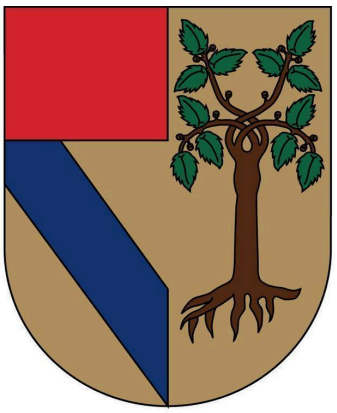

Design document

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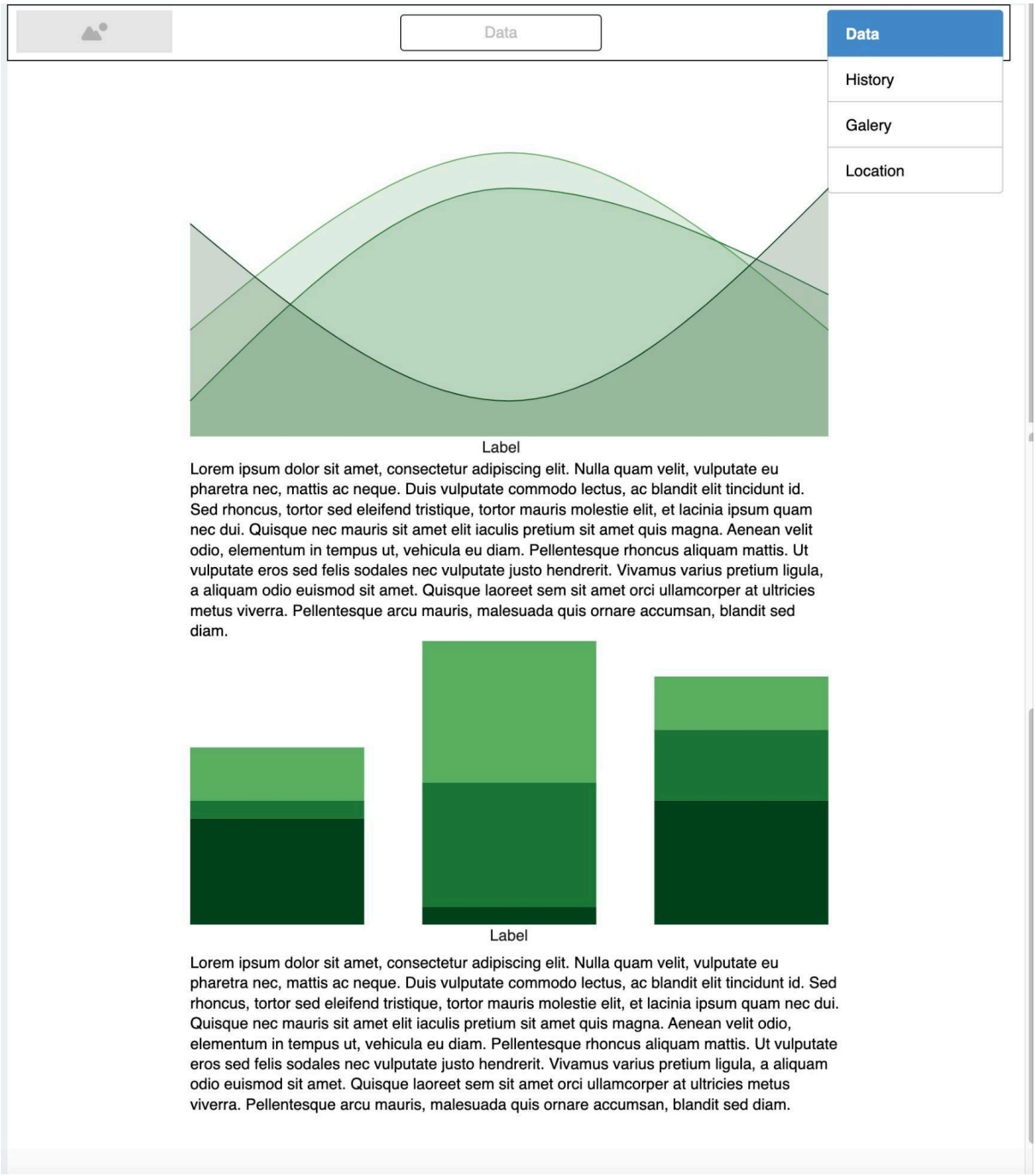
DAW2: Web Development

