

### Use Case Description

Use Case ID:	1.1		
Use Case Name:	Sign Up		
Created By:	Wong Zi Lun	Last Updated By:	Wong Zi Lun
Date Created:	07/02/2024	Date Last Updated:	25/02/2024

Actor:	User (Initiating Actor), User DB
Description:	Allows users to create an account
Preconditions:	The User does not already have an Account in User DB
Postconditions:	The User's Account is created and saved in User DB  or  The User receives an explanation from the System why an Account could not be created
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"><li>1. The User selects the option "Don't have an account? Get Started!"</li><li>2. The System opens a Signup page</li><li>3. The System requests the input of the User's particulars – Email and Password.</li><li>4. The User enters their particulars into all mandatory text fields – Email and Password.</li><li>5. The User submits the Registration Form by selecting the option 'Sign Up'.</li><li>6. The System verifies that all mandatory text fields are filled in.</li><li>7. The System verifies that all text fields are filled with valid data.</li><li>8. The System verifies that the User does not already have an account in User DB</li><li>9. The System creates an Account with the corresponding particulars for the User and saves it in User DB</li></ol>
Alternative Flows:	<p>AF-S6: If a mandatory text field is empty</p> <ol style="list-style-type: none"><li>1. The System displays the message "Please enter both email and password"</li><li>2. The System returns to step 3</li></ol> <p>AF-S7: If the text fields contain invalid data</p>

	<ol style="list-style-type: none"> <li>1. The System displays the message “Invalid email or password”</li> <li>2. The System returns to step 3</li> </ol> <p>AF-S8: If the User already has an Account in User DB</p> <ol style="list-style-type: none"> <li>1. The System displays the message “Invalid email or password”</li> <li>2. The System returns to step 3</li> </ol>
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	1.2		
Use Case Name:	Login		
Created By:	Wong Zi Lun	Last Updated By:	Wong Zi Lun
Date Created:	07/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), User DB
Description:	Allows the User to login to their Account
Preconditions:	The User has an Account in User DB
Postconditions:	The User is logged into their Account
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User launches the Route Rover application</li> <li>2. The System opens the Login page</li> <li>3. The System requests the input of the User’s Account’s email and password</li> <li>4. The User enters the email and password of their Account</li> <li>5. The User selects the option ‘Login’</li> <li>6. The System verifies that the email and password matches an</li> </ol>

	Account's details in User DB 7. The System logs the User into their Account 8. The System calls Use Case 2.1 to enter the Home page
Alternative Flows:	AF-S6: The username or password the User entered is invalid 1. The System displays the message "Invalid email or password" 2. The System returns to step 3
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	1.3		
Use Case Name:	Logout		
Created By:	Wong Zi Lun	Last Updated By:	Wong Zi Lun
Date Created:	07/02/2024	Date Last Updated:	25/02/2024

Actor:	User (Initiating Actor)
Description:	Allows the User to logout of their Account
Preconditions:	The User is logged into their Account
Postconditions:	The User is logged out of their Account
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	1. The User selects the option 'Log Out' on the system sidebar user interface 2. The System logs the user out of their Account 3. The System displays the Login page
Alternative Flows:	

Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	1.4		
Use Case Name:	Forget Password		
Created By:	Wong Zi Lun	Last Updated By:	Wong Zi Lun
Date Created:	07/02/2024	Date Last Updated:	25/02/2024

Actor:	User (Initiating Actor), User DB
Description:	Allows the User to reset the password of their Account
Preconditions:	The User has an Account in User DB
Postconditions:	The User's Account password is changed
Priority:	High
Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the option 'Forget password'</li> <li>2. The System opens the Forget Password Page.</li> <li>3. The System requests the input of the User's Account's email address</li> <li>4. The User inputs their Account's email address</li> <li>5. The User selects 'Submit'</li> <li>6. The System verifies that the email address is valid</li> <li>7. The System sends a link to the User's email address to reset their password</li> <li>8. The User selects the link in the email</li> <li>9. The System requests the input of the User's Account's new password and confirmation of their new password</li> <li>10. The User inputs their new password, and re-enters their new password for confirmation</li> <li>11. The System verifies the input of the User's new password</li> </ol>

	matches their confirmation 12. The System changes the password of the User's Account to the new password
Alternative Flows:	AF-S6: The email address is invalid 1. The System displays the message "Invalid email address! Please try again!" 2. The System returns to step 3  AF-S11: The new password and the confirmation do not match 1. The System displays the message "Password does not match! Please try again!" 2. The System returns to step 9
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	2.1		
Use Case Name:	Go to Home Page		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Runs DB, Route DB
Description:	Home page of the system which curates routes for the user and displays progress graph of the user's runs
Preconditions:	The User is logged into their Account
Postconditions:	System displays the user's total runs, total running time in hour, minute, second format, total distance ran in kilometres, average running speed in minute, second per km format and fastest running speed in minute, second per km format.

