ROUTE ROVER

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Background

Primary Function:

- Helps users find curated running routes in Singapore, created by both the app team and other passionate runners.

User-Created Content:

- Provides tools for users to build and share their own running routes.

Gamification Element:

- Features a gamified leaderboard to enhance social interaction and engagement among users.

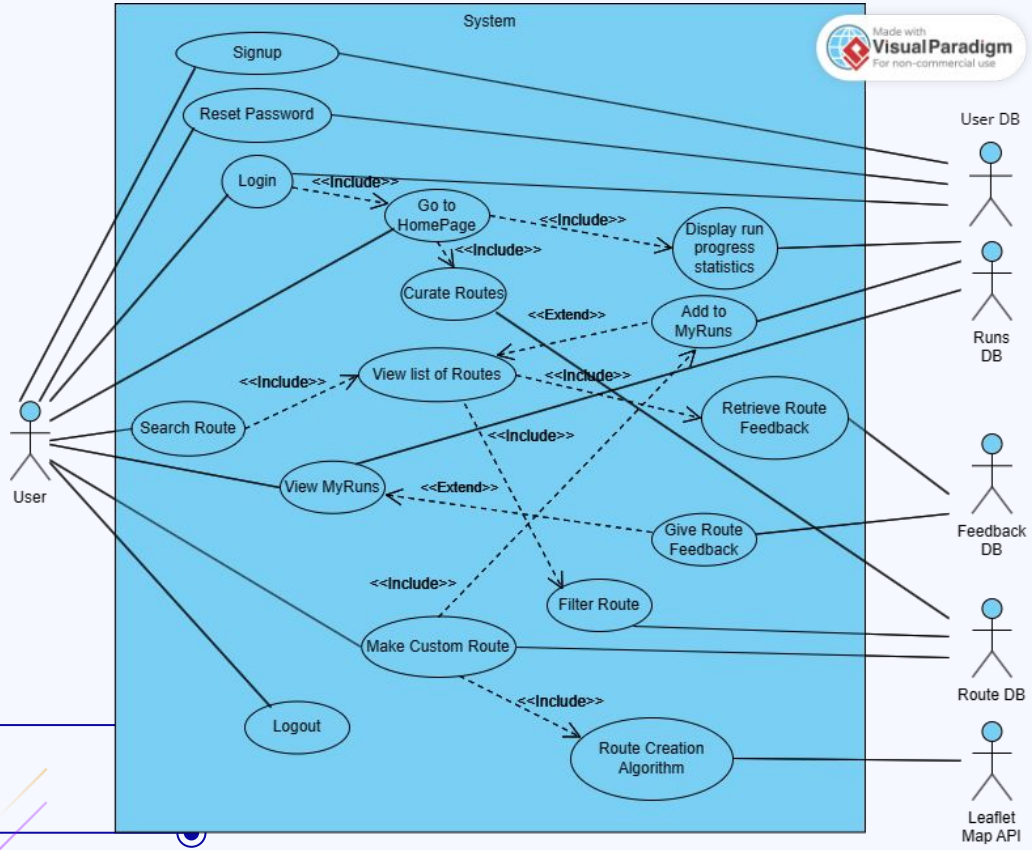
Target Users:

- Aimed at runners of all levels who are seeking new routes or wanting to share their favorite routes with a community.

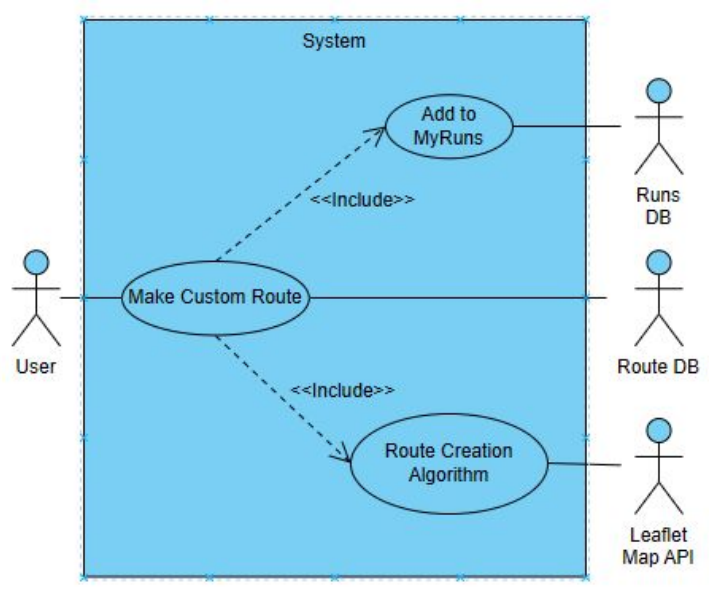
Social Features:

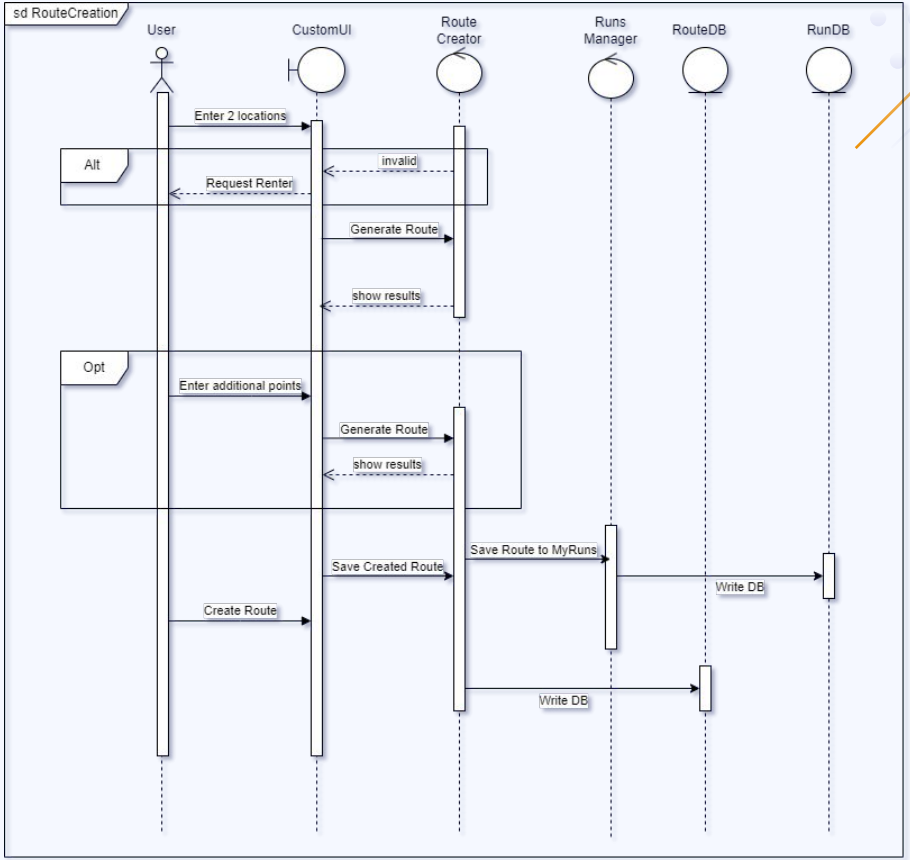
- Encourages social connections through competition and shared experiences in running.