Eng. Gabriel C. Cortés

20 November 2024

Basic sketch



The mockup represents the modernized version of our proposed website for showcasing the current state and key features of Lake Chapala, inspired by the existing website of **CEA Jalisco**. The goal of this redesign is to enhance the user experience by providing an intuitive, visually appealing interface that emphasizes data accessibility, historical information, gallery features, and location tools. Below is an explanation of the design elements present in the mockup:

Navigation Bar

- A clear and simple **navigation bar** is placed at the top to allow users to seamlessly switch between key sections:
    - **Data**: Displays current metrics and visual representations of Lake Chapala, such as water levels and quality.
    - **History**: Offers historical context and data trends for the lake.
    - **Gallery**: Features images and videos of the lake, highlighting its beauty and significance.
    - **Location**: Provides maps and tools to explore Lake Chapala's geographical context and surrounding areas.
- The **active section (Data)** is highlighted in blue to help users identify their current position on the website.

Data Section

- The main focus of the mockup is the **Data section**, which prominently displays:
    - **Graphical Representations**: Modern graphs and charts to visualize key data such as water levels, rainfall, or environmental metrics. In the mockup, the graph showcases overlapping data curves for comparisons.
    - **Descriptive Labels and Context**: Each graph is accompanied by a descriptive label and paragraph that provide detailed insights into the displayed data. This ensures accessibility for users who may not be familiar with raw metrics.

Visual Hierarchy

- The page is divided into distinct sections to guide user attention:
    - **Graphs**: Placed at the top to prioritize the visual representation of data.
    - **Explanatory Text**: Located below the graphs to provide context and in-depth analysis.
    - **Additional Visualizations**: The second set of graphs (e.g., bar charts) and supporting descriptions offer alternative perspectives or related data.

