rout

CS 30700 Sprint 1 Planning Document
02.22.2021

Team 17 :
Steven Bass
Luke Irons
Logan Sweeney
William White
Austin Wilson

Sprint Overview:

During this sprint, we aim to set up the database and implement user account creation and customization. Another goal of ours is to develop at least a basic version of the algorithm used for establishing new routes, as well as creating integral elements of the UI. After Sprint 1 completes, we'd like to have created a good foundation of the core elements of Rout.

Scrum Master: Steven Bass

Meeting Plan: Monday/Wednesday/Friday @ 6:30pm

Risks and Challenges:

Our biggest concern for this sprint is that developing the algorithm and getting it to run in polynomial time will be more difficult than anticipated. Since this is the core design of Rout, it is important that we implement it correctly and there are many issues that could arise. Long runtimes could force us to change direction with the algorithm multiple times until we get something that works. On the UI end of things, we don't anticipate too many issues but establishing a connection between the database, server, and client may prove to be more work than expected as well.

Current Sprint Detail

User Story #1
As a user, I would like to register a new Rout account.

#	Description	Estimated Time	Owner
1	Create UI element for account creation	2 Hours	Logan
2	Implement client-server-database communication protocol for storing user information	2 Hours (each)	Steven/Logan
3	Securely salt and hash stored passwords in the database	2 Hours	Steven
4	Use Cloudflare free SSL to encrypt communications between client and server	2 Hours	Steven

Acceptance Criteria:
- Users must be able to register their accounts through their email addresses.
- Invalid passwords (Under 6 characters) will force the user to create a new, valid password.
- Passwords must be hashed in the database and accessible to compare against password input during user login.
- To verify user information, database rows will be manually queried against known test data.

User Story #2
  As a user, I would like to login to my Rout account.

#	Description	Estimated Time	Owner
1a	Create login page	2 Hours	Logan
1b	Create invalid login UI	2 Hours	Logan
2a	Handle login requests server side	4 Hours	Steven
2b	Write fuzz tests for user form fields	4 Hours	Steven
3	Keep user logged in by utilizing cookies	3 Hours	Logan

Acceptance Criteria:

- When a username and password do not match the database, the UI should update to inform the user, keeping the username but clearing the password field.
- Users should remain logged in for inactive sessions of up to two hours, including when the client is closed or backgrounded.
- Results will be verified through both manual testing for functionality and fuzz testing for robustness.

User Story #3
   As a user, I would like to logout of my Rout account.

#	Description	Estimated Time	Owner
1	Create logout UI element	2 Hours	Logan
2	Handle logout requests server side	2 Hours	Steven
3	Create cookie system for keeping user logged out between sessions	2 Hours	Logan

Acceptance Criteria:
- Status of login for users must be obvious on any page of Rout.
- Session data should be fully cleared for a logged-out client
- As it is a straightforward task with no user input fields, functionality will be manually tested.

User Story #4

As a user, I would like to be able to reset my password through email.

#	Description	Estimated Time	Owner
1	Create "forgot password" UI element with email features	2 Hours	Logan
2	Create system for sending reset "code" to email	2 Hours	Logan
3	Create system for generating code to be sent	5 Hours (total)	Logan/Steven
4	Create system for storing generated codes and timing out expired codes	3 Hours	Steven

Acceptance Criteria:

- Users must be able to have an option between SMS and email password resetting.
- Code must be secure enough to prevent guessing or straightforward reverse-engineering (avoiding insecure random generation)
- Manual testing will also be conducted here by checking email functionality.

User Story #5

As a user, I would like to be able to reset my password through SMS.

#	Description	Estimated Time	Owner
1	Create system for sending reset "code" through SMS	3 Hours	Logan
2	Create system for generating code (from user story #5	1 Hours	Logan
3	Create "forgot password" UI element with SMS features	1 Hours	Logan

Acceptance Criteria:
- Users must be able to have an option between SMS and email password resetting.
- Code must be unique enough not to be replicated or guessable.
- Code will be sent from a central phone number.
- Code will be manually tested by making sure texts are being sent.

User Story #6

As a user, I would like to be able to customize my nickname on my profile.

#	Description	Estimated Time	Owner
1	Create UI element for allowing users to change nickname	2 Hour	Logan
2	Modularize UI elements to display username/nickname	2 Hour	Logan
3	Manage database storage of user nicknames	2 Hours	Steven
4	Handle server side validation of nicknames	2 Hours	Steven

Acceptance Criteria:
- Nicknames should be restricted to being alphanumeric and between 3-32 characters.
- User nicknames should be displayed on each page of Rout.
- Users should be allowed to change nicknames multiple times.

User Story #7

As a user, I would like to be able to customize my profile with a profile picture.

