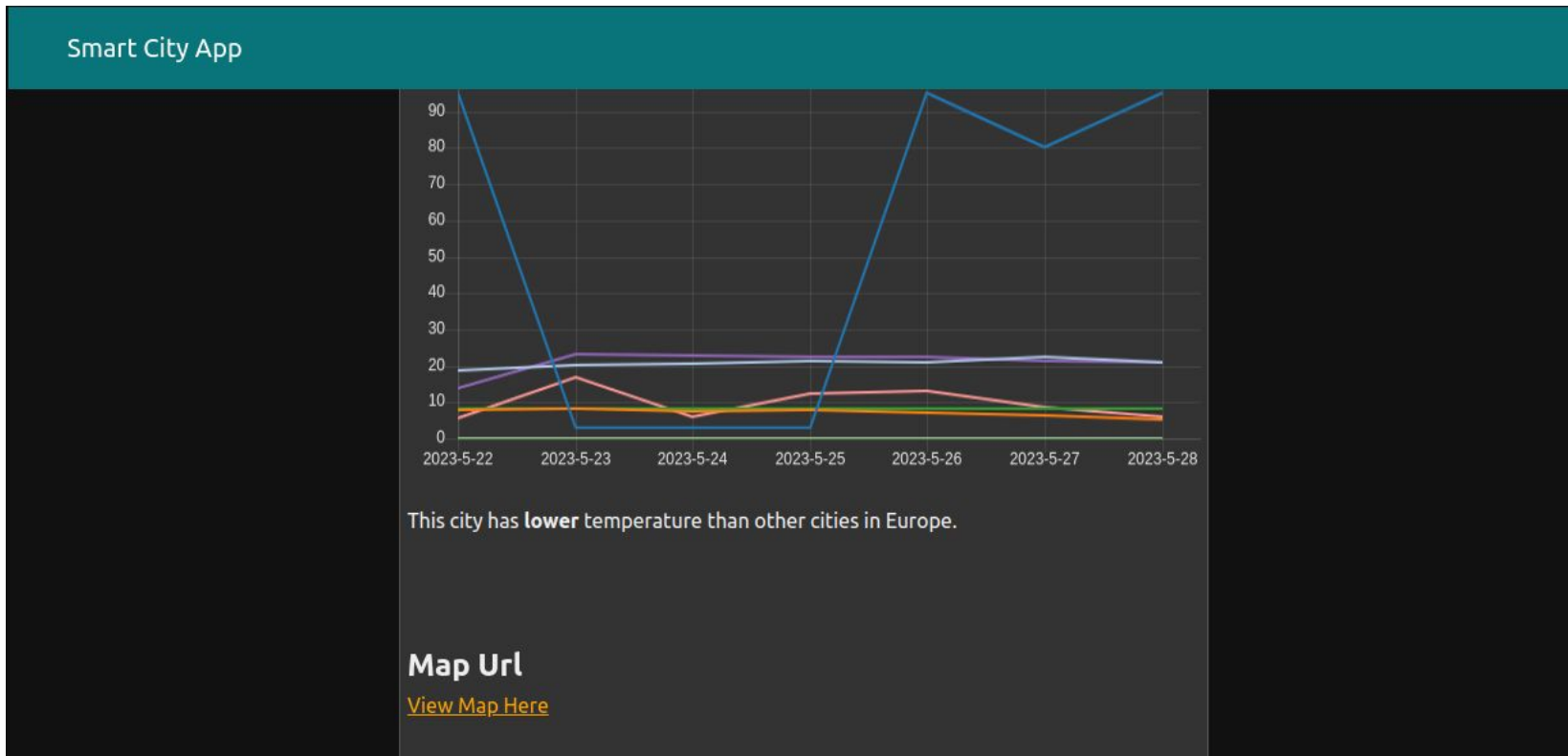
GUI Showcase



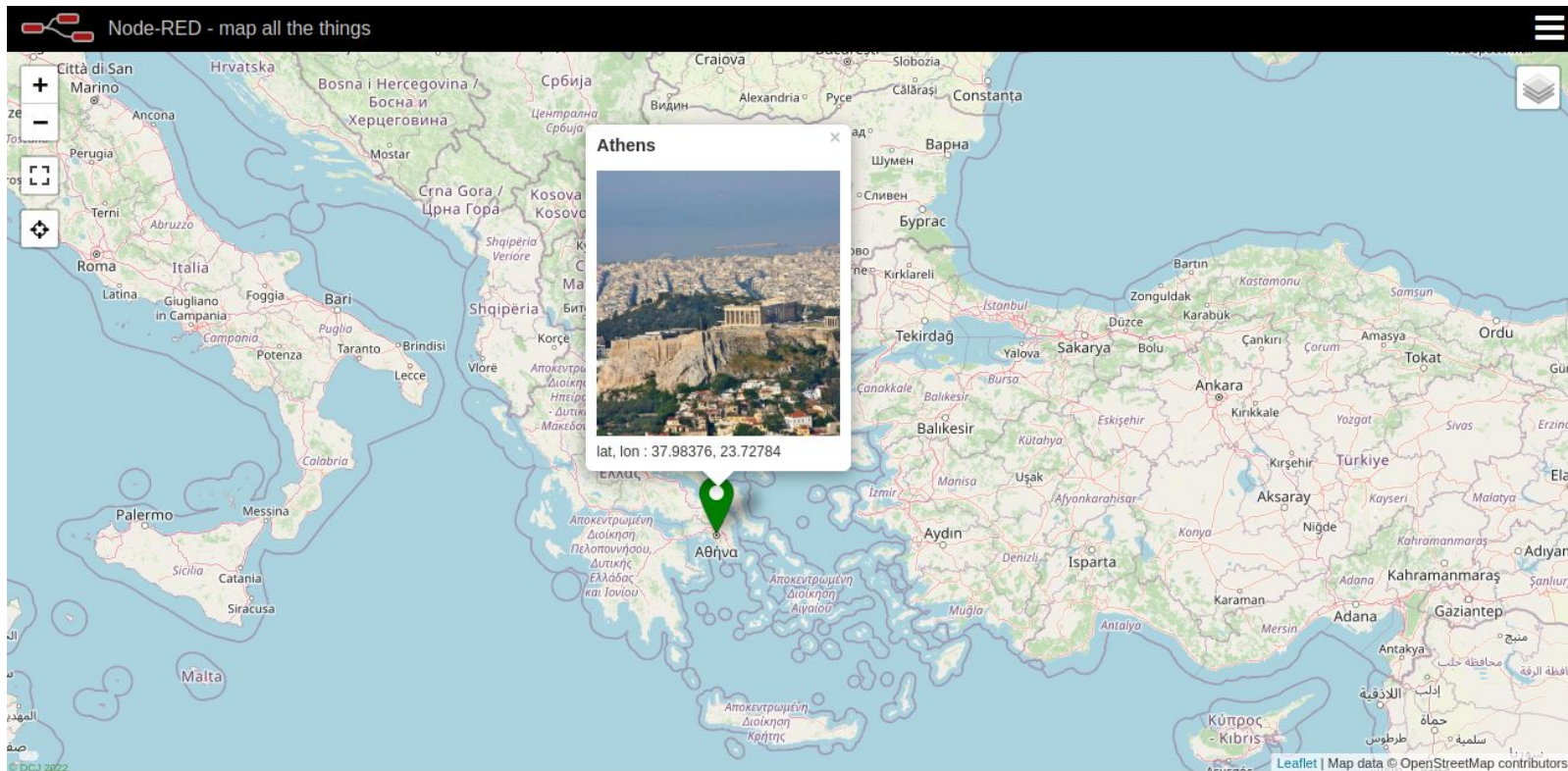
GUI Showcase



GUI Showcase



GUI Showcase



Participation in 2nd PHYSICS Hackathon 2023

You can view our devpost submission with our solutions to all the hackathon challenges [here](#).

2nd PHYSICS Hackathon 2023 Challenge

Solutions to the 2nd Hackathon PHYSICS Challenges 2023.

Like

Comment

STORY

UPDATES

Let's Play

Node-RED

Node-RED

Node-RED

kazakos13/

+

Copy link

Hackathon 2023 Solutions Demo

127.0.0.1:3000

Game Points: 600

Objectives:

1. (PHYSICS) Importing Sliding Window Action Tab

2. (PHYSICS) Using Sliding Window Subflow

3. Create your First Flow

4. Request a remote resource

5. Function API Node Flow

6. Switch API Node Flow

Watch on

YouTube

Edit project

SUBMITTED TO

2nd PHYSICS Hackathon

CREATED BY

Describe your contribution

Ex: I worked on the back-end. It was my first time using Node, which was a little intimidating, but I learned a lot.

Save Cancel

Manousos Linardakis

2nd PHYSICS Hackathon 2023 Subflows

This is a collection with all the subflows we implemented for the 2nd PHYSICS Hackathon 2023.

