Smart City App

Contributors

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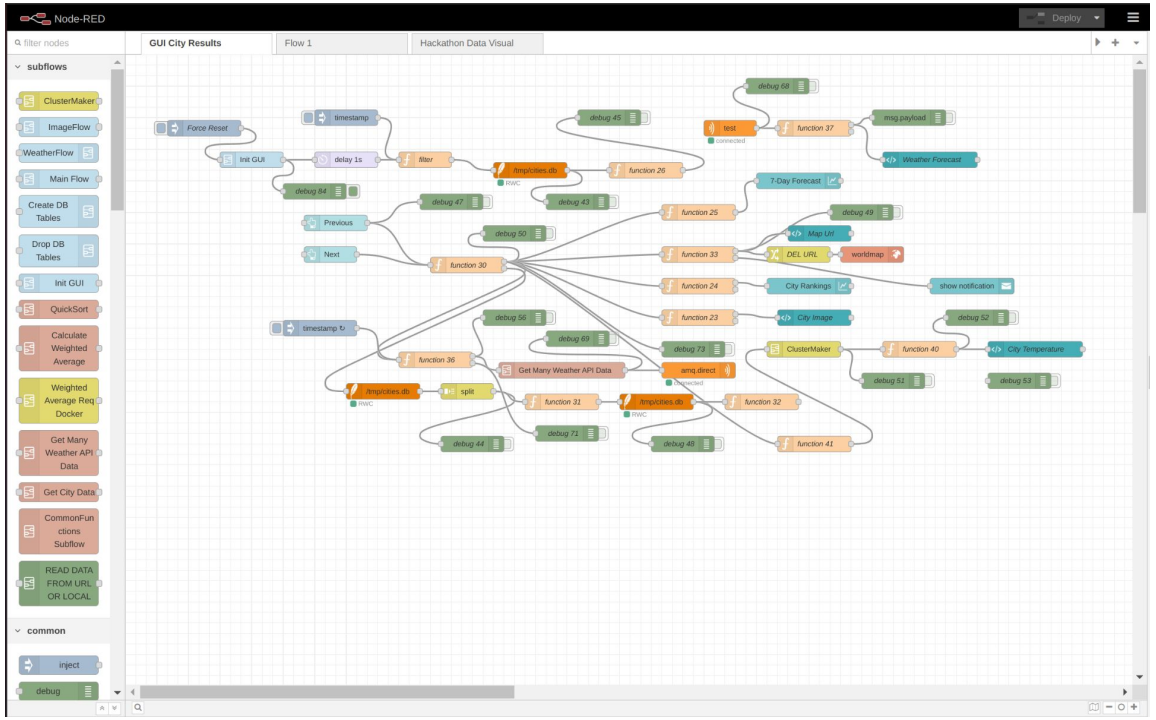
Project Description

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.



