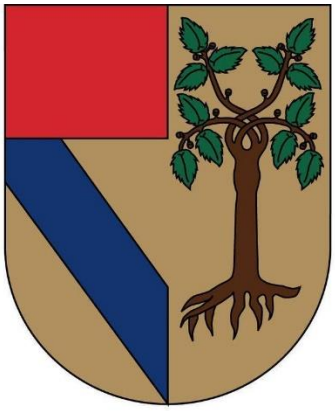

Save for solar

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Universidad Panamericana De Guadalajara

Desarrollo de aplicaciones web

Gabriel Castillo Cortés

Design document:

1. Objective:
The goal is to create an accessible web application that educates users on solar energy, provides a platform for feedback, and helps individuals estimate the potential benefits of switching to solar energy. By doing so, it promotes sustainable energy solutions and contributes to global climate action efforts.

2. Functional Requirements:

- Informational Content: A section with detailed explanations of solar energy, including:
    - Types of solar panels.
    - Installation process and costs.
    - Environmental and economic benefits.
- Review System: Allow users to leave and view feedback on solar energy experiences.
- Solar Calculator: Users can input their monthly energy costs, and the system will calculate the approximate number of solar panels needed to cover their usage.

3. Non-Functional Requirements:

- Responsive design for optimal viewing across devices.
- Fast loading times (under 2 seconds).
- Secure storage of sensitive user data.

4. Technology Stack:

- Front-End: React.js, React-Bootstrap, Bootstrap (ensures responsive and user-friendly design).
- Back-End: Node.js with Express for API development.
- Database: MongoDB using Mongoose for managing login data and reviews.

- Security: bcryptjs for password encryption, JSON Web Tokens (jsonwebtoken) for authentication.

5. Architecture:
We are using a monolithic architecture, where both front-end and back-end components are integrated within the same application.

- Advantages: Simpler deployment and maintenance for this project's scope.
- Disadvantages: Limited scalability for larger systems, but sufficient for this use case.

6. Database Design:
The database consists of the following collections:

- Users:
    - Fields: username, password (encrypted)
- Reviews:
    - Fields: user_id, review_content, timestamp

7. Security Measures:

- Password encryption using bcryptjs.
- Token-based authentication with JSON Web Tokens (JWT).
- Implementation of CORS to restrict unauthorized access.
- Environment variables managed with dotenv for sensitive configuration.

Development team log:

Git Log Summary

Tue Oct 29 00:17:08 2024 -0600

Commit: b2036f721c31cb201080eaefe7bcdd84e532725d
Author: Betodh 0244139@up.edu.mx
Message: Casi fin de la entrega 2
Summary: Últimos cambios previos al cierre de la segunda entrega.

Tue Oct 29 10:46:43 2024 -0600

Commit: b2036f721c31cb201080eaefe7bcdd84e532725d
Author: Betodh 0244139@up.edu.mx
Message: Fin de entrega 2
Summary: Preparación y finalización de la segunda entrega.

Wed Nov 27 21:41:48 2024 -0600

Commit: 0f662ca88cac733b0ebafe68c089f8b1993d099f

Author: NataliaTruPe37 <0267484@up.edu.mx>

Message: Add files via upload

Summary: Uploaded new files to the repository.

Wed Nov 27 21:54:30 2024 -0600

Commit: 6c80fdcaf4b40772900e3a719bde0e8a193f72b0

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL

Summary: Final version of the project committed.

Wed Nov 27 22:00:49 2024 -0600

Commit: 5d99324d7305f8e78e2a90d02edcc290189f4fe2

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL1

Summary: Updated final version with minor tweaks.

Wed Nov 27 22:07:49 2024 -0600

Commit: 87d72efd5bff16025b31c9eeb29497c545313092

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL2

Summary: Made additional changes, preparing for final version.

Wed Nov 27 22:34:00 2024 -0600

Commit: f76021e43151c1816f419b538cd0d06f6b7ef22b

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL4

Summary: Further updates to the final version of the project.

Wed Nov 27 22:39:01 2024 -0600

Commit: 5d91ac76ff7bc8e2a5fbe2e4842cb3bb274c08c9

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL5

Summary: Continued updates to finalize the project.

Wed Nov 27 22:53:22 2024 -0600

Commit: 8157257fb057dcade0fcead85cb9f99b3ec2389e

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL6

Summary: Minor changes to finalize the project.

Wed Nov 27 22:55:57 2024 -0600

Commit: 3b2195d5b3008b2b1d7fe66d2b02b942eb076a33

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL7

Summary: Final adjustments before the last commit.

Wed Nov 27 23:09:35 2024 -0600

Commit: 9d56b430c5a9d76956cbeab39e36d3c80ce9f416

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL8

Summary: Almost final version with some last changes.

Wed Nov 27 23:13:50 2024 -0600

Commit: 07863f74ae6ff2d4c5094b8135de7a091a313c6f

Author: Heidi Meiners <0266159@up.edu.mx>

Message: FINAL9

Summary: The final commit, marking the end of project adjustments.

Thu Nov 28 03:20:02 2024 -0600

Commit: 9e11745d91e6baa1a1f54990707a4e3a0db67f3e
Author: Betodh 0244139@up.edu.mx
Message: Eliminación de archivos innecesarios
Summary: Cleanup de archivos que no eran esenciales para el proyecto.

Thu Nov 28 03:14:56 2024 -0600

Commit: efa95a56fbfd52810ab104a7d5a8acf9ef336ad3
Author: Betodh 0244139@up.edu.mx
Message: Final
Summary: Versión finalizada del proyecto.

Personal log

Heidi:

I really enjoyed working on the project. Although it's true that, as a team, we had to invest a lot of time, what I enjoyed the most was definitely the teamwork.

The area I worked on the most was the backend, meaning making everything work. I believe it's a very demanding task because any mistake can break the entire page and cause everything to stop working. However, I think I learned a lot from it, and it will be useful for me in the future.

Beto:

I really enjoyed working on this project because it provided a more realistic experience of how the web development industry truly operates. All the challenges of building a web page from scratch were very rewarding.

I contributed to both the front end and back end, focusing more on the first two projects. Adapting from HTML to EJS and some JavaScript, I played a more supportive role and was often the one coming up with random ideas. However, I learned a lot of things that earlier in my life I thought of as witchcraft.

Natalia:

Working on this project was a challenging but rewarding experience that allowed me to strengthen my skills in React and Bootstrap while collaborating closely with my team. I faced obstacles such as debugging and ensuring a seamless integration of components, but these challenges taught me the value of persistence and problem-solving. Additionally, I learned how crucial effective communication and teamwork are in completing a project successfully, as dividing tasks and coordinating efforts required constant collaboration. This experience not only improved my technical abilities but also gave me a deeper appreciation for the importance of creating a user-friendly and visually appealing interface.

Final reflection:

The main challenge we faced was the information available on the internet about solar panels. Some pages said one thing, while others contradicted that information, so we had to be very selective with the sources we used. Another challenge was how to implement a database and API. However, after discussing it with the team, we concluded that implementing a weather API to help us calculate the number of solar panels a person might need, along with a database for user confirmation and reviews, would be the best solution.

We believe that the solution we provide is a useful tool in many ways. For example, the information we offer is comprehensive enough to ensure that people who want to make a change can be well-informed about the impact of switching to solar panels. It is also helpful for those who want to know how many solar panels they will need to cover the full cost of their electricity bill. This tool helps people discover different ways to achieve energy savings.