Use Case Diagram

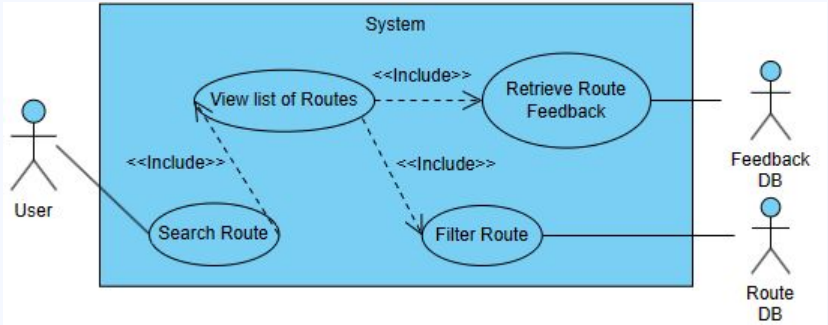


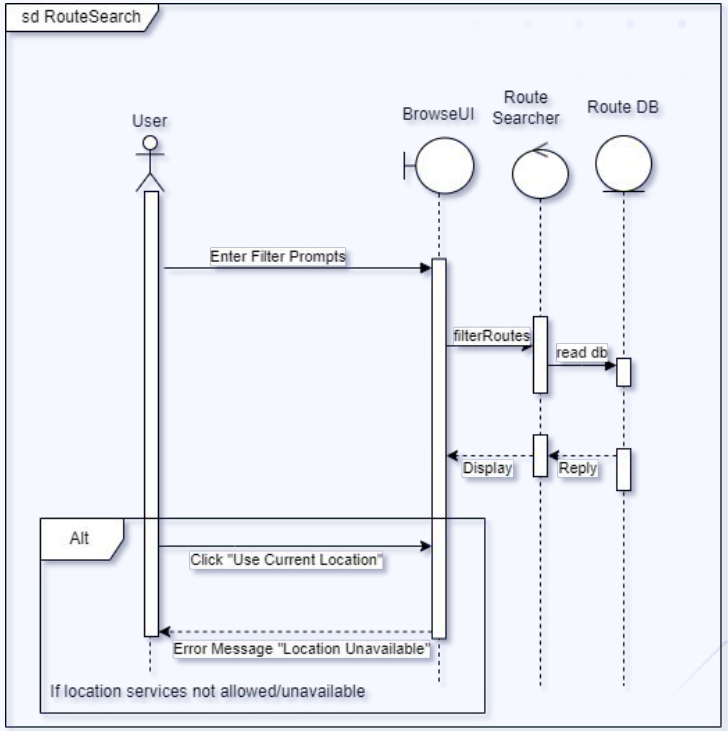
Use Case 1: Custom Route Creation





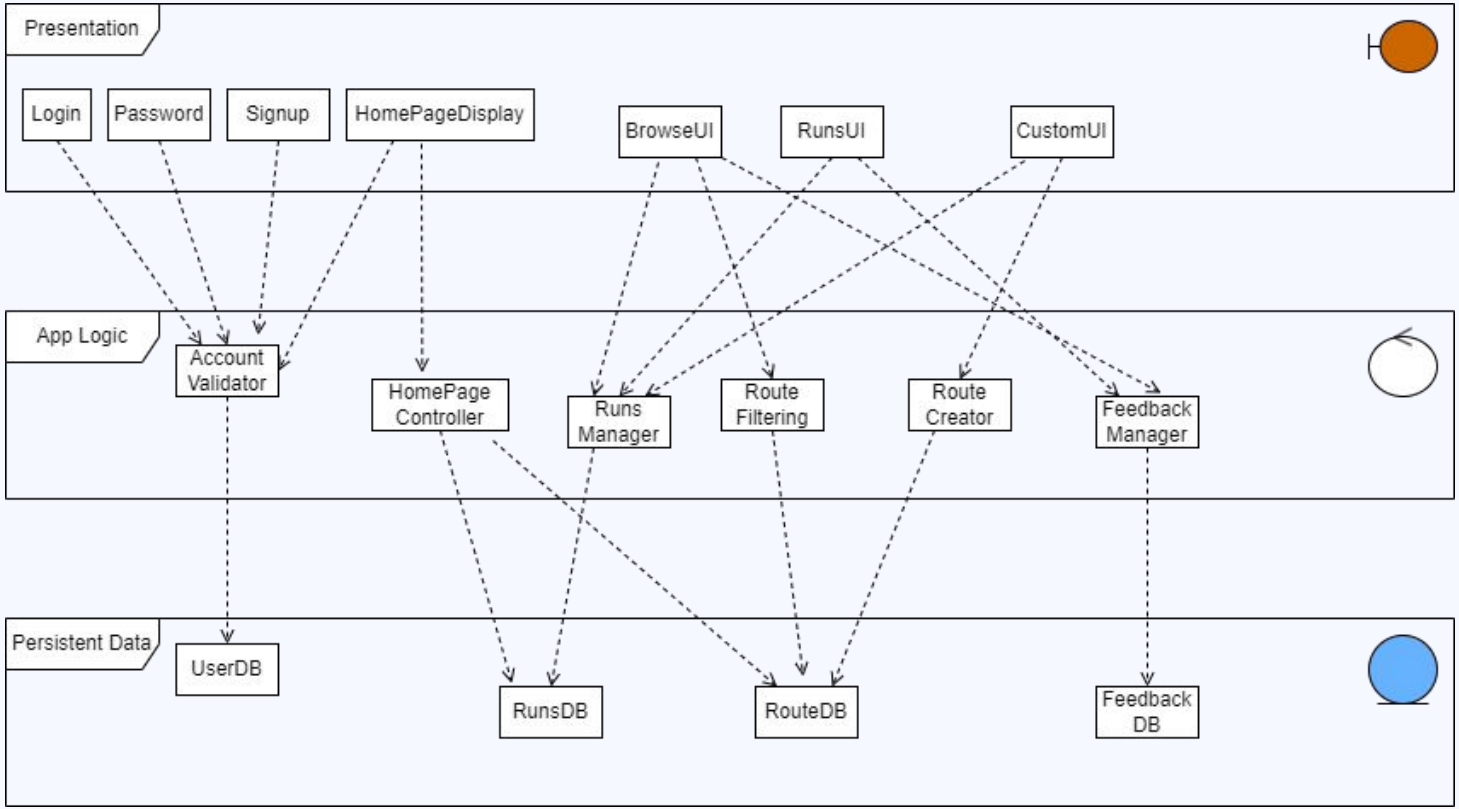