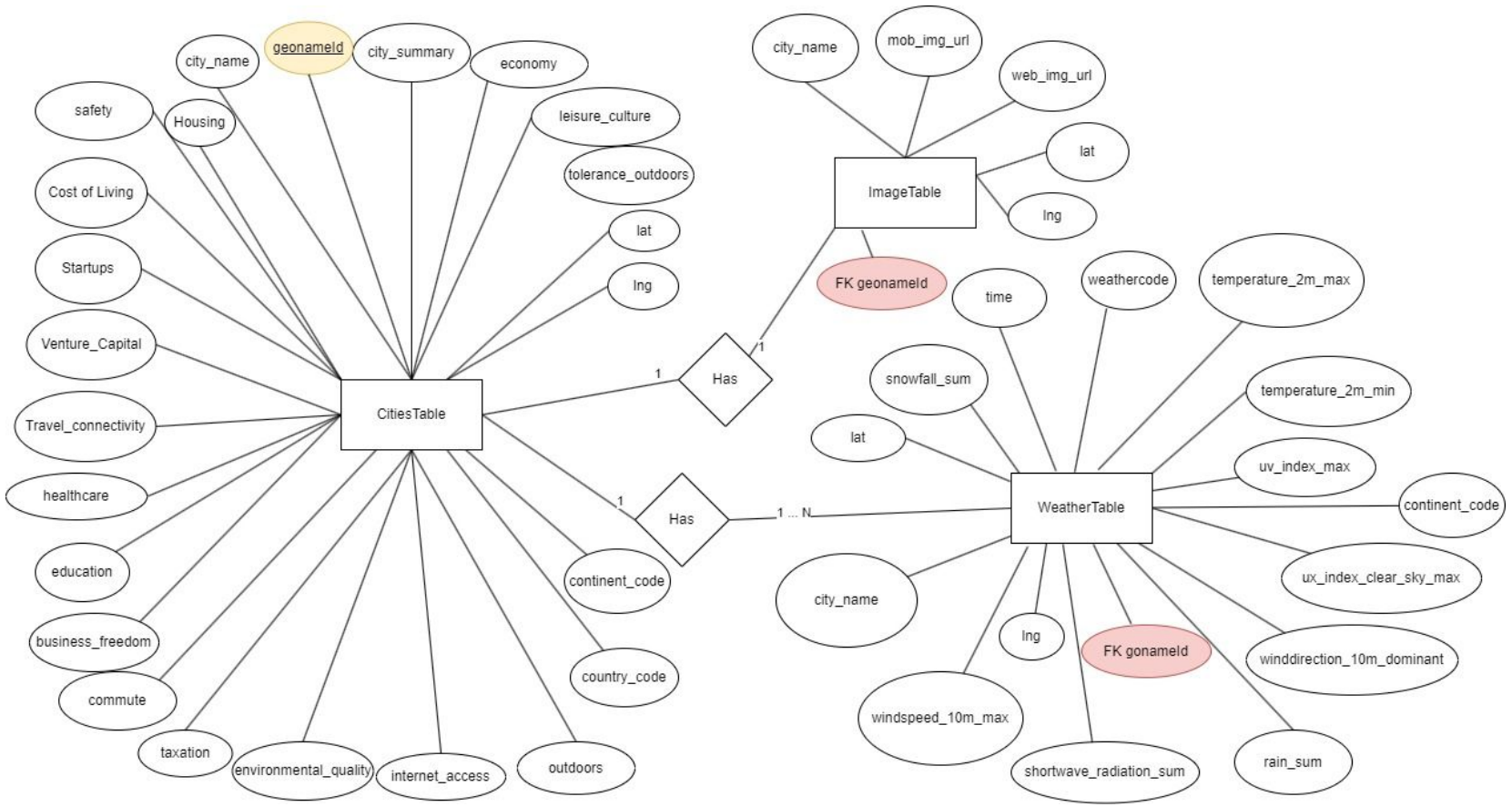
Main APIs Used

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

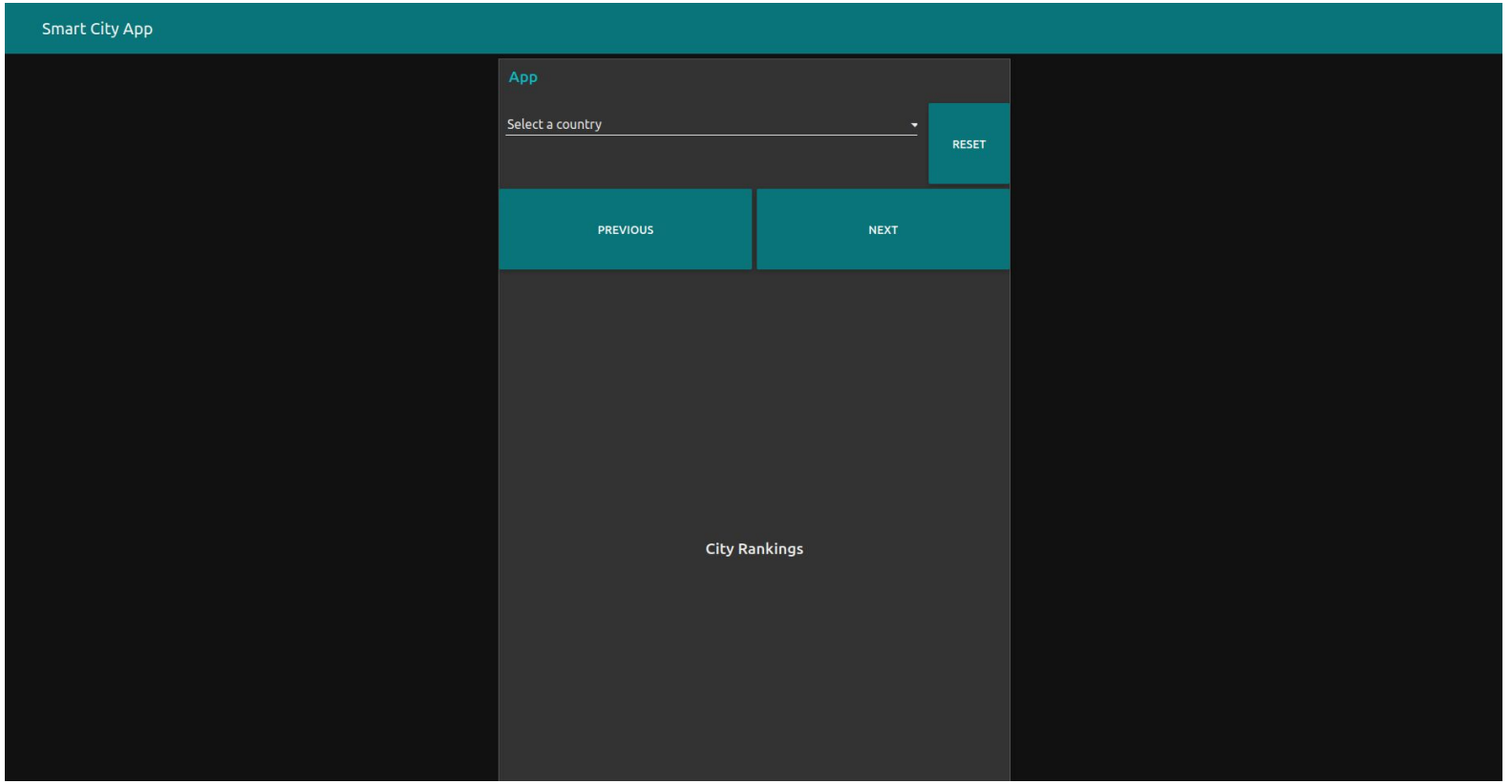

city_name
geonameId
city_summary
economy
safety
Housing
leisure_culture
tolerance_outdoors
Cost of Living
lat
Startups
lng
Venture_Capital
Travel_connectivity
healthcare
education
business_freedom
commute
taxation
environmental_quality
internet_access
outdoors
country_code
continent_code
CitiesTable
Has
1
1
Has
1
1 ... N
city_name
mob_img_url
web_img_url
lat
lng
ImageTable
FK geonameId
time
weathercode
temperature_2m_max
snowfall_sum
temperature_2m_min
lat
uv_index_max
WeatherTable
continent_code
ux_index_clear_sky_max
city_name
lng
FK gonameId
winddirection_10m_dominant
windspeed_10m_max
shortwave_radiation_sum
rain_sum