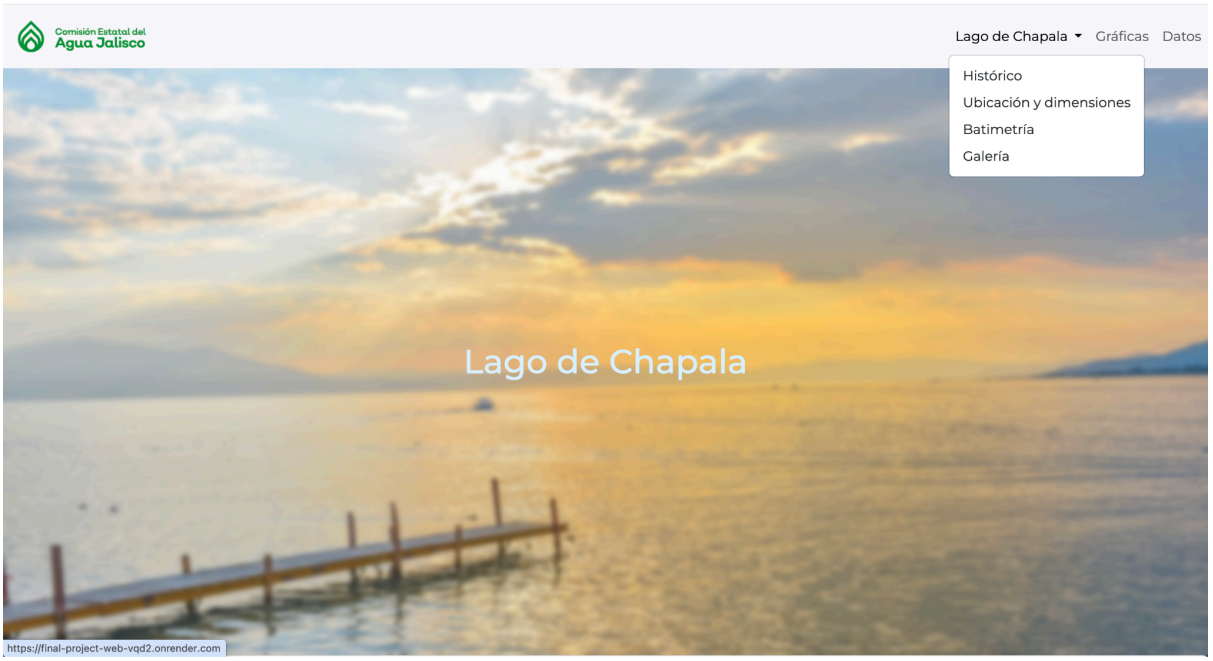
Responsive Sidebar

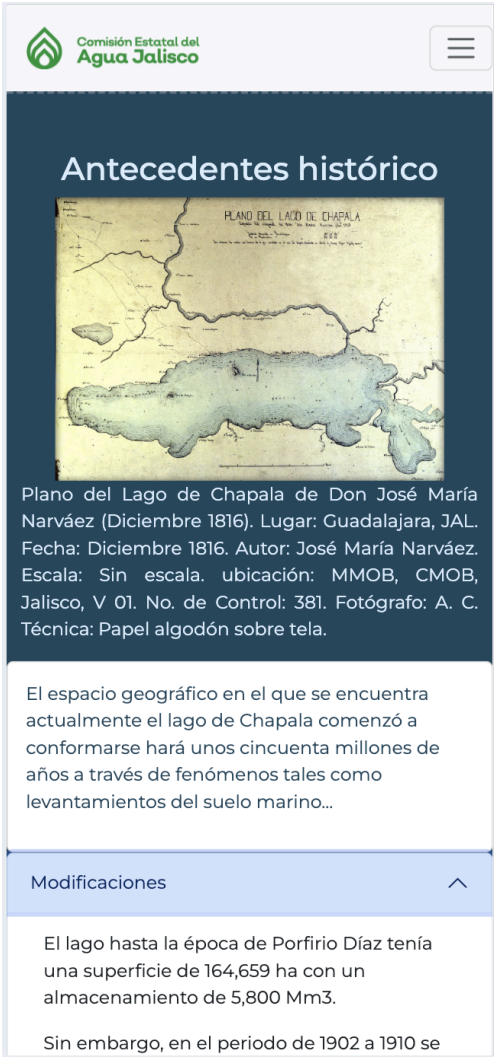
- A collapsible **sidebar** is included on the right-hand side to facilitate quick navigation across the website. The design is compact and ensures that the main content remains in focus while still offering easy access to other sections.

Color Scheme and Design Language

- The use of a clean, minimalist design with green and blue tones reflects the natural and ecological focus of the project, aligning with Lake Chapala's significance.
- The layout prioritizes responsiveness and accessibility, ensuring a consistent experience across devices such as desktops, tablets, and smartphones.

Progression in Midterm 1





Galería

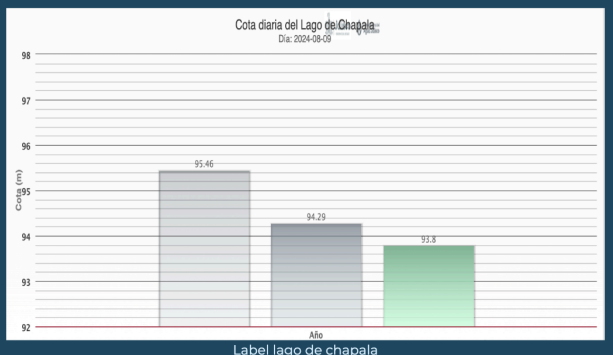
Lago rebasando el muelle

Datos

En esta sección se pueden descargar los datos utilizados en las Gráficas

Clave sih	Fecha	Descripción	Nombre común	Estado	Municipio	Alm. hm3	Elevación msnm	Uso	NAME Alm. hm3	NAME Elevación msnm	Porcentaje lle
LDCJL	1/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1505.8	92.91	AP	8126.41	98	0.185297
LDCJL	2/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1505.8	92.91	AP	8126.41	98	0.185297
LDCJL	3/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1498	92.9	AP	8126.41	98	0.184337
LDCJL	4/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1498	92.9	AP	8126.41	98	0.184337
LDCJL	5/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1498	92.9	AP	8126.41	98	0.184337
LDCJL	6/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1490.51	92.89	AP	8126.41	98	0.183416
LDCJL	7/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1490.51	92.89	AP	8126.41	98	0.183416
LDCJL	8/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1490.51	92.89	AP	8126.41	98	0.183416
LDCJL	9/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1490.51	92.89	AP	8126.41	98	0.183416
LDCJL	10/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1483.01	92.88	AP	8126.41	98	0.1
LDCJL	11/1/1991	Lago de Chapa...	Chapala	Jalisco	Chapala	1483.01	92.88	AP	8126.41	98	0.182493

Nivel actual



Label lago de chapala

Lorem ipsum, dolor sit amet consectetur adipisicing elit. Error ex est corrupti porro exercitationem, facilis magnam vitae quisquam, numquam veniam rerum, consequuntur sint itaque aliquam similique aperiam. Eligendi, quia. Perferendis.

