FindMyCovid

Senior Design

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Background

Our project is dedicated to addressing the urgent need for real-time, accurate, and accessible data on the global impact of the COVID-19 pandemic. We aim to achieve this by developing a comprehensive website that offers real-time mapping of COVID-19 cases worldwide.

Our platform will be a valuable resource for individuals, healthcare professionals, policymakers, and researchers, providing up-to-date information on the pandemic's status across geographical regions.

Central to our project is the integration of two crucial components: real-time COVID-19 data retrieval and visualization through an interactive map interface. By leveraging APIs for both COVID-19 data and mapping services, our platform will dynamically gather the latest statistics and present them visually on an intuitive map interface.
Users will have the ability to explore COVID-19 case trends, distribution, and related data with ease, fostering a deeper understanding of the pandemic's impact on a global and local scale.

The scope of our project includes the development of a user-friendly website accessible across various devices. This platform will utilize APIs to fetch real-time COVID-19 data, ensuring accuracy and timeliness in information presentation.
The map interface will provide interactive features such as zooming, filtering data by region, viewing detailed statistics, and tracking historical trends. Our primary focus is on delivering a seamless user experience, providing informative visualizations, and ensuring the reliability of the displayed information.

Key Requirements

- The COVID-19 pandemic has revealed shortcomings in the availability, accessibility, and comprehensibility of data related to the virus's spread and impact. These shortcomings have created a need for a solution that fixes these gaps.
- Currently, COVID-19 data is dispersed across various sources, including government websites, health agencies, and research institutions. This leads to inconsistencies and difficulties in viewing and interpreting the data
- The pandemic's increasing nature demands real-time information on COVID-19 cases, testing, and healthcare capacity. Traditional reporting methods often result in delays and outdated data.
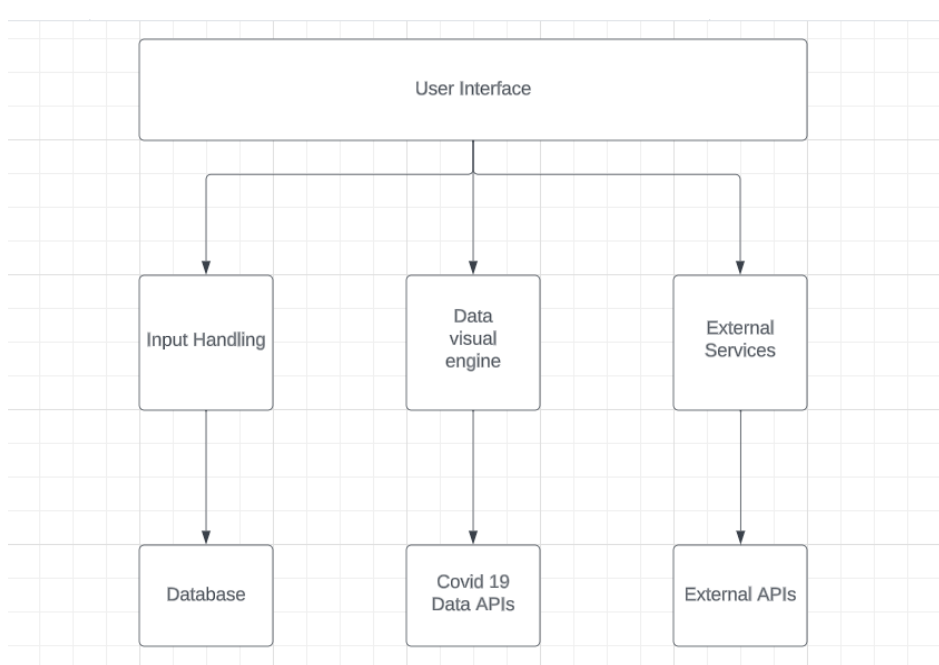

Figure 1. System Design of FindMyCOVID application

Architectural Design

Leaflet Layer

- Map Display API: Provides functionalities to render interactive maps on the user interface.
- Marker Creation: Generates markers based on data provided, adhering to specified filtering settings.
- Integration with COVID API: Receives data from the COVID API for dynamic marker creation

Covid-API Layer

- Data Retrieval: Fetches COVID-19 data from external APIs.
- Data Formatting: Formats raw data into a structured format suitable for visualization.
- Severity Classification: Categorizes data based on severity levels for mapping

