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ClubHQ

BEng Software and Electronic Engineering
Supervisor – Brian O’Shea

Introduction

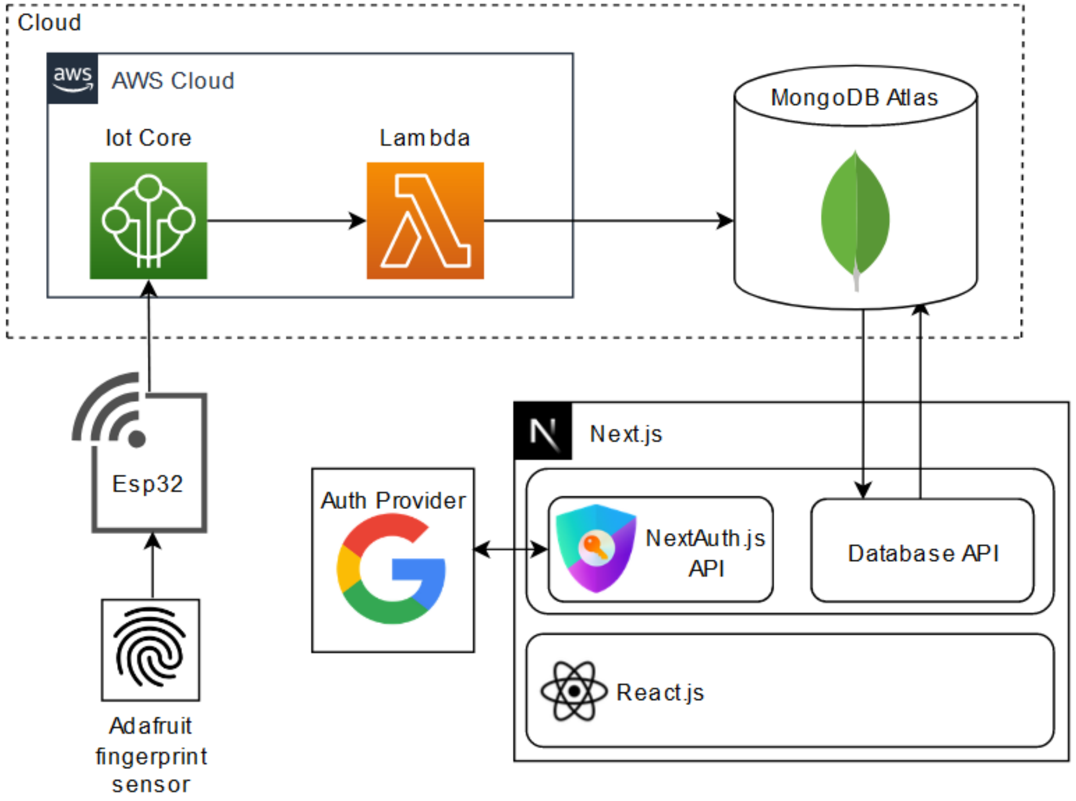
ClubHQ is a full-stack web application and accompanying fingerprint sensor for simplified member management.

The aim was to centralise the club’s data in an online database, to reduce paper records that can be lost or damaged.

Members’ can log attendance using the fingerprint sensor and view their details on a web application.

