Status Report 6

EE / CprE / SE 492 - sdmay25-06

Iowa Adventure Cyclists Course Creator

Week 12 Report

August 2024 - May 2025

Client & Faculty Advisor: Julie Rursch

Team Members

Kayley Clark - Technical Lead

Tanner Smith - Algorithm Architect

Nayma Garcia - UI/UX lead

Grant Pierce - Client Relation Manager

Nick Thoms - Testing

Eli Newland - Task Manager

Wan Elisa Wan Sarif - Component Design

Summary

Tanner and Kayley have been working together to wrap up route planning. Kayley had to make adjustments to the data set and created API’s to bring in data from OTM which is connected to the database. All of Ames is now loaded into the database with correct fields for Tanner to bring it into the backend to create routes given a specific point. Due to the amount of road segments, Tanner and Kayley decided it is best to just stick to Ames in the database, and future work would include going on to have more cities in the database (and increase the hardware of the server). This upcoming week Kayley and Tanner will finish route planning and have a functioning application.

The team made significant progress this week across multiple areas. Database and route planning saw major developments with Kayley creating OSM data pipelines and Tanner reconfiguring routing logic for the new data structure. Nayma completed UI updates and implemented location functionality for route generation. Grant enhanced security measures by implementing audit logging and role-based access control through Okta. Eli finished backend endpoints for friend management and profile modifications. Wan Elisa worked on frontend Okta integration and authentication flows.

Past Week Accomplishments

- Integrated OpenStreetMap API into backend processing
- Developed route-parsing logic for algorithm
- Continued frontend map development for route visualization
- Set up backend groundwork for Okta authentication
- Enhanced backend features for friends and account data
- Began system-wide testing of map, authentication, and routing features
- Improved frontend session handling and personalized account functionality

Pending Issues

Route planning algorithm is accurate but far exceeds the permissible wait-time (takes way too long to load routes).

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Kayley Clark	Created a pipeline for OSM data to be entered into the database, for the route planning. Worked with tanner to change different fields in the database to match his route planning. Working on connecting route planning to the frontend to display the routes.	7	97

Tanner Smith	Due to change from DOT data to OSM data, routing had to be reconfigured significantly. Went through and changed all files relating to route planning to accommodate change in which data is no longer stored in a road graph but rather direct calls to DB. Additionally, did further updates to cost calculating function to account for difficulty of road on top of surface type and average traffic amount. Did preliminary tests of route planning function and determined that it correctly generates routes but is very slow.	7	103
Nayma Garcia	Finished up updating the frontend UI to have a cohesive look. Got the map page to grab the users current location, as well as the functionality to enter a location you want to have a route generated to. Currently it saves the coordinates of that location, so that they can be sent to the backend for route generation.	7	94
Grant Pierce	Focused on advancing the app's security framework to prepare for upcoming integration testing. I implemented a backend audit logging system to monitor and record critical user actions—such as logins and data modifications—along with key metadata like IP addresses, timestamps, and user roles. This will support future compliance efforts and improve incident response capabilities. I also integrated role-based access control (RBAC) using Okta, defining clear user roles (Admin, Rider, Guest) and enforcing	8	100

	least-privilege access to sensitive features. In addition, I refined session management by shortening token lifespans, enabling secure cookie attributes (HttpOnly and Secure), and introducing automatic session termination after periods of inactivity. These enhancements strengthen the app's security posture while maintaining a seamless and secure user experience.		
Nick Thoms	NA	0	79
Eli Newland	Finished up the creation of all backend endpoints that modify the database separately from the route planning. Tested to ensure that creating friend requests, accepting, and viewing current friends function as expected. Also created endpoints for modifying profile information, and preference data. Additionally, fixed a bug that was preventing proper communication between the backend and database.	9	103
Wan Elisa Wan Sarif	Working on the frontend integration of the Okta login system. Focused on connecting authentication flows with the UI, including login, logout, and session persistence. Also began implementing the account details interface to display user information upon successful login. Identified some minor UI issues related to redirect behavior post-login and started investigating fixes.	6	92

Plans for Coming Week

GRANT: Grant's goal for this upcoming week is to support integration testing by validating the newly implemented security features across the application. This includes verifying that the audit logging system correctly captures key user actions and that role-based access control (RBAC) via Okta enforces appropriate permissions across different user roles. He will also conduct security-focused testing of session management features—such as token expiration, secure cookies, and session timeouts—to ensure proper behavior under real-world usage. Additionally, begin drafting documentation for the app's security architecture, including threat models and best practices, to support future handoff or deployment.

Tanner: Tanner's main goal for this upcoming week is to find out a way to decrease the run time of the current route planning algorithm. The idea will be to somehow leverage a route planner graph as was designed originally, but due to space limitations and the large size of the OSM data, must find a way to minimize the space it takes. Additionally, Tanner will work on completing the "generate full route" functionality which can generate a route between multiple locations. He will also continue working on trying to connect the front end and backend route planning services together. Additionally, he plans to find a time to meet with the testing team in order to explain how the route planning feature is implemented so that testing can be extensive and accurate in these final weeks.

Nayma: Nayma goal is to begin working with Tanner to get the front and backend connected, specifically the map portion, so that the coordinate points of the desired location can be sent, get a route generated, sent back to the frontend and displayed. Another goal is to work with Elisa & Eli to begin connecting the front and backend for pages such as profile & friends.

Eli: Eli's goal is working with Kayley to connect all of the data modification endpoints to the front end. Also work on some updates to the creation and storage of saved and favorite routes.

Kayley: Kayley's goal this week is to connect the backend and frontend of the route planning to display routes. Additionally work on connecting Eli's backend API's to the frontend functionalities.

Wan Elisa: Elisa's goal is to finish polishing the Okta login integration by resolving UI bugs related to redirects and session handling. Elisa plans to improve the account details view by enhancing the display of user information. Additionally,

she will collaborate with the UI/UX team to ensure consistency in styling and flow across authentication-related components.

Nick: NA