App to Support Recall for Residents Receiving Rehabilitative Therapy

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QLI
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Abstract

QLI provides rehabilitation for individuals with brain or spinal injuries, many of whom experience memory challenges.

To support them, we developed a web app that helps residents:
- Log in with their Microsoft Outlook credentials
- View therapy details (schedule, location, therapist, session notes, etc.)
- Access campus maps and building photos for easier navigation

Therapists can use the app alongside residents to reinforce goals, recall progress, and support attendance.

Image credit: QLI website

Image credit: QLI Instagram

Introduction

Imagine attending a therapy appointment as you recover from a serious injury and not remembering what you worked on… or having an upcoming session and being unable to recall what your therapist looks like or where to go. **This is the reality for many QLI residents.**

Memory challenges are common among individuals receiving neurorehabilitation and occupational therapy. To compensate, many utilize various strategies, such as calendars, cues, notebooks, etc., to track important information related to their care.

While various general tools exist, **QLI needed a customized app to help residents remember details about their injury, treatment, caregivers, and facilities.** Our task was to design a product that fulfills these needs, while also being accessible and user-friendly, so as not to place additional cognitive demands on residents.
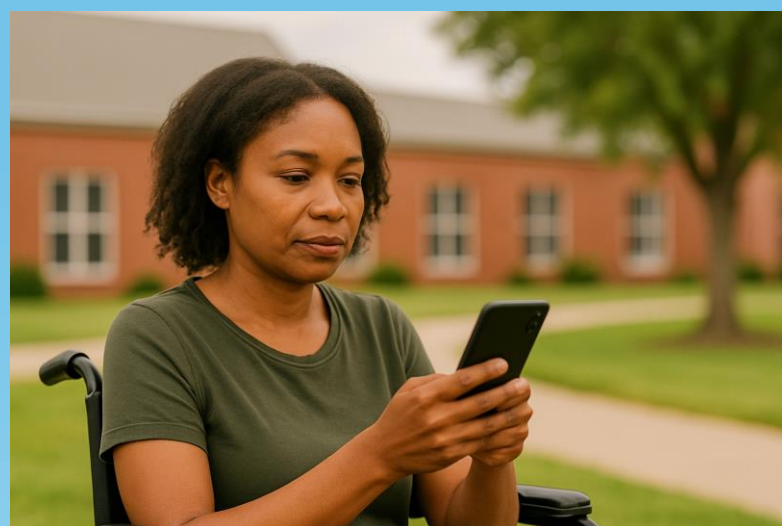
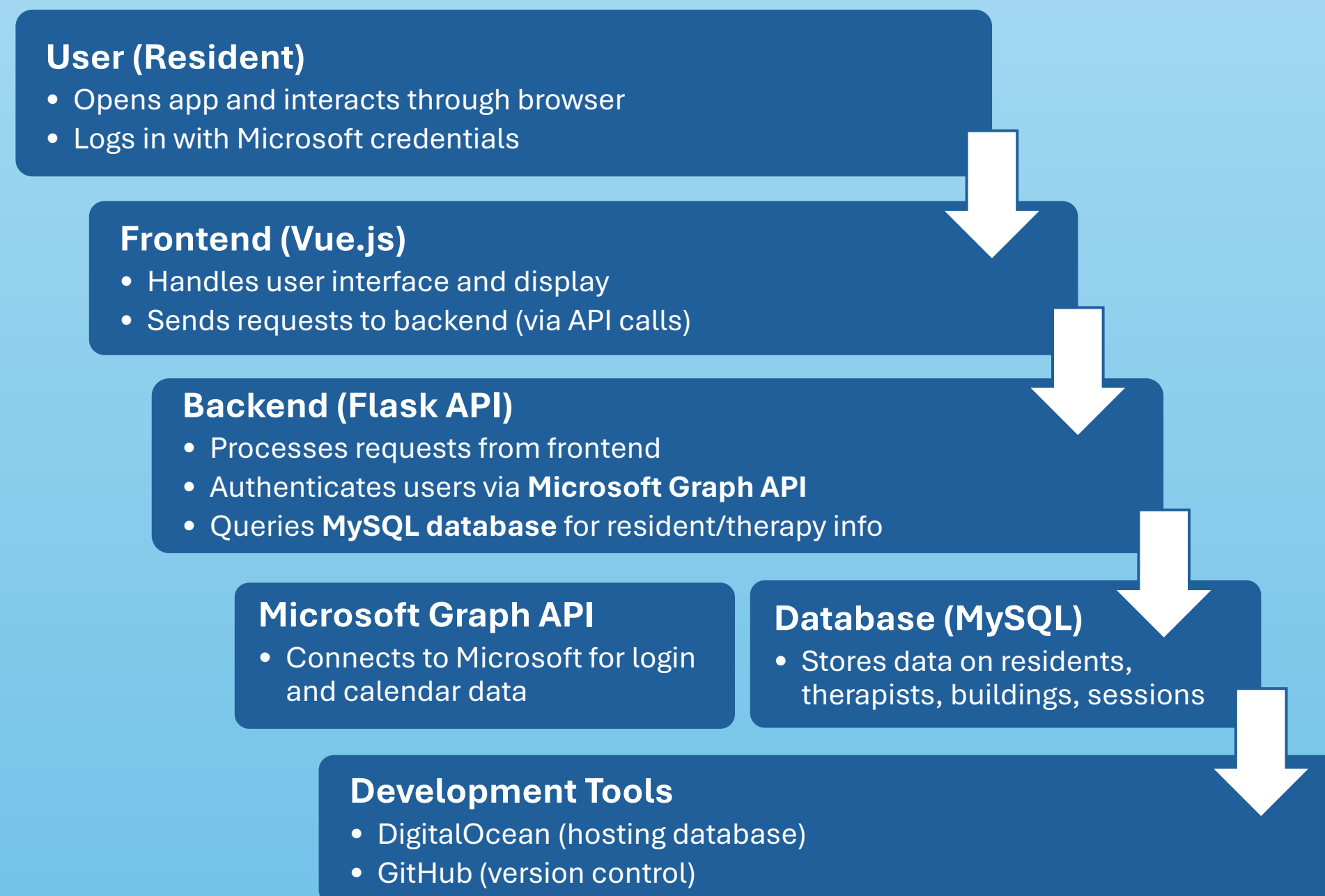AI-generated image created by ChatGPT