FindMyCovid Layer

- Map Display: Presents an interactive map to the user for visualizing COVID-19 data.
- Marker and Layer Creation: Utilizes Leaflet to generate markers and layers based on COVID data.
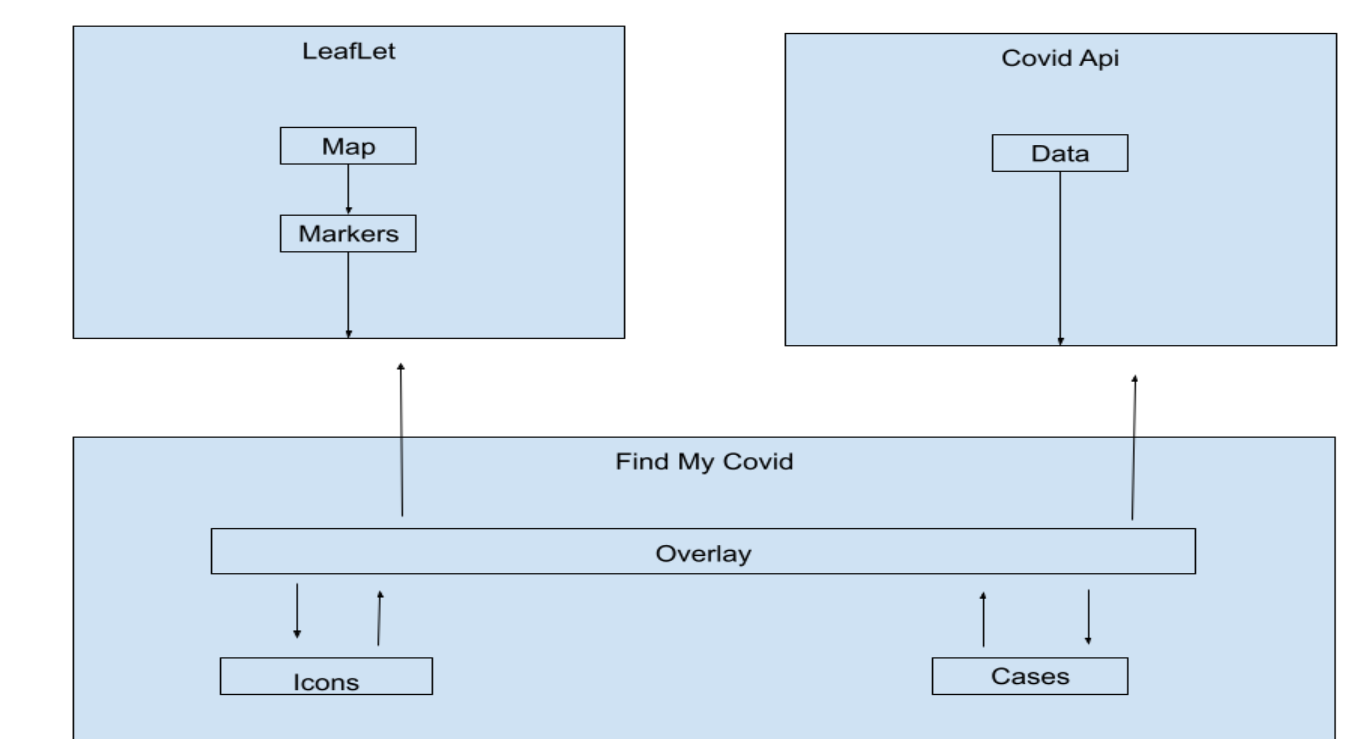- External API Interaction: Retrieves real-time COVID-19 data from external APIs.

