Walking Trails App Final Report

-Kiet Ly

|  |  |
| --- | --- |
| Implemented | Remains to be done |
| Demographics form (frontend) | Demographic information to the database |
| Video uploading function (admin) | Videos are stored but not tied to the markers yet |
| Correctly store trail coordinates, created markers from the admin page | Video like/dislike (database for it as well), view counts |
| Background update | User login count |
| Map visibility update (Home page) | Markers are not being retrieved when selecting the trail |
| Like/Dislike button | Overall UI/UX update on admin home page |
|  | Password recovery |

## Known Issues:

1. Database and Data Formatting Issues

Invalid Coordinate Data: There were errors with marker coordinates not being valid numbers, which prevented markers from displaying correctly on the map.

MongoDB ObjectID Casting Error: There was an issue where the trail ID was being passed as undefined to the backend, leading to MongoDB casting errors. This suggests there may be issues in how data is handled or passed between the frontend and backend.

1. Authentication and User Input

Lack of Input Validation: The sign-up and sign-in forms lacked client-side validation beyond basic HTML5 attributes, which could lead to poor data integrity and user experience.

Handling of User Data: There were potential improvements mentioned for the handling of gender, ethnicity, and community membership data within user forms, including how these fields are managed in the database schema.

## Flyer

A screenshot of a video

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## Video demo of Walking Trail App

<https://youtu.be/6BsSrBVlcQo>

## Team members

**Kiet C. Ly – GGC senior, software development major / Team leader, lead programmer, UI/UX design for Walking Trails App Spring 2024**

A person in a white shirt

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## Clients

## **Dr. Karen Lee Perell-Gerson**

Dr. Perell-Gerson has served as a faculty member at the collegiate and graduate levels with appointments at UCLA and California State University, Fullerton. Her primary area of practice and research has been in kinesiotherapy and biomechanics, specifically, the movement patterns presented with chronic diseases. At Georgia Gwinnett College, she examines the benefits of an applied learning environment that allows the student to be part of the research process and be prepared for career development.

## Dr. Karen Lee Perell-Gerson

## **Dr. Kristie Walsdorf**

Dr. Kristie Walsdorf graduated from Florida State University with a doctorate in physical education teacher education. While working on her Ph.D. she served as a full-time instructor in the Department of Kinesiology at Valdosta State University for four years. After leaving VSU, she was hired as an assistant professor of physical education teacher education at her alma mater, Florida State University. Walsdorf taught a variety of PETE undergraduate and graduate courses in addition to managing the student teaching internship program for seven years.



## **Ms. Cindie A. Corey**

Ms. Cindie Corey is an instructor in the exercise science and physical education disciplines.



## App abstract

The app aims to provide information about different objectives as they appear along a walking trail. As the user walks along the trail the app should reveal the next steps and surroundings useful. Information can be videos, text, GPS, and/or others. AR (augmented reality) is an excellent way to reveal info in a real 3D environment.

## Installation Instruction

Add --force at the end of the npm command when encountered with errors  
  
*1.* Open the terminal  
*2.* Move to the "client" directory (cd C:/../WalkingTrailApp/TrailApp/client)  
*3.* Enter the following commands:   
 npm i @material-ui/core   
 npm i @material-ui/icons   
 npm i @material-ui/lab   
 npm i @react-oauth/google   
 npm i axios   
 npm i jwt-decode   
 npm i material-ui-chip-input   
 npm i moment   
 npm i react   
 npm i react-dom   
 npm i react-file-base64   
 npm i react-redux   
 npm i react-router-dom   
 npm i react-scripts   
 npm i redux   
 npm i redux-thunk   
 npm i --legacy-peer-deps   
 npm i -S @react-google-maps/api  
*4.* Move to the "server" directory (cd C:/../WalkingTrailApp/TrailApp/server)  
*5.* Enter the following commands:   
 npm i bcryptjs   
 npm i body-parser   
 npm i cors   
 npm i express   
 npm i jsonwebtoken   
 npm i mongoose   
 npm i nodemon  
 npm i google-auth-library  
  
*###* How to Run  
  
*1.* Move to the "client" directory inside of the TrailApp foler  
*2.* Enter "npm start" in the terminal  
*3.* Move to the "server" directory inside of the TrailApp foler  
*4.* Enter "npm start" in the terminal

## Help

Issue: The application fails to start.

Solution: Make sure to run npm start on the right folder “WalkingTrailApp”

For Further Assistance

## Code Documentation

**Components**

1. **Gold Component**
   * **Description**: Manages the main interactive map view, displaying trails and allowing users to add and interact with custom markers.
   * **Key Functionalities**:
     + **Marker Management**: Add, update, and delete markers representing points of interest along the trails.
     + **Trail Search**: Locate and zoom to predefined trails based on user selection.
     + **User Interaction**: Handle user inputs for creating new trail markers and managing existing ones.
   * **State Management**:
     + Local state for UI controls and form inputs.
     + Redux state integration for loading and managing markers and trails.
2. **Auth Component**
   * **Description**: Handles user authentication including sign-up and sign-in functionalities.
   * **Key Functionalities**:
     + **Sign Up**: New user registration with form validations.
     + **Sign In**: User login handling.
     + **Session Management**: Persist user sessions and manage user state.
   * **State Management**:
     + Local state for form data and toggles.
     + Redux integration for dispatching authentication actions.

**Libraries and Frameworks**

* **React**: For building the user interface.
* **Material-UI**: Used for styling and structuring the layout with ready-to-use components.
* **Redux**: State management library to manage the app's state centrally.
* **React Router**: Manage navigation between different parts of the application.
* **Google Maps API**: To render interactive maps and handle geographic functionalities.

**Redux State Management**

* **Actions**:
  + Marker actions: **createMarker**, **getMarkers**, **updateMarker**, **deleteMarker**
  + Trail actions: **getTrails**
  + Auth actions: **signin**, **signup**
* **Reducers**:
  + Marker reducer: Manages state related to markers.
  + Trail reducer: Manages state related to trails.
  + User reducer: Manages authentication and user-specific data.

**API Integration**

* **Endpoints**:
  + **/api/markers**: CRUD operations for markers.
  + **/api/trails**: Retrieve trails data.
  + **/api/users**: User authentication endpoints.
* **Methods**:
  + GET for fetching data.
  + POST for creating data.
  + PUT for updating data.
  + DELETE for removing data.

**Testing**

* **Unit Tests**: Ensure components and utilities function correctly in isolation.
* **Integration Tests**: Test the interaction between components and the Redux store.

**Security Considerations**

* Implement authentication and authorization checks.
* Validate all inputs to prevent XSS and SQL injection.
* Use HTTPS to secure data in transit.

**Deployment**

* **Build**: Configuration settings for production build.
* **CI/CD**: Automate deployment using tools like Jenkins or GitHub Actions.
* **Hosting**: Options include cloud services like AWS, Azure, or traditional web hosting.

**Future Enhancements**

* Implement real-time notifications for trail updates.
* Enhance mobile responsiveness and offline capabilities and QR code access.
* Incorporate user feedback and ratings for trails.

## Where to find installation, developer, and user documentation

These can be found in the WalkingTrailsApp/README.md file or docs-Spr2024

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## Velocity Charts

A screenshot of a computer

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The good part was the amount of story points finished during the different sprints were equally spread out. However, the bad parts were not opening the first sprint in the right board and not working on the core part of the web app in the earlier sprints. This caused the fixing and testing of the trail/marker system to be harder. I would prioritize the critical user stories first next time I work in an agile environment. There were also many unfinished tasks from previous semesters so I would also check the backboard on Jira at the requirement phase.