AI-generated image created by ChatGPT

Design & Implementation

Design Priorities

- **Primary users: QLI residents**
- **Web app** optimized for use on mobile devices
- **Microsoft integration** to pull therapy details from Outlook calendar events
- **Three main sections:**
  - **About Me** (name, injury, type of services, etc.)
  - **Therapy Details** (date, time, location, therapist, session notes)
  - **Campus** (map and photos)
- Ability to **upload therapist photos**
- **Accessible & user-friendly** (simple interface/layout, persistent sessions)

System Architecture

User (Resident)
- Opens app and interacts through browser
- Logs in with Microsoft credentials

Frontend (Vue.js)
- Handles user interface and display
- Sends requests to backend (via API calls)

Backend (Flask API)
- Processes requests from frontend
- Authenticates users via **Microsoft Graph API**
- Queries **MySQL database** for resident/therapy info

Microsoft Graph API
- Connects to Microsoft for login and calendar data

Database (MySQL)
- Stores data on residents, therapists, buildings, sessions

Development Tools
- DigitalOcean (hosting database)
- GitHub (version control)

Testing & Verification

- Performed **unit testing** on core backend functionality, including database queries and data handling
- Conducted **integration testing** to ensure Microsoft login, calendar access, and data retrieval worked seamlessly together
- Verified **token refresh** functionality to maintain persistent sessions for users
- Completed **manual testing** of the interface to confirm that residents can navigate the app easily