K–means Clustering

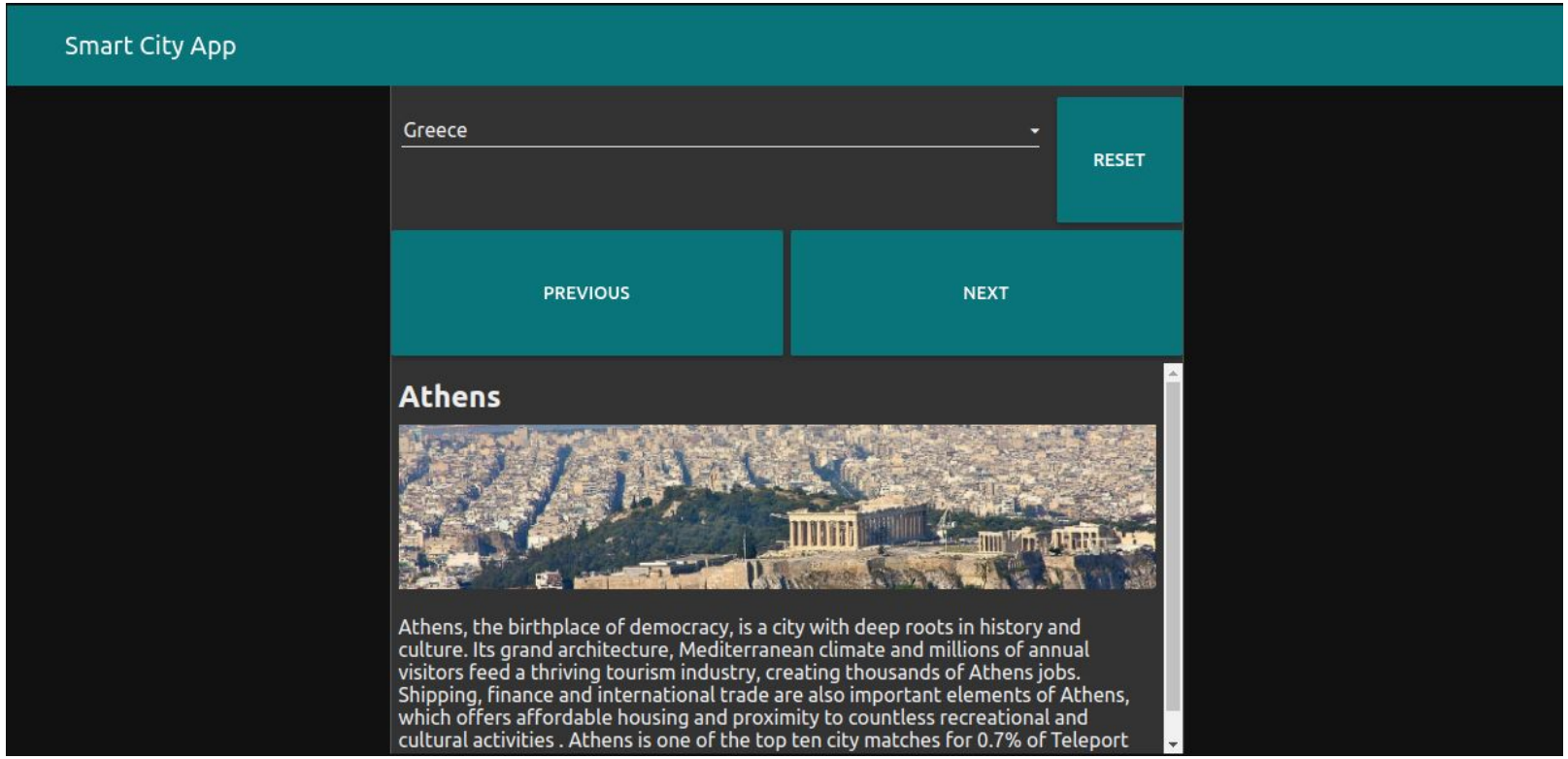
We implemented K–means clustering for grouping temperatures in the database.

Example Output in GUI:

GUI Showcase



GUI Showcase



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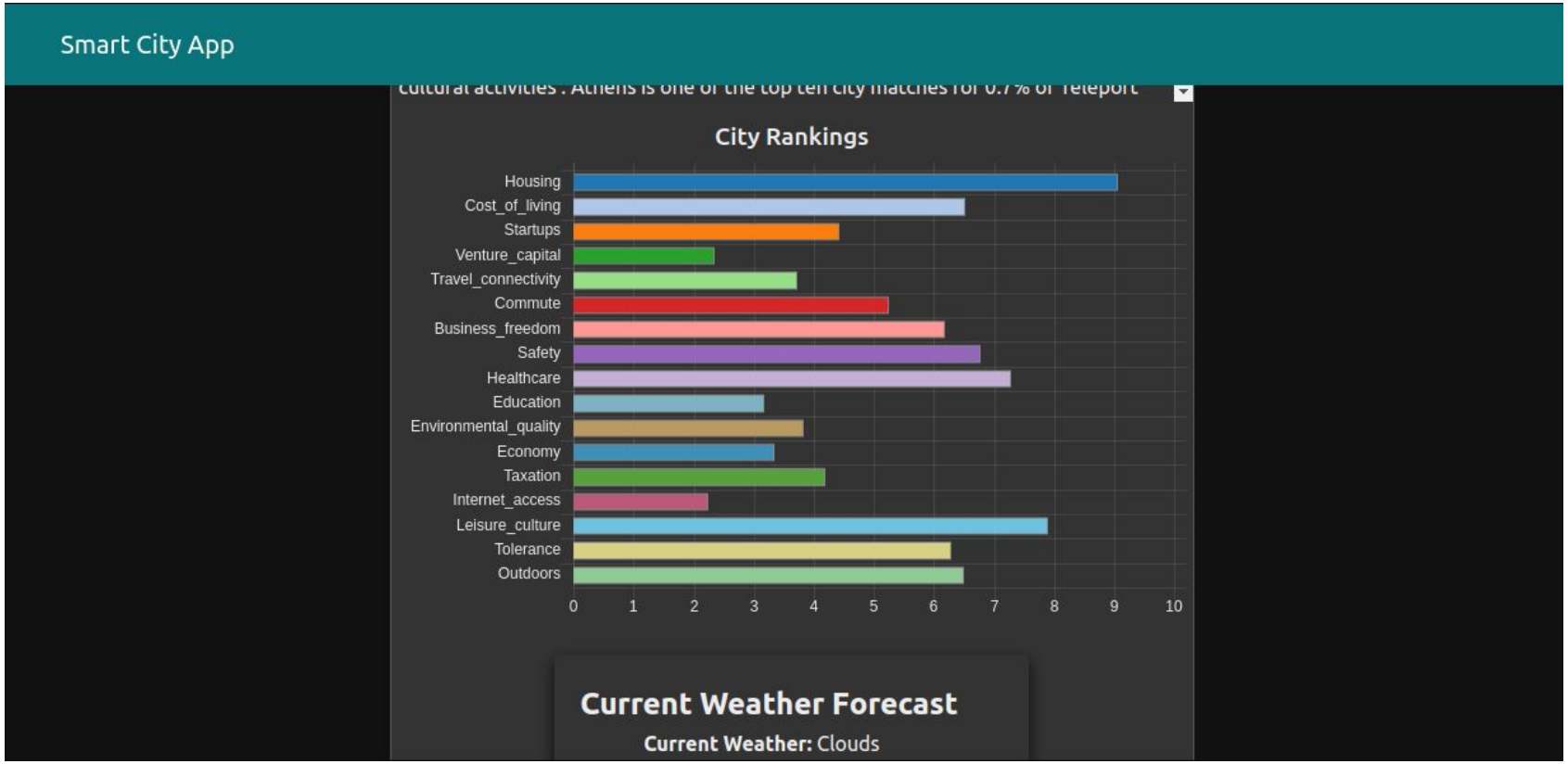
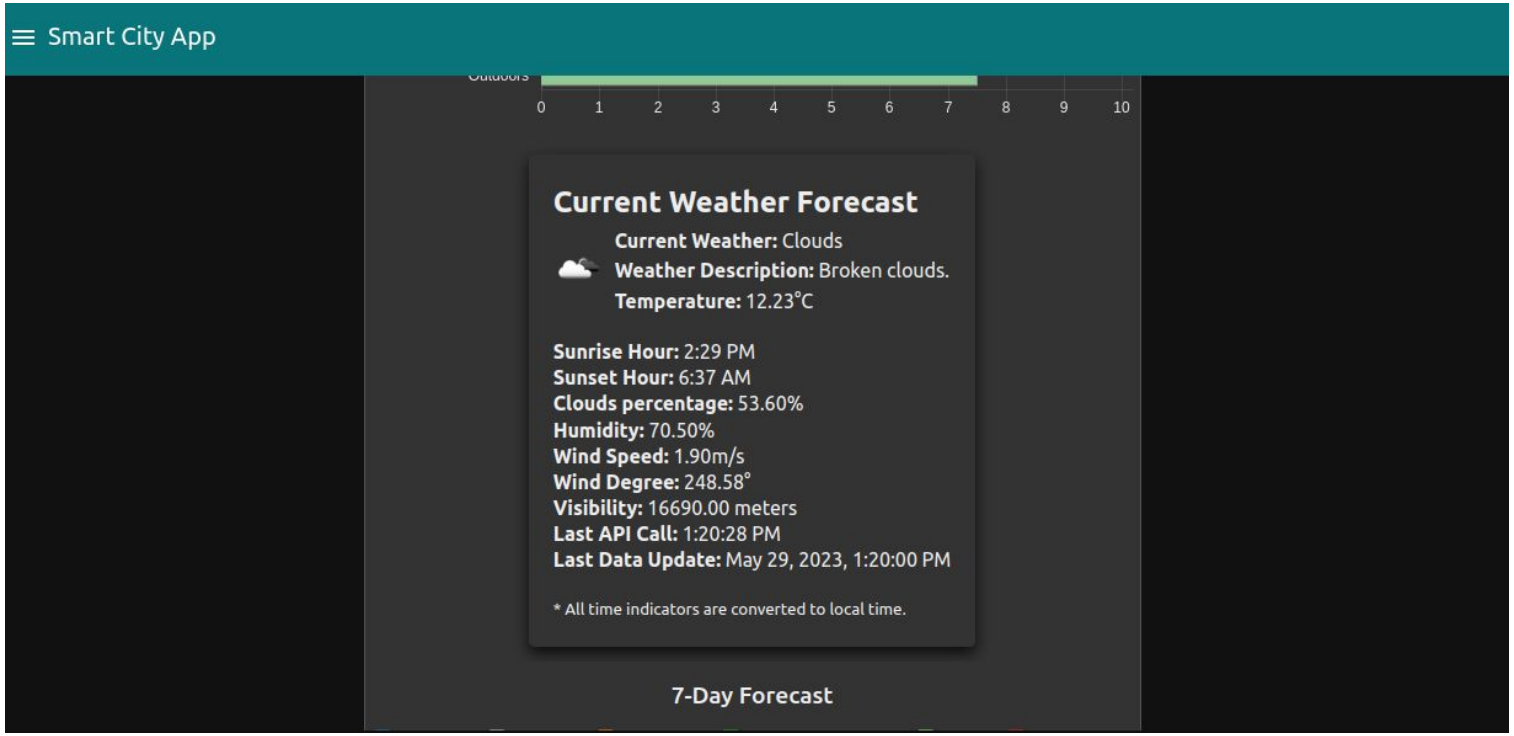
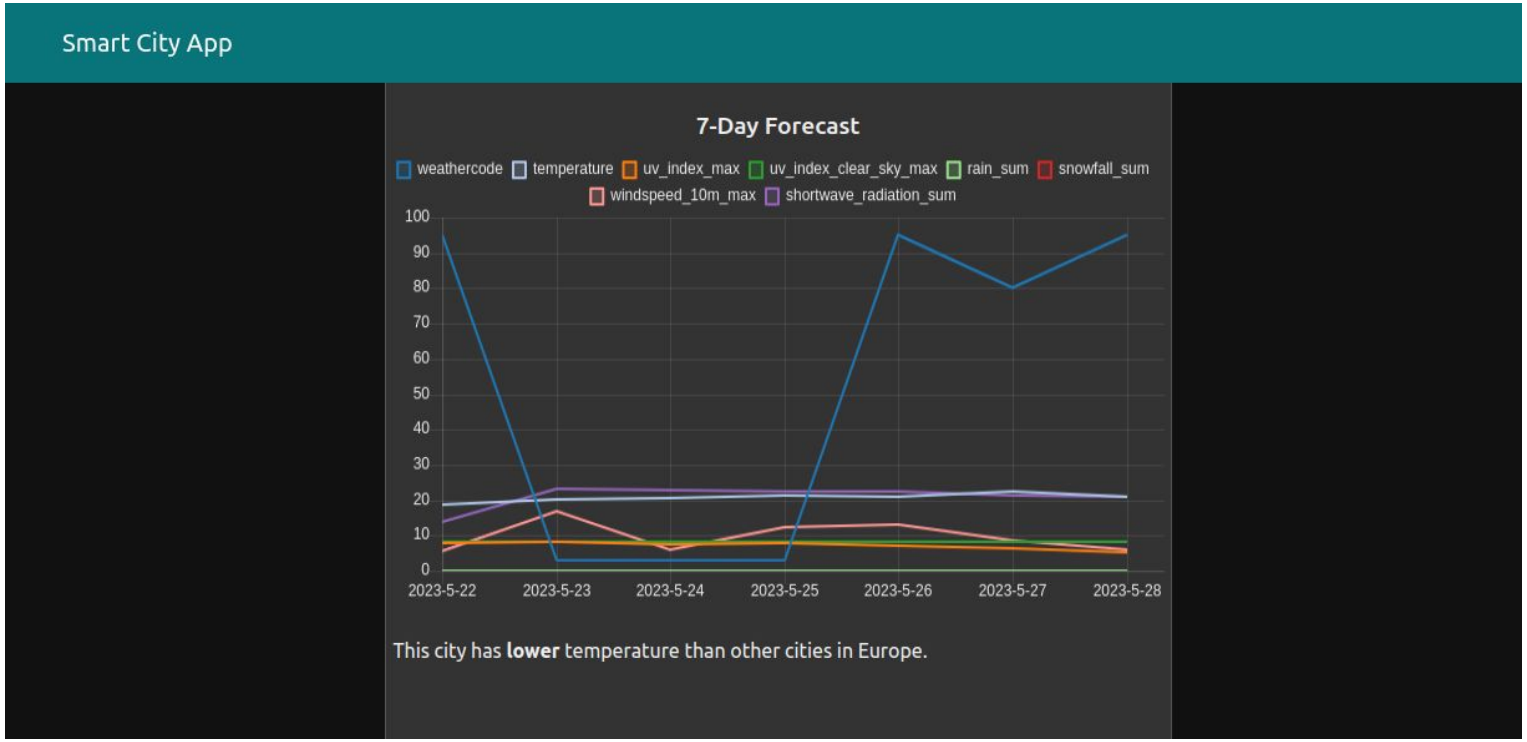