During the first project milestone, we made significant progress compared to the initial mockup design. The key changes and improvements implemented were as follows:

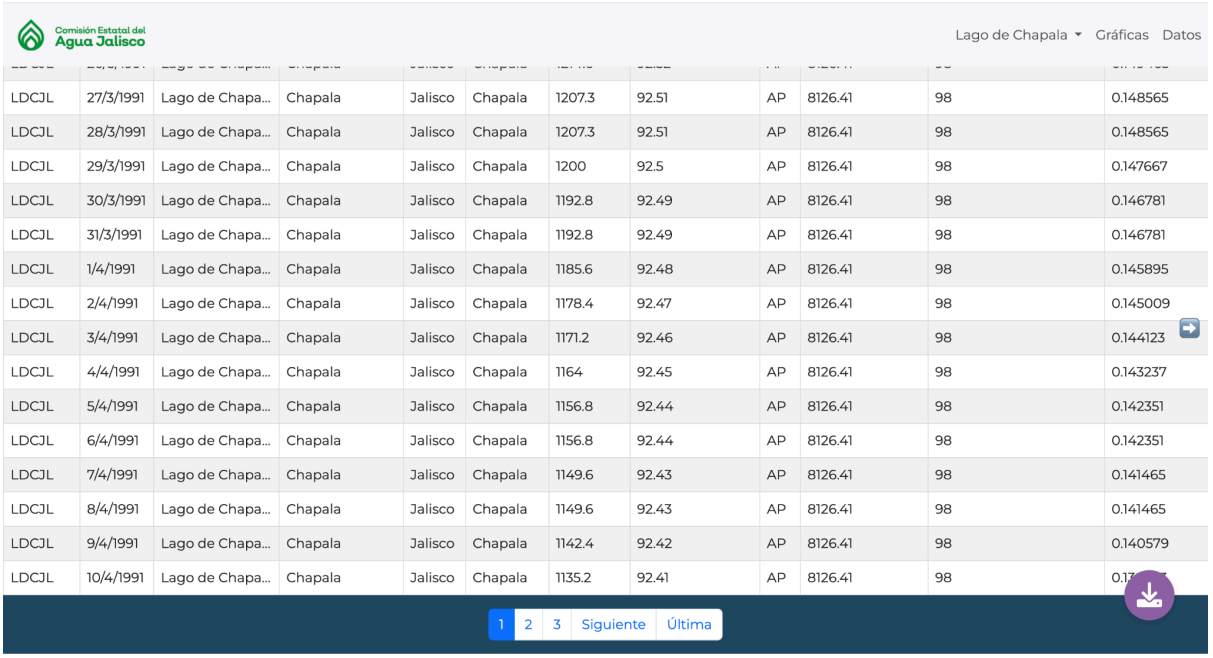
Changes Made

1. **Navbar Styled with CSS**
    - A functional and responsive **navbar** was created using pure CSS, improving navigation between the website's sections.
    - The navbar included links to sections such as "Historical," "Graphs," "Data," and "Gallery."
2. **Homepage with Basic Information about the Lake**
    - The homepage was redesigned to present all **basic information about Lake Chapala**, divided into clearly defined sections, including:
        - **Historical Background:** A brief introduction with historical context about the lake.
        - **Modification Information:** Data about changes in the lake's surface area and volume over the years.
3. **Gallery on the Root**
    - An interactive **carousel-style gallery** was implemented using CSS only.
    - The gallery showcased historical and current images of the lake, highlighting its beauty and importance.
4. **Graphs Section**
    - Since implementing dynamic graphs was challenging at this stage, we opted to include **representative images** of graphs related to the lake.
5. **Data Section**
    - A structured table was added to display basic information, which was **manually populated**, as we didn’t yet have an automated data source.

Key Achievements

- The website progressed from a simple **mockup** to a functional version with basic navigation, structured content, and an initial design for all key sections.
- The use of **pure CSS** allowed us to style the elements consistently, enhancing the overall visual experience.