Use Case 2: Route Search



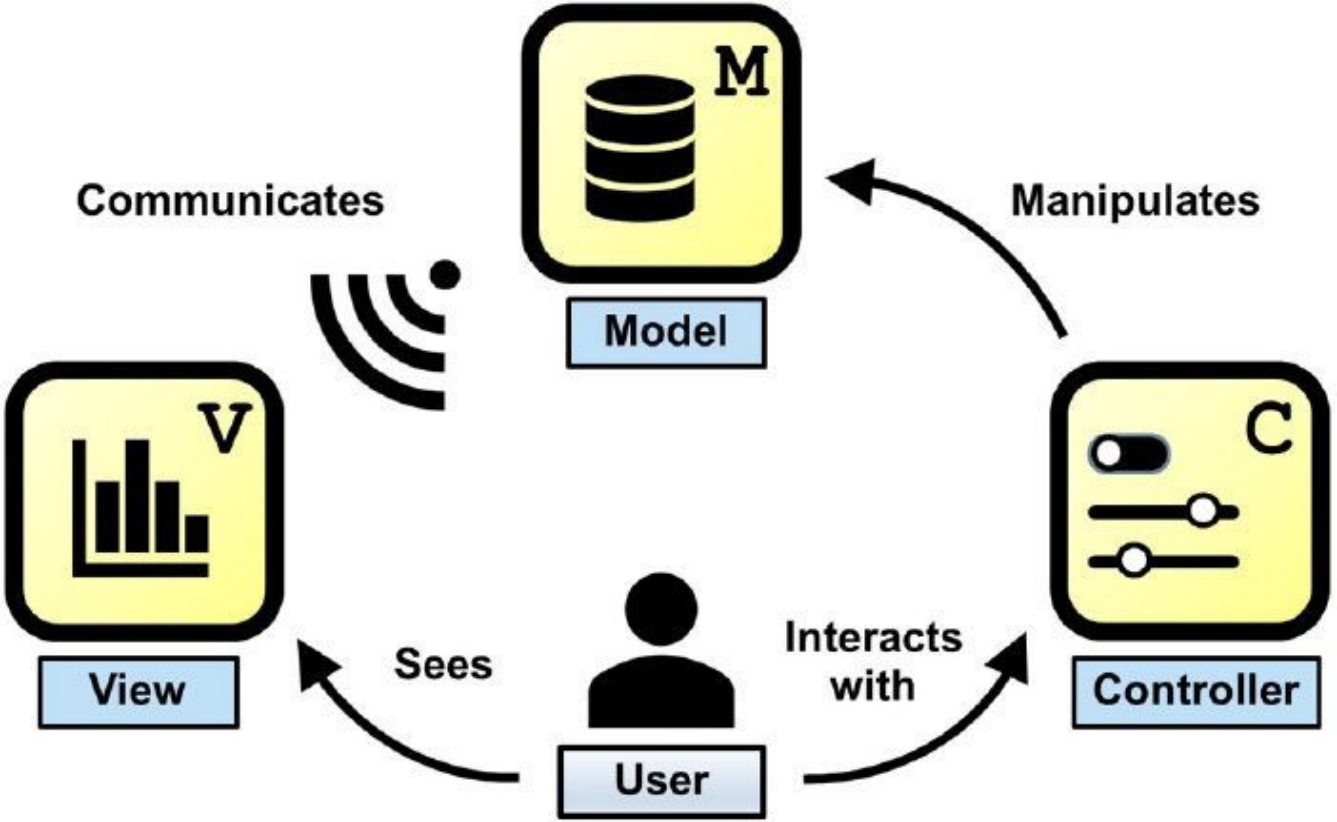


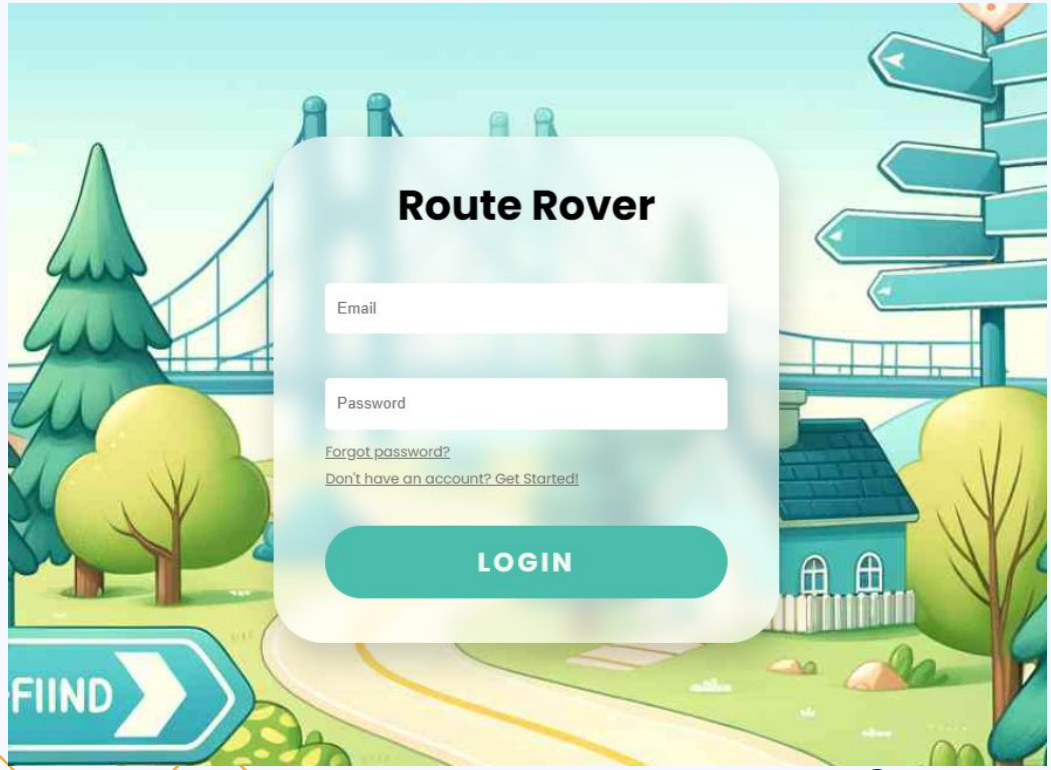
System Design

System Architecture



System Design





Live Demonstration

Good SWE practices

Continuous Integration

Merge all working copies of developers to a shared mainline multiple times a day and constantly test the website.

Detect integration issues as soon as feasible.