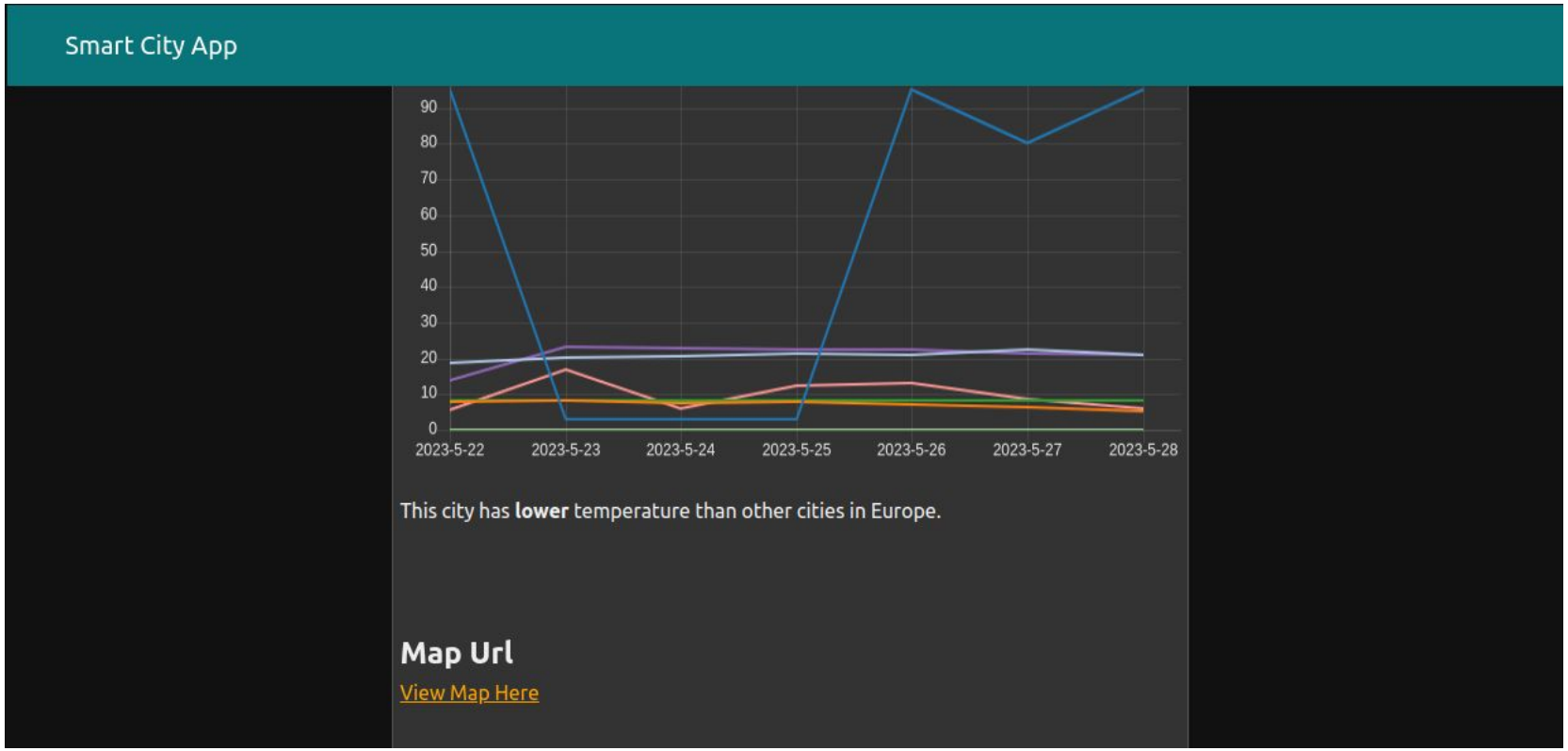
GUI Showcase



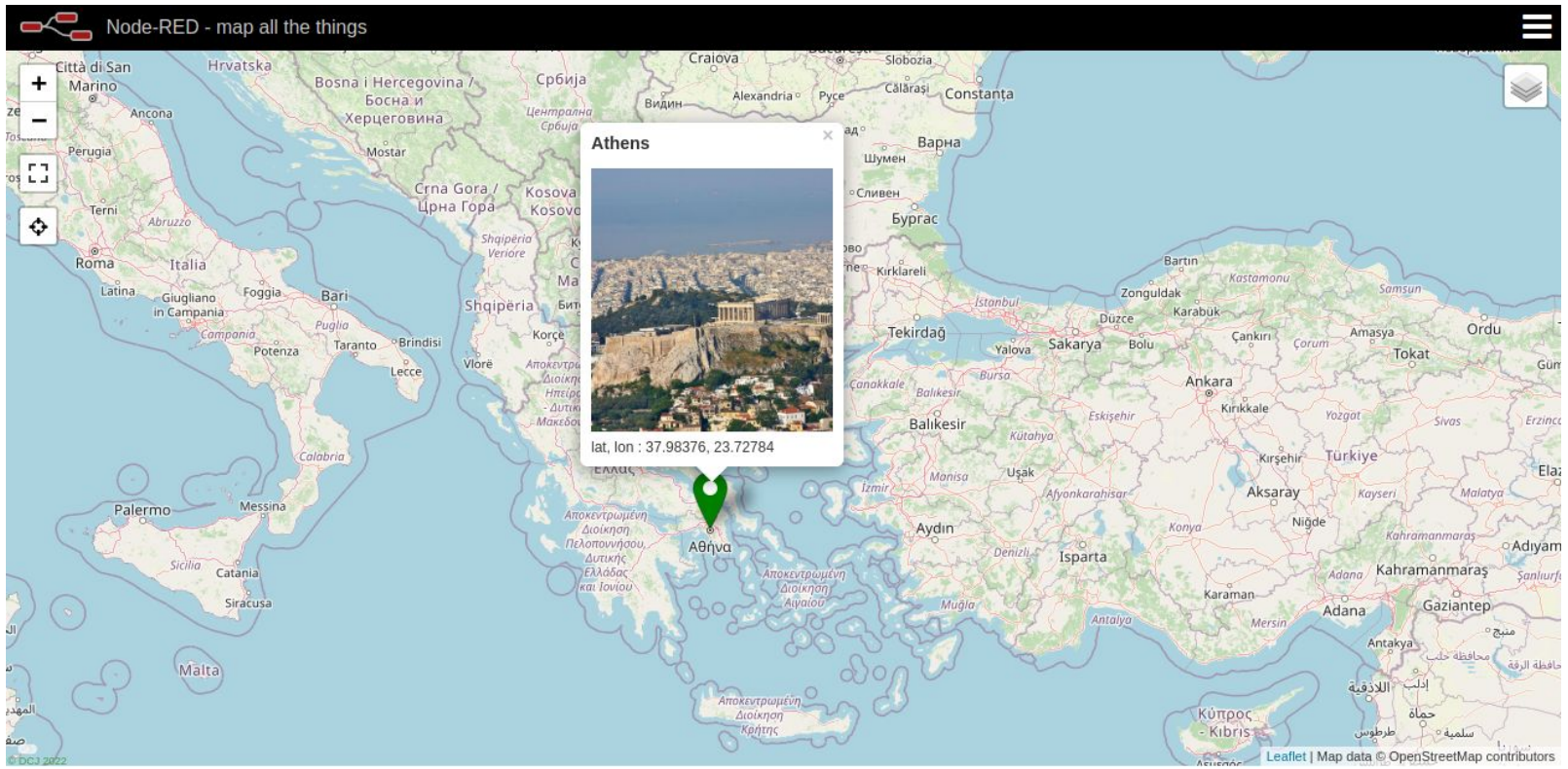
GUI Showcase



GUI Showcase

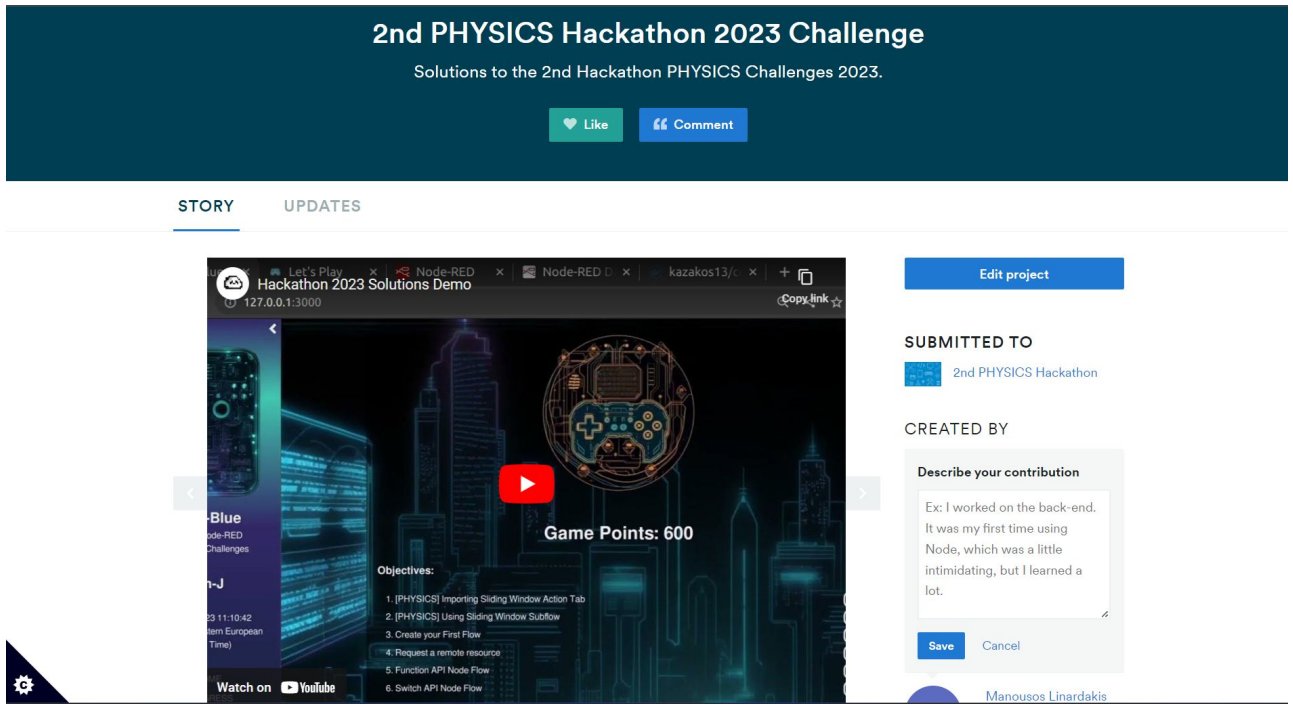


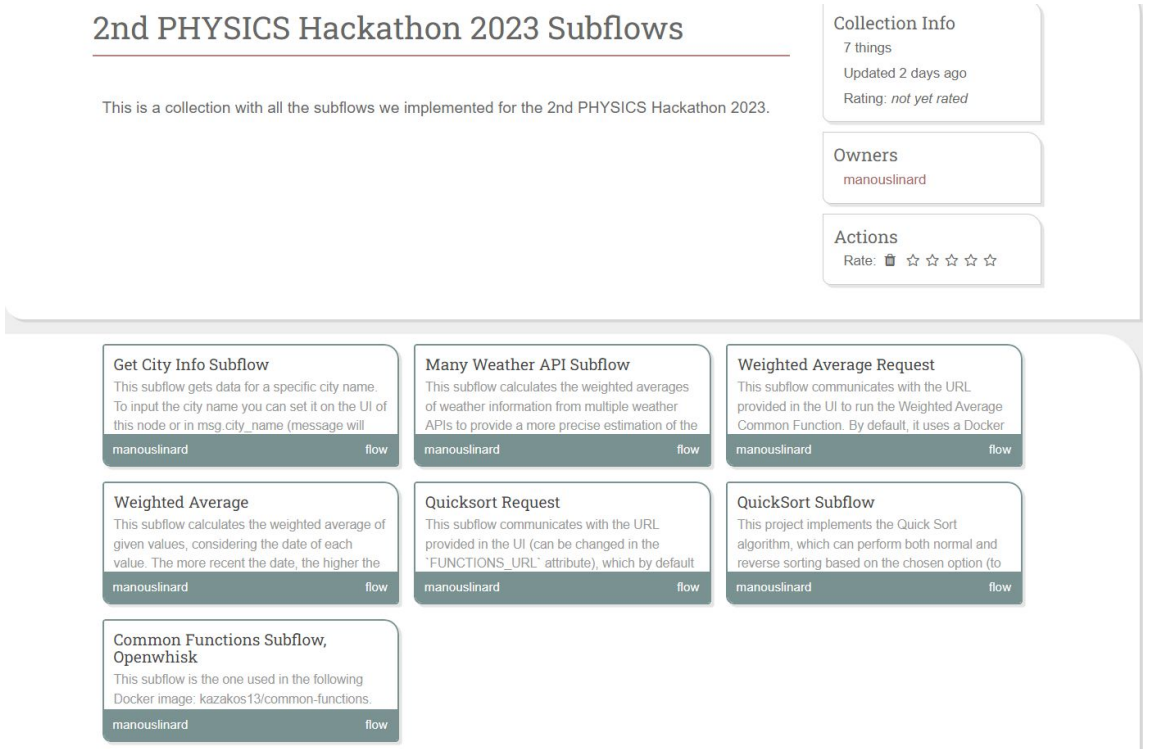