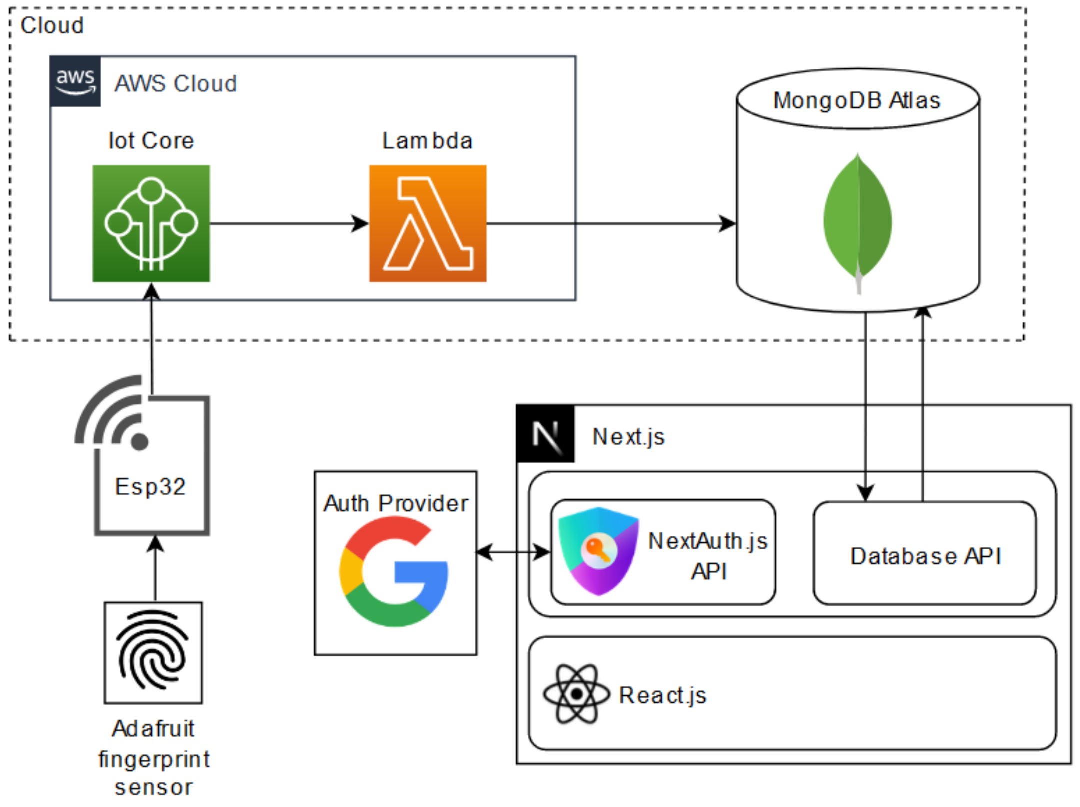
Hardware + Cloud Architecture

- A fingerprint sensor returns the ID of the member logging attendance.
- The ESP32 publishes the ID as an MQTT message to AWS IoT Core.
- The Lambda function uses Node.js to make a connection to the database to add the ID to the class date.



Web app Architecture

- The Next.js framework provides the frontend and backend for this project.
- The API routes make connections to the database to perform CRUD operations.
- NextAuth allows members, whose emails are attached to a profile, to log in using their Google account.



Research

Why a web app?

Web apps can be accessed from any device or platform with a web browser. They can be developed without having to learn platform-specific languages.

Why Next.js?

As a framework built on React.js, it has all the benefits of React.js plus additional features such as server-side rendering and built-in routing.

Why NextAuth?

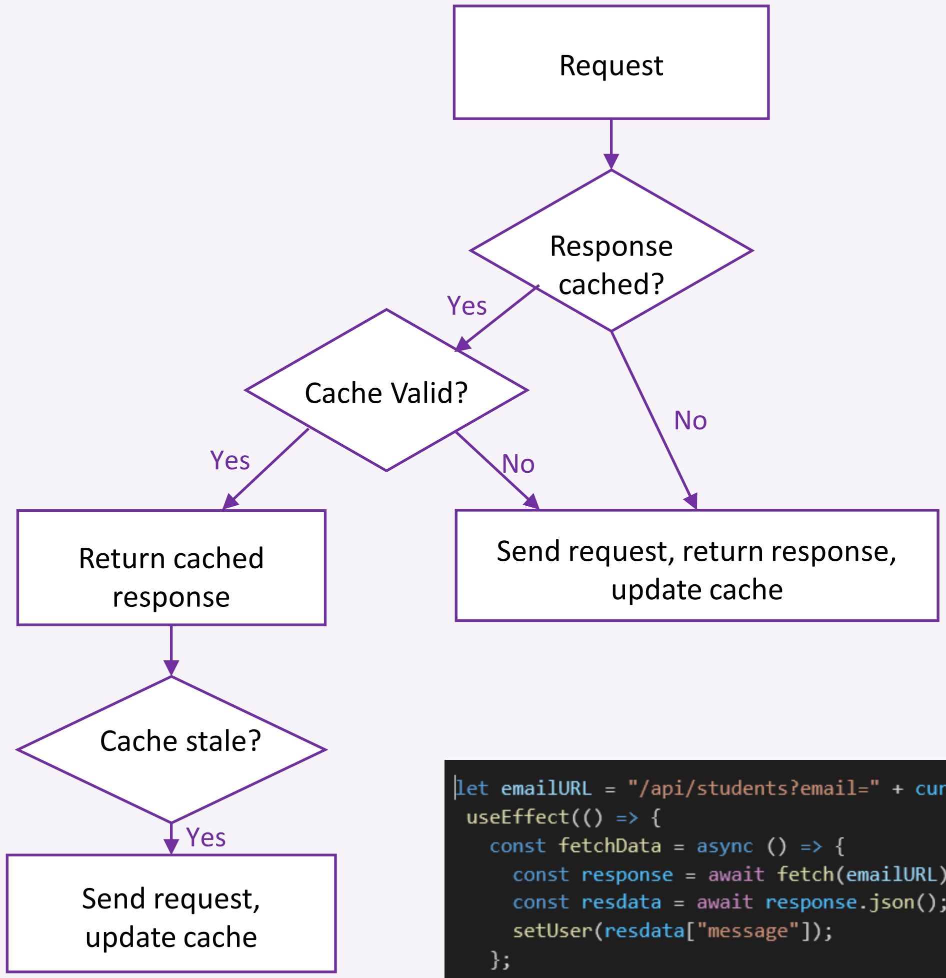
It provides a simple login interface for members using existing Google accounts.