Refactoring

Revise the code on a regular basis to improve its underlying structure while maintaining its external behaviour.

Keeps the codebase clean and adaptable to changes.

Good SWE practices

Pair Programming

Two team members working together at a task

Solves complex design problems and ensures high-quality code with fewer errors.

Test-Driven Development (TDD)

Start by planning tests for a new feature before writing the code itself.

Ensures requirements specifications are met.

Good SWE practices

Version Control

dev branch for development works & feature branches for individual works

Always review as a group before merging to main or dev

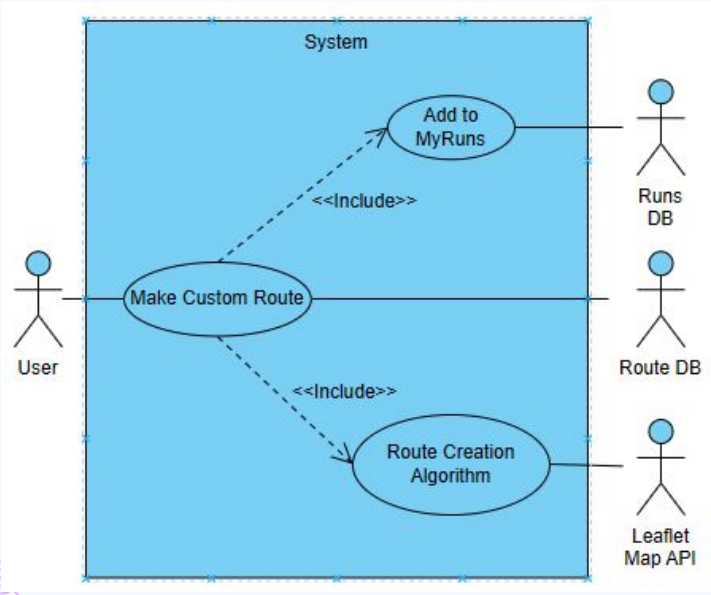
Good Documentation

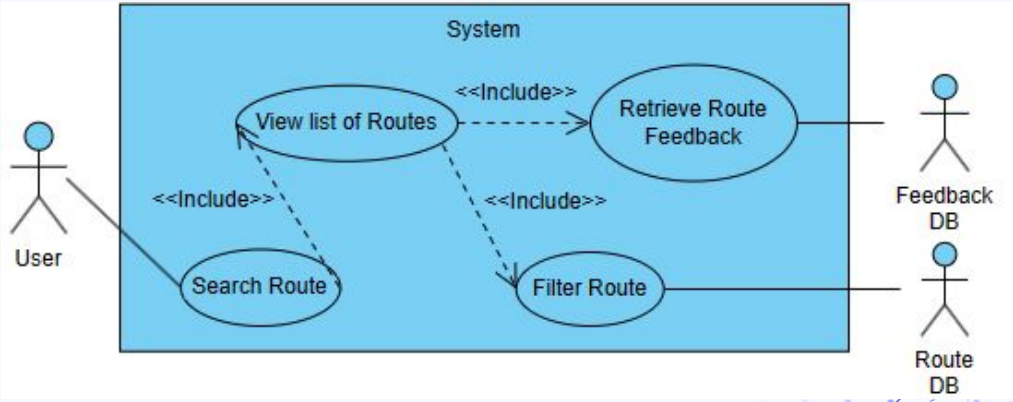
Constant updating and providing good commit messages and code comments

Include diagrams, flowcharts, and screenshots to clarify complex concepts

Traceability of requirements

All requirements from the SRS can be traced to the actual implementation in the app





Traceability of documents





Testing

1.6. Browse Page Functionality

Test Case No.	Inputs	Expected Output	Test Output	Result
1	Browse Page	Input field of location with recommended location and filters	Input field of location with recommended location and filters	Passed
2	Click on the search bar, and enter an address or select recommendation e.g. Nanyang Drive, NTU North Spine Plaza, Singapore	Display the list containing the search query	Display the list containing the search query	Passed
3	Combinations of Ratings, Distance, Terrain and Elevation	Output list should be filtered accordingly	Output list should be filtered accordingly	Passed
4	Scroll down the list	The list shows the best match first then subsequently less matching routes	The list shows the best match first then subsequently less matching routes	Passed
5	Select one of the route in the list	Route information displayed with map and Leaderboard	Route information displayed with map and Leaderboard	Passed