Progression in Midterm 2



For the second project milestone, while the visual appearance of the website did not change significantly, substantial technical improvements were implemented under the hood. The key updates are summarized below:

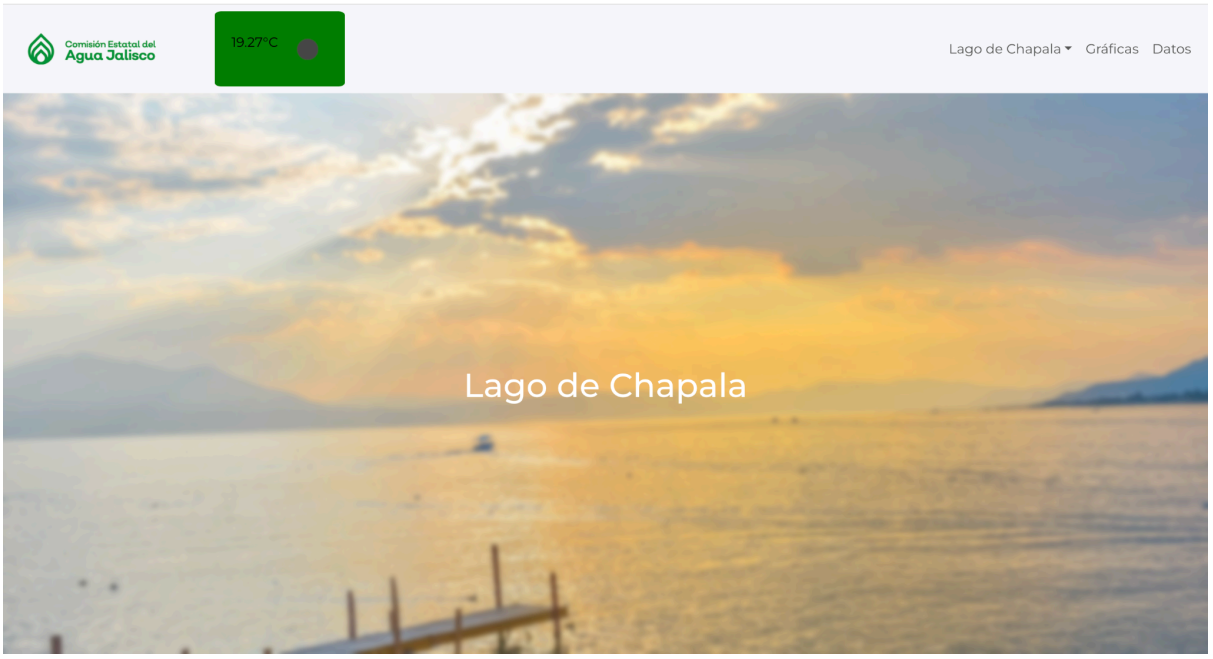
Changes Made

1. **Integration of Node.js Backend**
   - A robust **Node.js backend** was developed to handle server-side logic and connect the application with a database.
2. **MongoDB Atlas Database**
   - The project integrated a **MongoDB Atlas** database, enabling dynamic retrieval and management of data, replacing the manual population of information.
3. **Switch to EJS Components**
   - The frontend transitioned to use **EJS (Embedded JavaScript)** for dynamic rendering of views, allowing seamless integration of database-driven content.
4. **Dynamic Data Display with Pagination**
   - Data fetched from MongoDB was displayed dynamically using a **pagination system**, making large datasets easy to navigate.
   - This significantly improved the usability of the "Data" section, where users could browse through records efficiently.
5. **Introduction of Bootstrap**
   - **Bootstrap** was introduced to improve the visual design and responsiveness of the website.
   - Components like buttons, tables, and pagination were styled using Bootstrap, enhancing the overall user experience.

Key Achievements

- Moving to a **dynamic, database-driven architecture** greatly improved the site's functionality and scalability.
- The integration of **Bootstrap** refined the website's appearance, ensuring a consistent and modern design.
- Combining **EJS components**, **Node.js**, and **MongoDB** created a cohesive system for managing and displaying data efficiently.
- The **pagination system** allowed for seamless navigation through extensive datasets, adding a professional touch to the "Data" section.

Progression in Final Deliverable



Comisión Estatal del Agua Jalisco

19.27°C

Ubicación y dimensiones

Localizado al oriente del Estado de Jalisco y al noroeste del Estado de Michoacán, tiene una superficie máxima de 114,659 ha, de las cuales Jalisco ocupa el 86% y Michoacán el 14%.