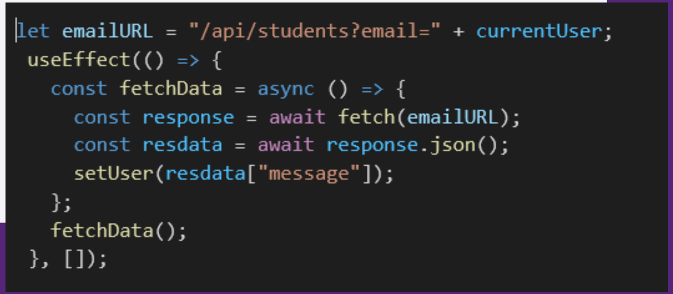
Why MongoDB Atlas?

Allows data storage in flexible schemas that can handle various data types. Since it is a cloud-based database service, it can be accessed from any device or software application with an internet connection.

Research - SWR

- During my project I researched Stale-While-Revalidate(SWR), a React hook library for client-side fetching.
- This library allows revalidation and caching.
- A page can be populated with old data from the cache for users to see immediately while the function revalidates and fetches the new data. The page then gets updated with the new data.
- I was using SWR alongside a Next.js feature, getServerSideProps. On discussion with my project supervisor, we decided replacing these methods with a React useEffect hook would be just as efficient for my Calendar and Profile pages.
- I am still using getServerSideProps for my Student list page as it does not need to be passed a variable, email, to find one user.