1.3. Log Out Account

Test Case No.	Inputs	Expected Output	Test Output	Result
1	After logging in, click on "Log out" button	Successful log out	Successful log out	Passed

1.4. Remain Logged In After Refresh

Test Case No.	Inputs	Expected Output	Test Output	Result
1	After logging in, refresh the page by clicking the refresh button.	User is still logged in	User is still logged in	Passed

1.5. Home Page Functionality

Test Case No.	Inputs	Expected Output	Test Output	Result
1	Home Page	Display statistics/ recommendation of routes	Display statistics/ recommendation of routes	Passed
2	Click on the recommended routes	Brings user to browse and prompt display route information	Brings user to browse and prompt display route information	Passed
3	Home Page Welcome Back, header should be the <email> without @gmail.com	Welcome Back, AARON	Welcome Back, AARON	Passed

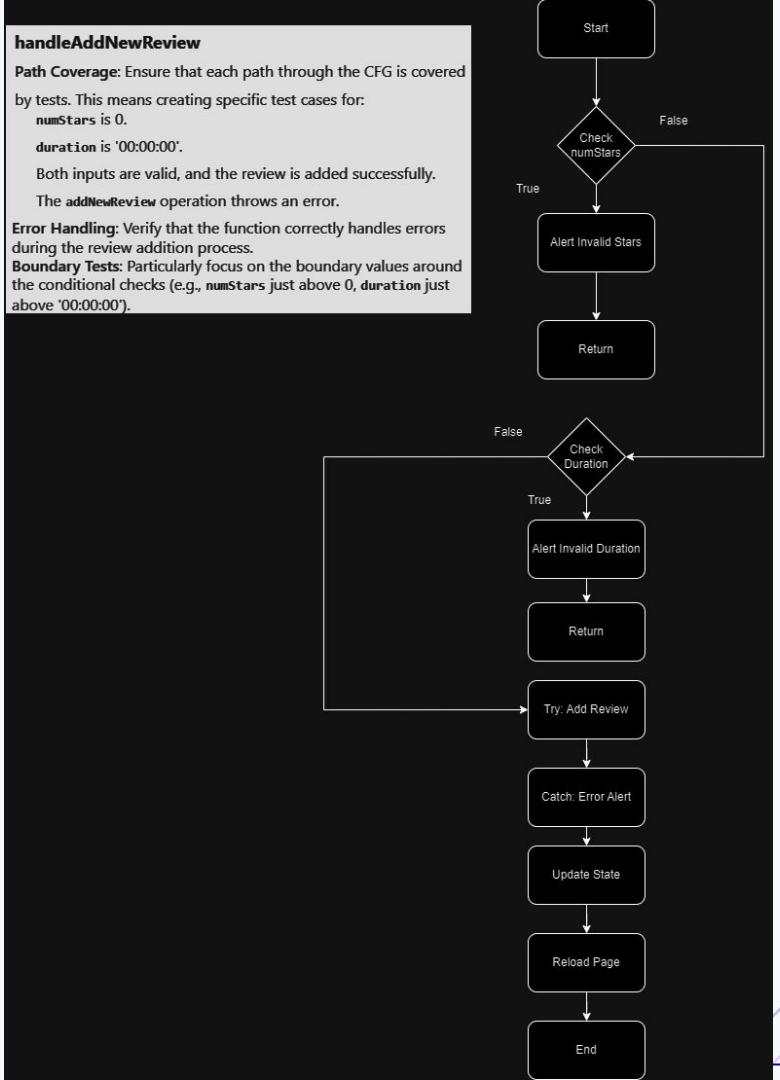
Testing Control Flow Graph (CFG)