Table 1. Architectural Design Diagram

Implementation Details

FINDMYCOVID WEBSITE APPLICATION IMPLEMENTATION

COVID-19 Data API

- External APIs provided by reliable sources such as health organizations, government agencies, and research institutions. These APIs supply real-time and historical COVID-19 data
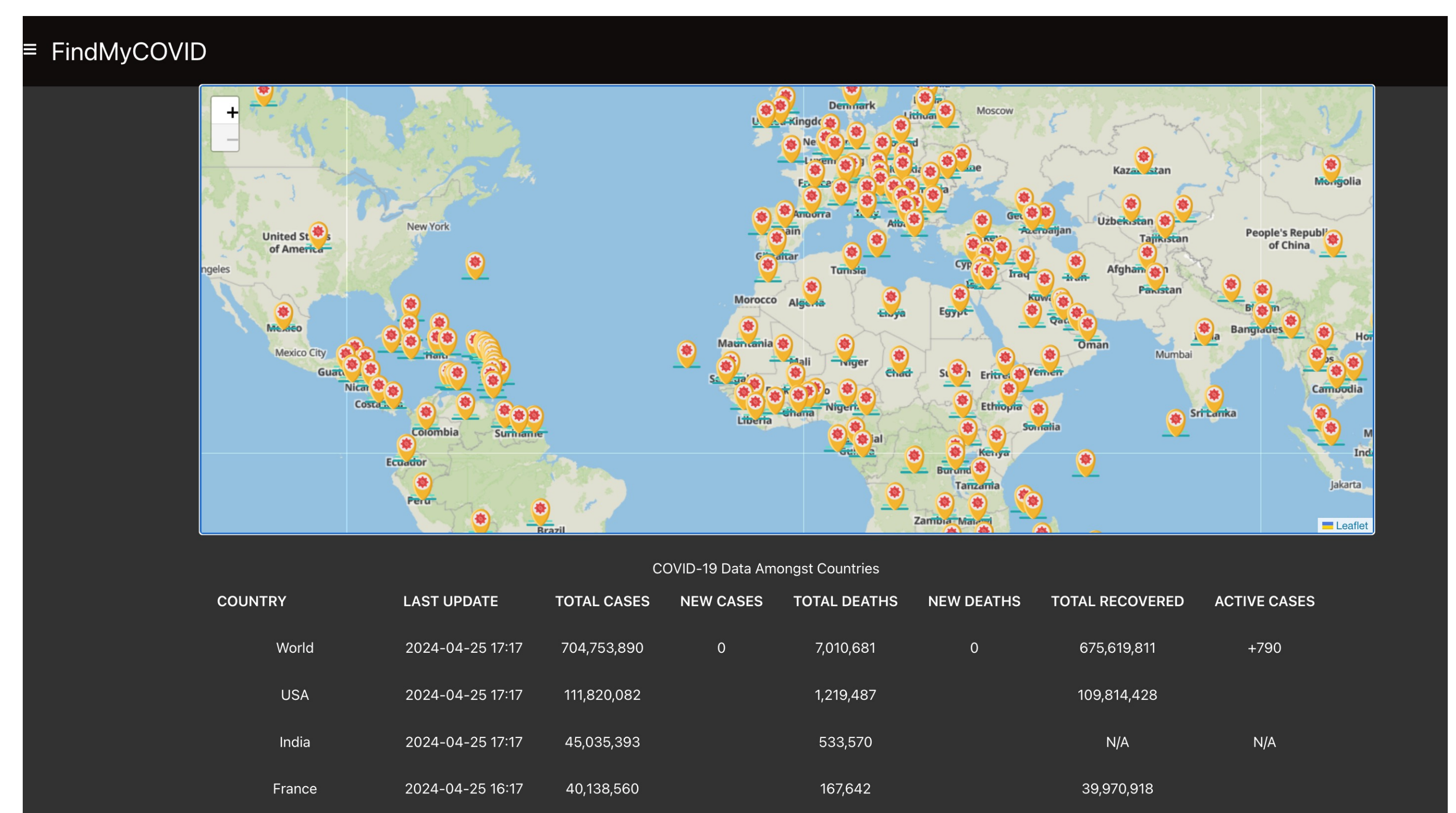
Functionality

- External APIs provided by reliable sources such as health organizations, government agencies, and research institutions. These APIs supply real-time and historical COVID-19 data

Interfaces

- The Application Backend interacts with these APIs using standardized protocols (HTTP/HTTPS) to fetch data. APIs respond with JSON or XML data, which is processed by the backend

COVID-19 Data Amongst Countries

COUNTRY	LAST UPDATE	TOTAL CASES	NEW CASES	TOTAL DEATHS	NEW DEATHS	TOTAL RECOVERED	ACTIVE CASES
World	2024-04-25 17:17	704,753,890	0	7,010,681	0	675,619,811	+790
USA	2024-04-25 17:17	111,820,082		1,219,487		109,814,428	
India	2024-04-25 17:17	45,035,393		533,570		N/A	N/A
France	2024-04-25 16:17	40,138,560		167,642		39,970,918	

Conclusions and Future Work

Reflecting on our recent design project, we've found that our chosen design effectively met the client's goals and constraints. Looking ahead, we aim to improve our CSS implementation for enhanced user experience and functionality. By delving deeper into CSS frameworks and responsive design principles, we'll ensure scalability and maintainability. Additionally, we recognize the need to obtain better data from APIs and other sources, enabling us to iterate more efficiently and deliver even more tailored solutions in the future. We also plan to enhance our analysis capabilities and implement them into React, leveraging data-driven insights to refine our designs further. We're grateful for the support from our client, sponsors, and collaborators, whose feedback has been instrumental in shaping our plans.

References

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3.OWID. (n.d.). COVID-19 Data: Cases and Deaths. Retrieved from https://github.com/owid/covid-19-data/tree/master/public/data/cases_deaths

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