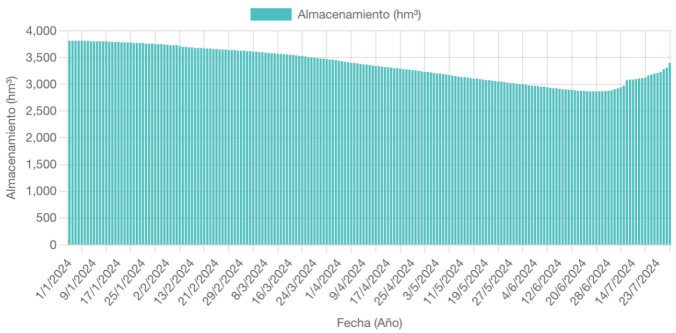
Tiene un almacenamiento máximo, a la cota 97.80 (equivalente a 1,423.80 msnm) de 7,897 millones de metros cúbicos (Mm^3). A esa misma cota, sus dimensiones extremas son de: 79 km de este a oeste y 28 km de norte a sur.

Cuenca hidrológica

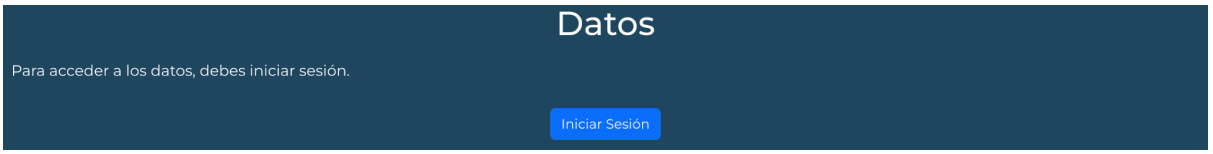
Forma parte de la Cuenca Lerma-Chapala-Santiago, cuenca que inicia al suroeste de la Ciudad de Toluca, con el nacimiento del Río Lerma, continúa su recorrido por el Estado de México en su porción noroeste, continúa como línea divisoria entre los estados de Querétaro y

Graficas

Almacenamiento a lo largo del tiempo



Esta grafica contiene los niveles de elevacion en msnm a lo largo de este año 2024



LDCJL	3/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1164	92.45	AP	8126.41	98
LDCJL	4/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1156.8	92.44	AP	8126.41	98
LDCJL	5/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1156.8	92.44	AP	8126.41	98
LDCJL	6/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1149.6	92.43	AP	8126.41	98
LDCJL	7/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1149.6	92.43	AP	8126.41	98
LDCJL	8/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1142.4	92.42	AP	8126.41	98
LDCJL	9/4/1991	Lago de Chapala	Chapala	Jalisco	Chapala	1135.2	92.41	AP	8126.41	98

1 2 3 4 5

Cerrar Sesión

Changes Made

1. **Migration to React**
   - All components were migrated from **EJS to React**, allowing for better modularity, maintainability, and scalability.
   - A clear separation between **frontend** and **backend** was established, improving development workflow.
2. **Integration of External API for Temperature Display**
   - An external API was integrated to fetch and display the **current temperature** of the area around Lake Chapala, adding a dynamic and engaging feature to the homepage.
3. **Updated Homepage**
   - Replaced accordion sections with **buttons** that expand to reveal information dynamically, creating a cleaner and more user-friendly design.
   - Added a **footer** with location and contact information for a professional look.
4. **Error Management**
   - Implemented a **dedicated error management system**, accessible through a button, to demonstrate error-handling capabilities.
5. **Graph Section**
   - The graphs are now generated dynamically using **real-time data fetched from the backend**, significantly enhancing their relevance and usability.
6. **Data Section with Validation**
   - Introduced a basic **login simulation**: users need to press a button to "log in" before accessing the data tables.

    - Tables now include options for **downloading datasets**, providing more functionality and a better user experience.

Key Achievements

- Migrating to **React** marked a significant leap in the project's technological framework, enabling a smoother and more modern interface.
- The integration of the **external API** demonstrated the ability to combine third-party services with the project’s core features.
- Enhanced **interactivity** with buttons for revealing content and a professional **footer** improved the visual appeal.
- **Dynamic graphs** and the **data table validation system** added a layer of sophistication, aligning with real-world application standards.

Conclusion

The progression of this project demonstrates a clear evolution from a basic mockup to a fully functional and dynamic web application. Each milestone introduced significant improvements, from integrating backend functionality and database management to migrating to React for a modern, scalable architecture. The addition of features such as real-time data visualization, external API integration, and user-friendly design elements highlights the practical application of web development principles. This project not only achieved its initial goals but also showcased the potential for further scalability and real-world usability, setting a strong foundation for future enhancements.