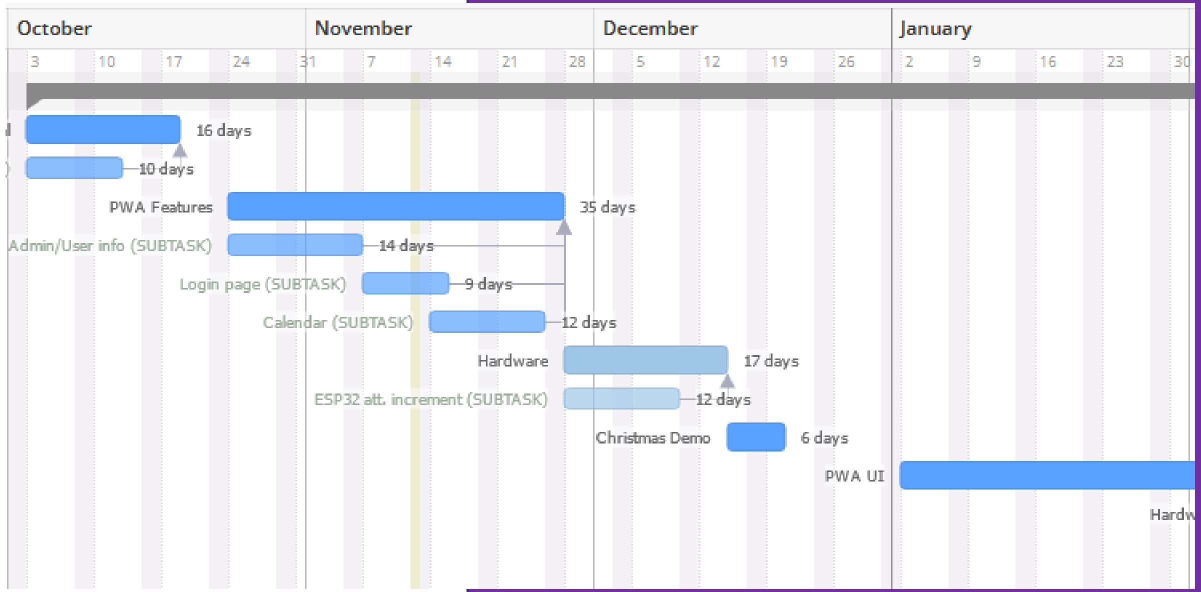


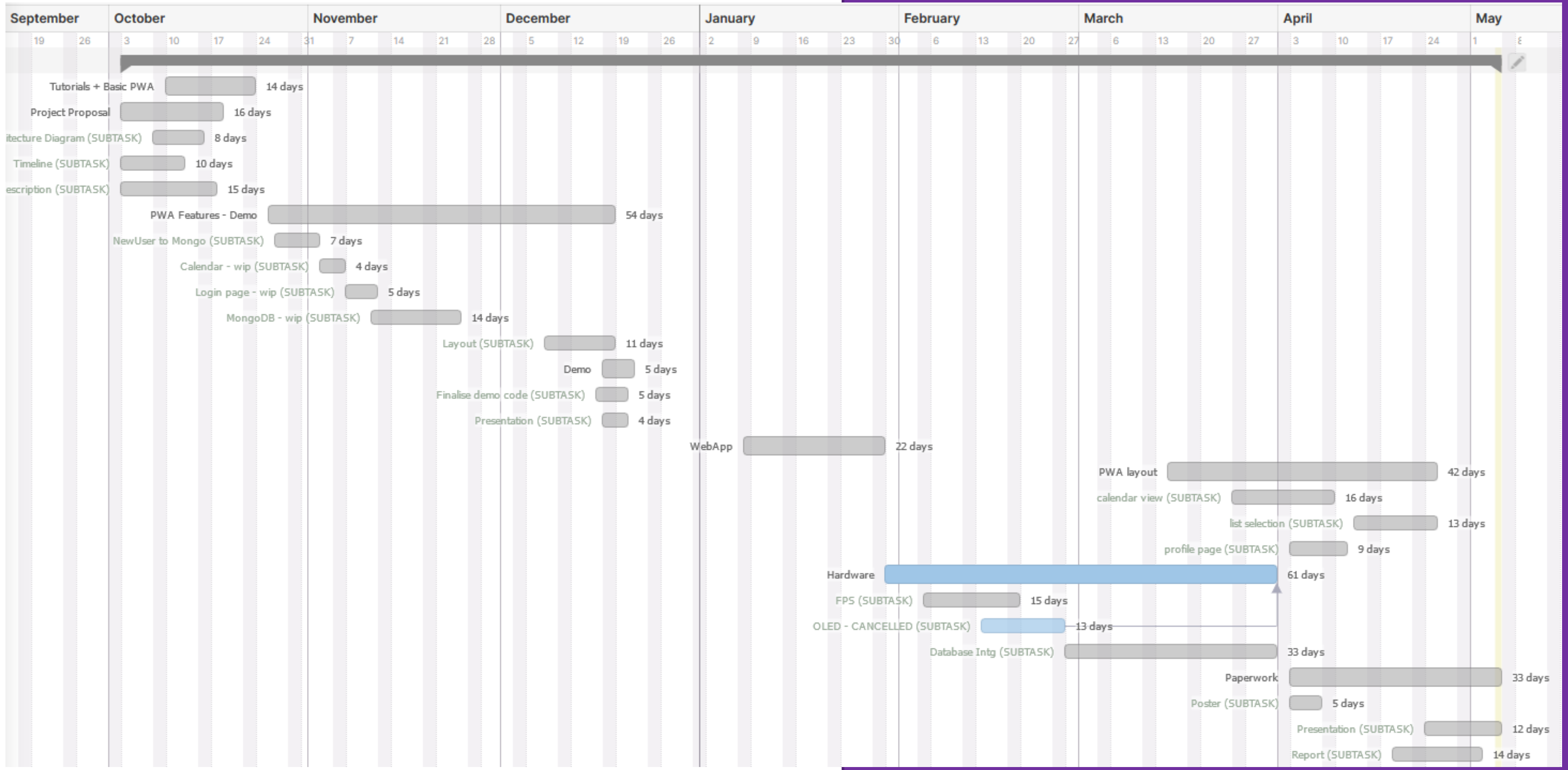


```
let emailURL = "/api/students?email=" + currentUser;
 useEffect(() => {
   const fetchData = async () => {
     const response = await fetch(emailURL);
     const resdata = await response.json();
     setUser(resdata["message"]);
   };
   fetchData();
 }, []);
```