Results & Future Work
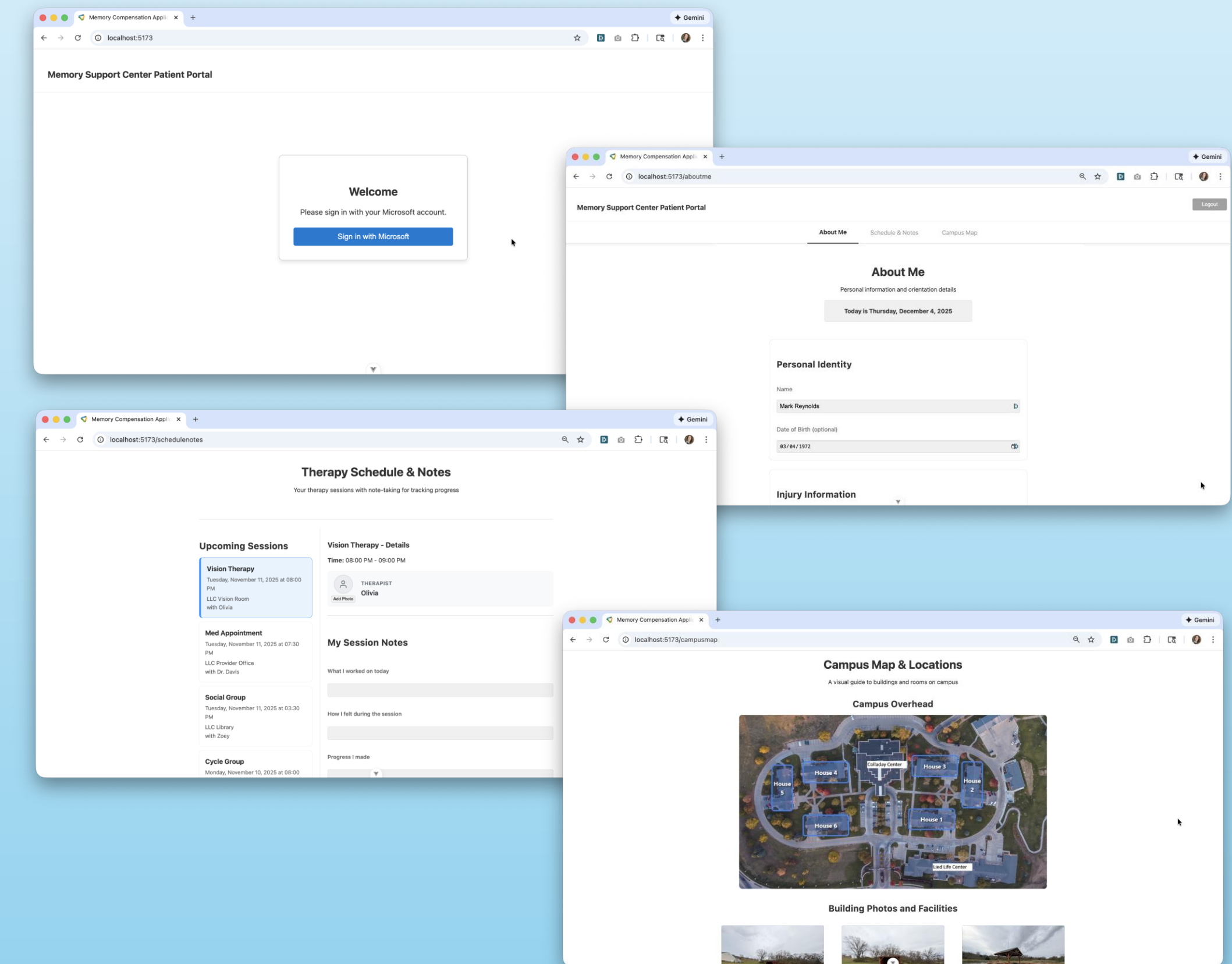
Next steps for future phases of this project include the following:
- Map building photos to specific therapy sessions
- Add resident photo upload capability
- Implement navigation feature for campus directions

Conclusions

Key takeaways from this project include:
- Obtained additional experience with full-stack app design
- Expanded technical and design skills, including Microsoft integration, Figma prototyping, and frontend development with Vue.js
- Strengthened collaboration and client communication skills
- Improved ability to prioritize and problem-solve under time constraints

Acknowledgements