Collection Info

7 things
Updated 2 days ago
Rating: *not yet rated*

Owners

manouslinard

Actions

Rate: ☆ ☆ ☆ ☆ ☆ ☆

Get City Info Subflow

This subflow gets data for a specific city name. To input the city name you can set it on the UI of this node or in msg.city_name (message will)

manouslinard flow

Many Weather API Subflow

This subflow calculates the weighted averages of weather information from multiple weather APIs to provide a more precise estimation of the

manouslinard flow

Weighted Average Request

This subflow communicates with the URL provided in the UI to run the Weighted Average Common Function. By default, it uses a Docker

manouslinard flow

Weighted Average

This subflow calculates the weighted average of given values, considering the date of each value. The more recent the date, the higher the

manouslinard flow

Quicksort Request

This subflow communicates with the URL provided in the UI (can be changed in the "FUNCTIONS_URL" attribute), which by default

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QuickSort Subflow

This project implements the Quick Sort algorithm, which can perform both normal and reverse sorting based on the chosen option (to

manouslinard flow

Common Functions Subflow, Openwhisk

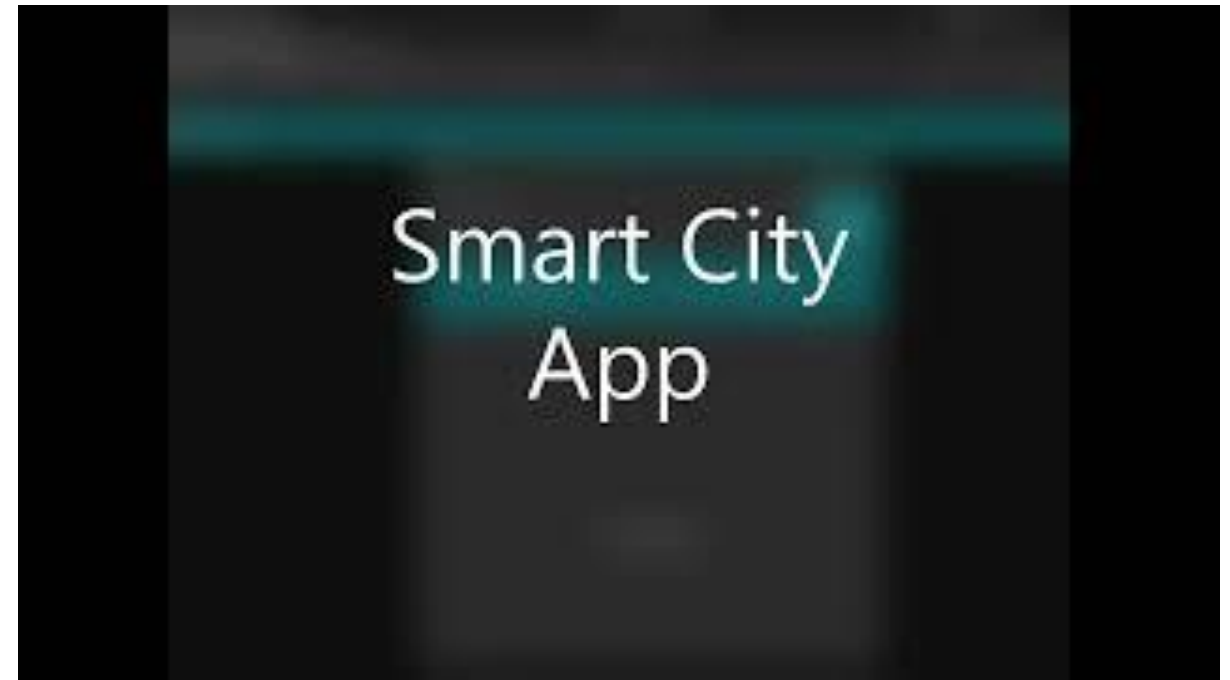
This subflow is the one used in the following Docker image: kazakos13/common-functions.

manouslinard flow



Source Code (& other links)

- [Github Repository](#)
- [Project Documentation](#)
- [2nd PHYSICS Hackathon 2023 Submission](#)
- [Node-red Subflow Collection](#)
- [Hackathon Solutions Presentation](#)



The background of the slide is a dark, artistic representation of a city at night. It features a dense cluster of skyscrapers in the distance, their lights reflecting on a surface that appears to be water or a wet street. In the foreground, there are numerous curved, glowing lines in shades of blue, purple, and white, suggesting light trails from moving vehicles or perhaps digital data paths. The overall color palette is dominated by deep blues and purples, with bright highlights from the city lights and light trails.

Thank you for your time!