- I used Teamwork to track my progress during this project.
- During this project I had to edit my timeline to accommodate other assignments and blockers, as my first timeline was a little too optimistic.
- For the second semester, I learned to plan for these likelihoods and was able to create a more realistic and manageable timeline.
- Even though I fell behind schedule, as recorded during our stand ups, my timeline did not suffer, thanks to better planning.

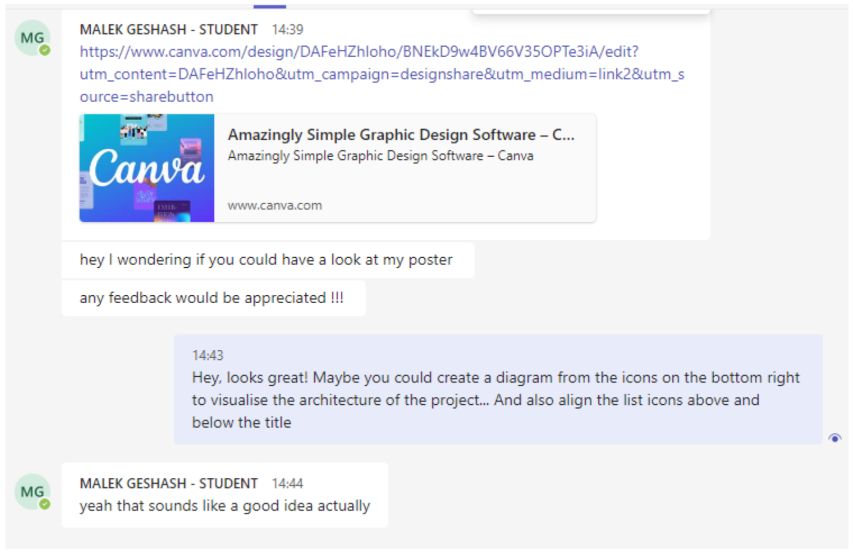
Timeline





Teamwork

- Took part in weekly stand up meetings
- Had work peer reviewed before submission
- Practiced presentation before the day with Darragh and Cian
- Discussed code errors and blockers with members of class with similar issues


MALEK GESHASH - STUDENT 14:39
https://www.canva.com/design/DAFeHZhloho/BNEkD9w4BV66V35OPTe3iA/edit?utm_content=DAFeHZhloho&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

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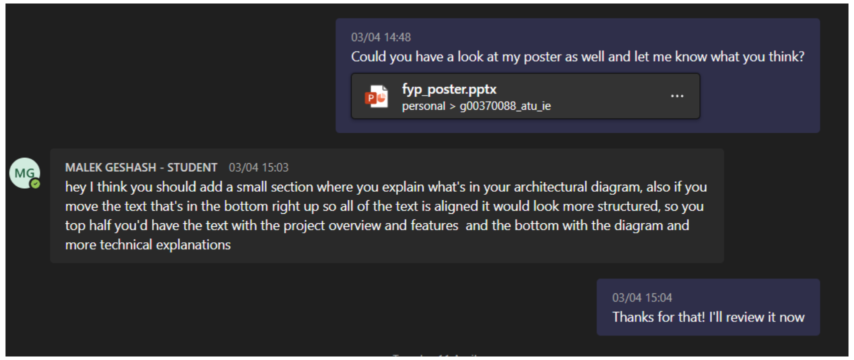
hey I wondering if you could have a look at my poster

any feedback would be appreciated !!!