GUI Showcase



Participation in 2nd PHYSICS Hackathon 2023

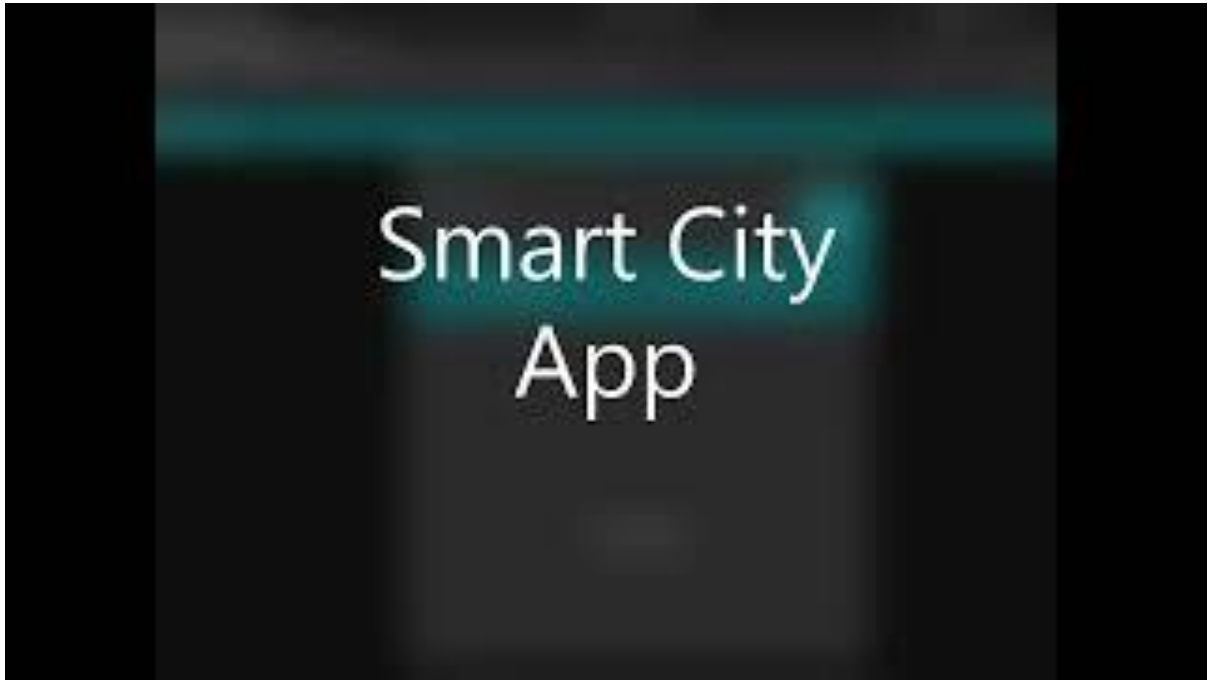
You can view our devpost submission with our solutions to all the hackathon challenges here.

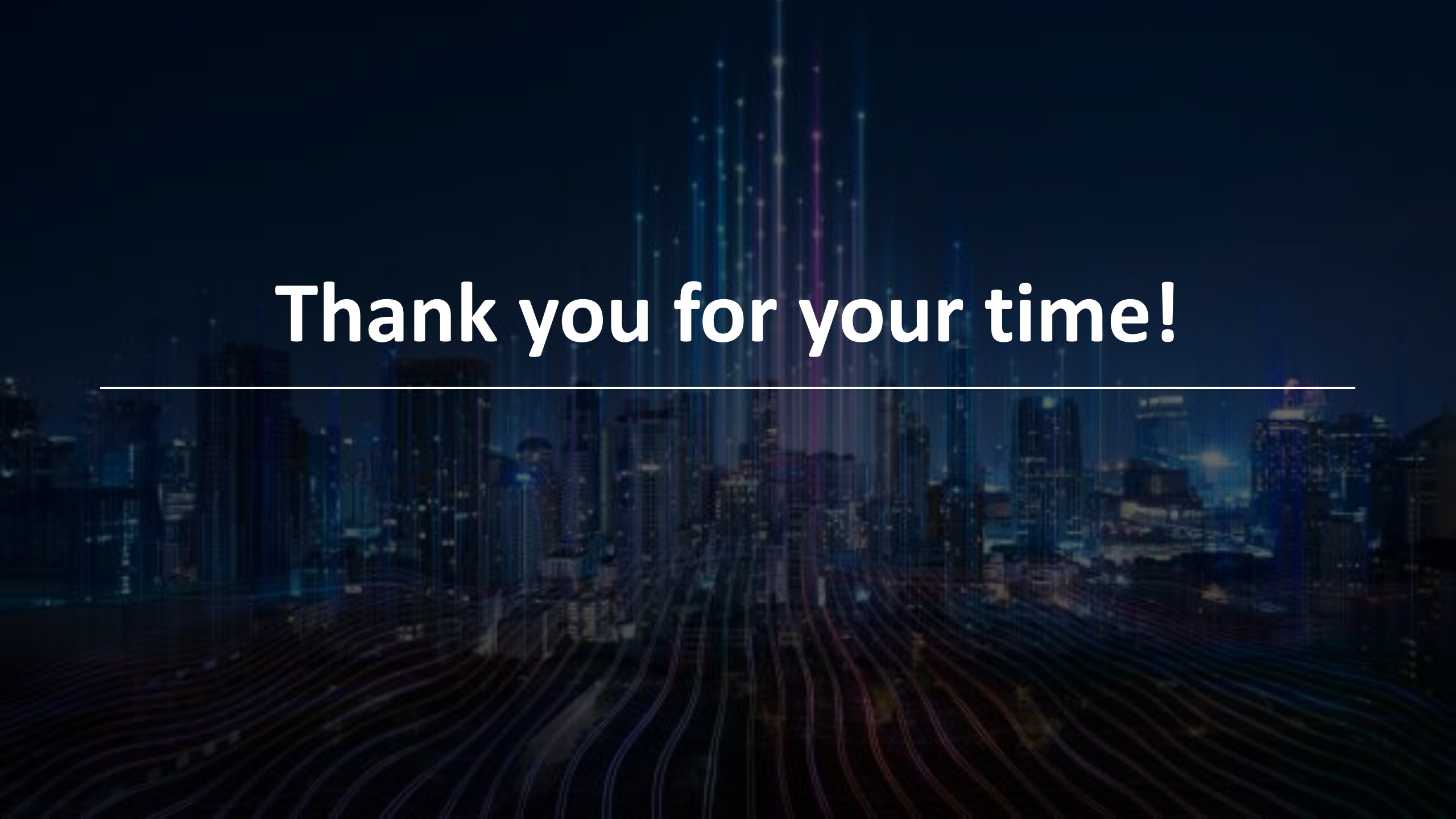




Source Code (& other links)

- Github Repository
- Project Documentation
- 2nd PHYSICS Hackathon 2023 Submission
- Node-red Subflow Collection
- Hackathon Solutions Presentation




Thank you for your time!