#	Description	Estimated Time	Owner
1	Handle server storage system for profile pictures	3 Hours	Steven
2	Create UI element for displaying profile pictures on Rout pages	2 Hour	Logan
3	Create UI element for allowing users to change profile pictures	2 Hours	Logan

Acceptance Criteria:
- Profile pictures should not exceed 8MB, if they do, we should downscale them for the user (if we have time to implement the feature).
- User profile pictures should be displayed on each page of Rout next to user nicknames.
- Users should be allowed to change profile pictures multiple times.
- Users should have the option of choosing from one of the default profile pictures we have set up.

User Story #8

As a user, I would like the UI of the website to be easily understood and used.

#	Description	Estimated Time	Owner
1	Use AWS to host the website	2 Hours	Steven
2	Create a UI panel to display Google Maps	2 Hours	Austin
3	Implement UI design for the main webpage	10 Hours	Austin

Testing:

Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:

- The website must be hosted online and viewable.
- Google Maps must be viewable on the mainpage of the UI.
- The mainpage of the website must be visually pleasing and understood.
- UI Elements should be correctly styled when viewing the webpage, regardless of device.

User Story #9

As a user, I would like for outside temperature to be displayed in the route planning screen.

#	Description	Estimated Time	Owner
1	Find location for and create UI panel for temperature	1 Hour	Austin
2	Implement the outside temperature into the panel	2 Hours	Austin

Testing:

Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:
- A visually pleasing location should be found for the UI panel.
- Given the temperature panel works correctly it should be updated in real time and display current temperatures near the user's location.
- The UI panel should be shown on start up and hideable if desired.
- UI Elements should be correctly styled when viewing the webpage, regardless of device.

User Story #10

As a user, I would like for outside weather conditions (rain, snow, etc) to be displayed in the route planning screen.

#	Description	Estimated Time	Owner
1	Find location for and create UI panel for weather	1 Hour	Austin
2	Implement the outside weather into the panel	2 Hours	Austin

Testing:

Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:
- A visually pleasing location should be found for the UI panel.
- Given the weather panel works correctly it should be updated in real time and display current weather near the user's location.
- The UI panel should be shown on start up and hideable if desired.
- UI Elements should be correctly styled when viewing the webpage, regardless of device.

User Story #11

As a user, I would like for date/time information to be displayed in the route planning screen.

#	Description	Estimated Time	Owner
1	Find location for and create UI panel for date/time information	1 Hour	Austin
2	Implement the date/time information into the panel	2 Hours	Austin

Testing:

Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:
- A visually pleasing location should be found for the UI panel.
- Given the date/time panel works correctly it should be updated in real time and display current date/time near the user's location.
- The UI panel should be shown on start up and hideable if desired.
- UI Elements should be correctly styled when viewing the webpage, regardless of device

User Story #12
As a user, I would like the website to have a visually appealing color palette.

#	Description	Estimated Time	Owner
1	Research best color design for UI	1 Hour	Austin
2	Implement new colors in the UI	2 Hours	Austin

Testing:
Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:
- The color design should be visually pleasing and should not be a hindrance to any users.
- The color design should be modularly implemented into all aspects of the UI.
- UI Elements should be correctly styled when viewing the webpage, regardless of device.

User Story #13
As a user, I would like to adjust the color of the UI to dark mode.

#	Description	Estimated Time	Owner
1	Design a dark mode version of the UI	1 Hour	Austin
2	Implement dark mode into the UI	2 Hours	Austin
3	Allow for users to change the color design using UI buttons	4 Hours	Austin

Testing:

Testing will be done manually through viewing the webpage for correct locations and functions of UI elements.

Acceptance Criteria:
- Dark mode should be easy to view in low light.
- Dark mode should be applied to all aspects of the UI.
- Users should be able to change the color of the website site in real time and see its changes when new color buttons are chosen.
- Users color preferences should be saved on reopen.

User Story #14

As a developer, I would like to implement a pathfinding algorithm which uses the Google Maps Directions API.

#	Description	Estimated Time	Owner
1	Create an algorithm that generates routes utilizing the Google Maps Directions API.	12 Hours (total)	William, Luke
2	Debug and test algorithm using unit tests	5 Hours (total)	William, Luke
3	Connect the algorithm to the map UI on the main web page.	2 Hours	William

Acceptance Criteria:
- Given that the algorithm is implemented correctly, when the user chooses to generate a new route, the route should be created successfully.
- Given that the algorithm is implemented correctly, when the user chooses to generate a new route, the user should be able to cancel the request.
- Given that the connection between the home page map and the algorithm is implemented correctly, when a route is generated, it should be viewable from the main page.

User Story #15

As a developer, I would like to use the Google Maps API to create possible routes.

#	Description	Estimated Time	Owner
1	Develop a method to utilize the Google Maps API to pick a starting point and create a route.	5 hrs.	William
2	Implement method	10 hrs.	William
3	Test by creating routes and determining whether they a suitable running routes, debug etc.	3 hrs.	William

Acceptance Criteria:
- The route starts and ends at the same point.
- The route is of a specified fixed length.
- The route is actually runnable (doesn't go on an interstate highway).
- Relatively efficient in the number of requests sent to the Google Maps API.
- The only inputs necessary are a starting location and distance.