handleAddNewReview

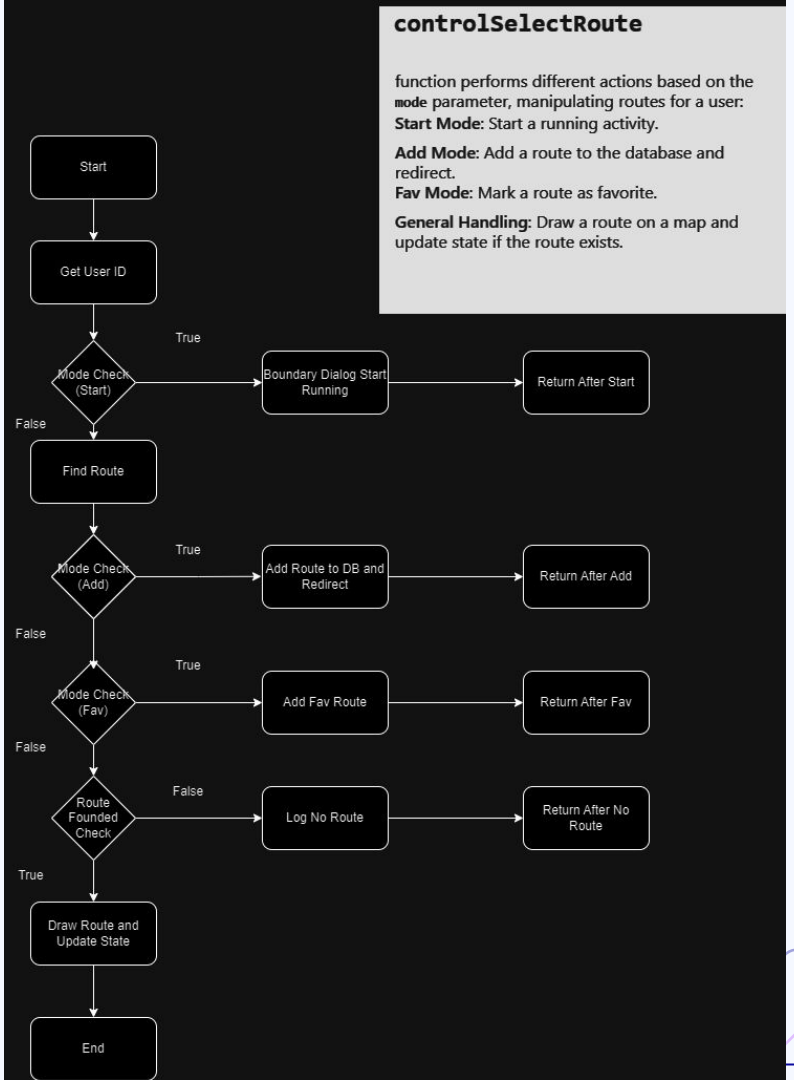
Path Coverage: Ensure that each path through the CFG is covered by tests. This means creating specific test cases for:

- `numStars` is 0.
- `duration` is '00:00:00'.
- Both inputs are valid, and the review is added successfully.
- The `addNewReview` operation throws an error.

Error Handling: Verify that the function correctly handles errors during the review addition process.
Boundary Tests: Particularly focus on the boundary values around the conditional checks (e.g., `numStars` just above 0, `duration` just above '00:00:00').



Testing Control Flow Graph (CFG)



Extensions

Automatic State Detection

- Implement functionality that automatically detects a user's location (state or region) using GPS or mobile network data when they are creating or searching for routes.

Mobile-Friendly Application Design

- Optimize the app's interface for mobile devices to improve usability and accessibility.
- Mobile App Version
- Simplify the user interface to make navigation and interaction easier on smaller screens.

Extensions

Integration with Smart Devices

- Enable connection with wearables to track running progress and sync route data automatically.
- Provide features that allow users to interact with the app via these devices, enhancing the hands-free experience during physical activities.

Social Interaction Enhancements

- Allowing for real-time sharing of runs and locations with friends or groups.
- Enable in-app communication or integration with social media for easier sharing and engagement.

Extensions

ML/AI for route recommendations

- Use of Machine Learning can help suggest better routes and give users better route creation ideas
- Implement AI-driven suggestions for optimising running times and improving performance based on past activity logs.

THANK YOU