14:43
Hey, looks great! Maybe you could create a diagram from the icons on the bottom right to visualise the architecture of the project... And also align the list icons above and below the title

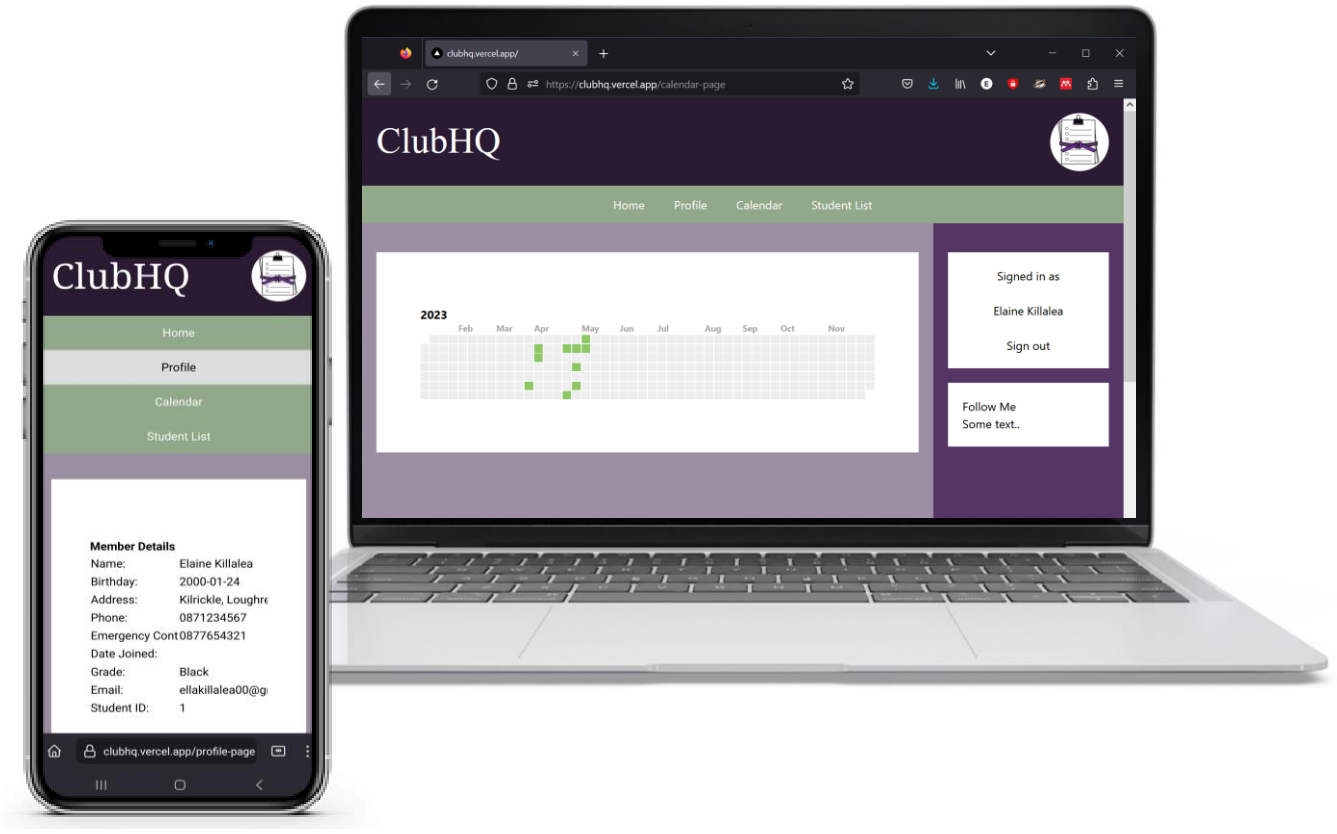
MALEK GESHASH - STUDENT 14:44
yeah that sounds like a good idea actually


03/04 14:48
Could you have a look at my poster as well and let me know what you think?
fyp_poster.pptx
personal > g00370088_atu_ie

MALEK GESHASH - STUDENT 03/04 15:03
hey I think you should add a small section where you explain what's in your architectural diagram, also if you move the text that's in the bottom right up so all of the text is aligned it would look more structured, so you top half you'd have the text with the project overview and features and the bottom with the diagram and more technical explanations

03/04 15:04
Thanks for that! I'll review it now

Demo



Member Details

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