User Story #16

As a user, I would like to plot routes with specific waypoints to pass through.

#	Description	Estimated Time	Owner
1	Develop a method to manually utilize the Google Maps waypoint feature in the route generation algorithm.	10 Hours	Luke
2	Debug and test algorithm using unit tests	4 Hours	Luke
3	Connect the waypoint algorithm to the map UI	2 Hours	Luke

Acceptance Criteria:
- Given that the waypoint algorithm is implemented correctly, when the user chooses to generate a new route, they should be able to choose specific waypoints that the route must pass through.
- The waypoint is checked to make sure the route can pass through it without going over the specified distance.
- Given that the waypoint algorithm is connected to the UI correctly, when the user requests a route, they should be able to select waypoints on the map.
- Given that the user can select a waypoint, when the user wishes to move/delete that waypoint, they should be able to do so without deleting the route.

User Story #17

As a user, I would like to find multiple routes from the same starting point.

#	Description	Estimated Time	Owner
1	Use the route generation algorithm to develop additional routes from the same starting point	2 Hours (each)	Luke, William
2	Test and debug the algorithm under the multi-route criteria	2 Hours	Luke
3	Connect the multi-route generation to the UI	2 Hours	Luke

Acceptance Criteria:
- Given that the route generation algorithm is implemented correctly, when the user requests a new route, the algorithm should return multiple usable routes.
- Given that multiple routes are successfully generated, when the user has requested a route, they should be able to choose one specific route.
- Given that the multi-route generation works successfully, when the user requests a route, the generated routes should all show up on the map UI.

Sprint 1 Total Hours:
Steven: 33 Hours
Luke: 30.5 Hours
Logan: 30.5 Hours
William: 30.5 Hours
Austin: 31 Hours

Backlog:

Functional

<u>User Account</u>:

As a user,

- I would like to find a new route without needing an account.
- ~~I would like to register a new Rout account.~~
- ~~I would like to login to my Rout account.~~
- ~~I would like to logout of my Rout account.~~
- ~~I would like to be able to reset my password through email.~~
- ~~I would like to be able to reset my password through SMS.~~
- I would like to be able to secure my account with 2 factor email authentication.
- I would like to be able to secure my account with 2 factor SMS authentication.
- ~~I would like to be able to customize my nickname on my profile.~~
- ~~I would like to be able to customize my profile with a profile picture.~~

<u>User Interface</u>:

As a user,

- ~~I would like the UI of the website to be easily understood and used.~~
- I would like a brief tutorial on the UI the first time I use the application.
- ~~I would like to adjust the color of the UI to dark mode.~~
- ~~I would like the website to have a visually appealing color palette.~~
- I would like to be able to adjust default measurements between Miles/Kilometers.
- I would like to have a UI element to customize what type of route I am looking for.

<u>Route Planning</u>:

As a user,

- ~~I would like for outside temperature to be displayed in the route planning screen.~~
- ~~I would like for outside weather conditions (rain, snow, etc) to be displayed in the route planning screen.~~
- ~~I would like for date/time information to be displayed in the route planning screen.~~
- I would like to drop a pin to use as a start point.

- I would like to use an address as a start point.
- I would like to have autocomplete when typing an address.
- I would like to be able to see important turning points on my route through Google 360° Street View.
- ~~I would like to find multiple routes from the same starting point.~~
- I would like to find a route using distance.
- I would like to find a route using time and a pace.
- I would like to find a route by hilliness.
- I would like to find a route only on sidewalks.
- I would like a "difficulty score" based on the intensity of my route.
- ~~I would like to plot routes with specific waypoints to pass through.~~
- I would like to track my progress along a route in real time via GPS.

Route Completion:

As a user,

- I would like to save a route for future use.
- I would like to view and use saved routes.
- I would like to be able to export saved routes as a file for sharing purposes.
- I would like to be able to share routes with other users through a URL.
- I would like to be able to share my routes through popular social media services (Facebook, Twitter, Instagram).
- I would like to be able to rate a route following its completion.
- I would like to know the pace of the previous route.

User Statistics:

As a user,

- I would like to see how many calories I've burned after taking a route.
- I would like to be able to visualize the amount of calories I've burned.
- I would like to view my total calories burned over all routes I've taken.
- I would like to compare my pace with distances similar to those ran by famous or olympic runners.
- I would like the information and statistics of previous routes to be stored.

Non-Functional

As a developer,

- I would like the pathfinding algorithm to run in polynomial time.
- I would like administrator accounts which give access to backend data.

- I would like to be able to push changes to the UI without taking down the site for management.
- ~~I would like to implement a pathfinding algorithm which uses the Google Maps Directions API.~~
- ~~I would like to use the Google Maps API to create possible routes.~~
- I would like a Javascript framework for making calls to the Google Maps API.
- I would like to be able to edit user information within the database.
- I would like a MySQL database for storing account information.
- I would like to be able to view usage metrics of Rout.