	<p>and</p> <p>The system will display a graph of the user's average speed of each run</p> <p>and</p> <p>System displays 6 curated routes for the user</p>
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User clicks on the option 'Home' on the system sidebar user interface</li> <li>2. The System retrieves the User's Username from User DB.</li> <li>3. The System retrieves the statistics of the User's runs from Runs DB.</li> <li>4. The System generates a curated list of routes for the User from Route DB.</li> <li>5. The System calculates and displays the User's run progress statistics – Total runs, Running Time (in hours, minutes, seconds format), Distance ran (in kilometres and to 2 decimal points), Average speed (in minutes and seconds per kilometre) and Fastest run (in seconds per kilometre)</li> <li>6. The System displays a progress graph that can show the Average Speed (in minute per kilometre), Distance (in kilometre) or Duration (in hours) of the User's past runs.</li> <li>7. The System displays the 6 curated routes with their details – image attached to the route, name of the route, username of the creator of the route, number of users that have finished the route, distance information of the route in kilometres, terrain information (urban or trail) of the route and estimated time of completion of the route in minutes.</li> </ol>
Alternative Flows:	
Exceptions:	<p>EX1: The User is logging in to their account</p> <ol style="list-style-type: none"> <li>1. The System jumps to step 2</li> </ol>
Includes:	
Special Requirements:	
Assumptions:	

Notes and Issues:	
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Use Case ID:	2.2		
Use Case Name:	Toggle progress graph		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Runs DB, Route DB
Description:	Changing the statistic of the progress graph in home page
Preconditions:	User is at the Home page
Postconditions:	The system will display a graph of the user's run statistic depending on the choice
Priority:	Medium
Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the statistic to display – Average Speed (in minute per kilometre), Distance (in kilometre) or Duration (in hours) of the User's past runs.</li> <li>2. The System displays the progress graph of the chosen statistic.</li> </ol>
Alternative Flows:	AF-S1: The User selects an already active statistic on the progress graph <ol style="list-style-type: none"> <li>1. The System does not do anything</li> </ol>
Exceptions:	
Includes:	3 statistics to choose from: Average Speed (in minute per kilometre), Distance (in kilometre) or Duration (in hours) of the User's past runs.
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	3		
Use Case Name:	Browse routes		
Created By:	Javen Ong Jing Hian	Last Updated By:	Wong Zi Lun
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Route DB
Description:	Gives a list of routes based on the location and specifications user has input
Preconditions:	User is logged into their account
Postconditions:	User gets a list of routes according to search
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the option 'Browse' on the system sidebar user interface</li> <li>2. The System creates a Search Form</li> <li>3. The System displays the options for the User to choose a location by input into a text field, using their current location or selecting a location from a list of suggested locations based on past User inputs</li> <li>4. The System displays an option to toggle the minimum rating (from 0.0 to 5.0 in intervals of 0.5) of the running routes to search for.</li> <li>5. The System displays an option to toggle the maximum distance (from 0.5 km to 30 km in intervals of 0.5 km) of the running routes to search for.</li> <li>6. The System displays the difficulty of the run the user is searching for as Easy (0.5 km to 2.5 km), Medium (3.0 km to 8.0 km), Hard (8.5km to 15.0 km) or Expert (above 15.5km) based on the maximum distance chosen.</li> <li>7. The System displays an option for the User to choose the terrain type (urban or trail) of the running routes to search for.</li> <li>8. The System displays an option to 'Search' for the routes.</li> <li>9. The System displays an interactive map from Leaflet Map API.</li> <li>10. The User chooses the location, minimum rating, maximum run distance and terrain type of the route they want</li> </ol>



	11. The User selects the option “Search” 12. The System verifies that a valid location is selected 13. The System retrieves a list of routes that matches the user’s requirements and their names, usernames of their creator, average review ratings, number of users that have finished the route, distance information in kilometres, terrain information (urban or trail) and estimated time of completion from Route DB 14. The System displays the list of routes retrieved and their respective details
Alternative Flows:	AF-S13: A valid location is not chosen 1. The System displays the message “invalid location” 2. The System returns to step 10
Exceptions:	EX1: The User is returning back to the Browse page from viewing a route 1. The System jumps to step 2
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	4.1		
Use Case Name:	View Additional Route Information (Browse)		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Route DB
Description:	Views additional information about a route
Preconditions:	User is logged into their account  and

	User is in the Browse page and has already searched for routes		
Postconditions:	User is shown additional details of the route they selected		
Priority:	High		
Frequency of Use:	Frequent		
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User clicks on a route to view more information.</li> <li>2. The System retrieves the details of the route from Route DB.</li> <li>3. The System displays the leaderboard of fastest run times of the route.</li> <li>4. The System displays the route and marks the start, end and stop-by points on the interactive map</li> <li>5. The System displays an option to add the route to the User's list of runs, 'Add to My Runs'</li> <li>6. The System displays an option to start running the route, 'Start Running'.</li> <li>7. The User selects the option 'Add to My Runs'</li> <li>8. The System calls Use Case 7.4 to add the route to the User's list of runs</li> <li>9. The System brings the User to the My Runs page</li> </ol>		
Alternative Flows:	AL-S7: The User selects the option 'Start Running' <ol style="list-style-type: none"> <li>1. The System calls Use Case 6 for the User to review the route after they have completed the route</li> </ol>		
Exceptions:			
Includes:			
Special Requirements:			
Assumptions:			
Notes and Issues:			

Use Case ID:	4.2		
Use Case Name:	View run on interactive map		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Route DB, Leaflet Map API
Description:	Displays the route chosen on the interactive map
Preconditions:	The User is logged into their Account  and  The User is in 'My Runs' page or Browse page
Postconditions:	The route chosen is displayed on the interactive map
Priority:	Medium
Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the route to display on the interactive map</li> <li>2. The System retrieves the details of the route from Route DB</li> <li>3. The System displays the route and marks the start, end and stop-by points on the interactive map</li> </ol>
Alternative Flows:	
Exceptions:	EX1: The User selects to view a curated route from Home page or selects a run to 'Add to My Runs' in Browse page <ol style="list-style-type: none"> <li>1. The System jumps to step 2 using the route selected</li> </ol>
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	4.3		
Use Case Name:	View Route		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Route DB
Description:	Views a route and its details

Preconditions:	<p>User is logged into their account</p> <p>and</p> <p>User selects to view a curated route from Home page or selects a run to 'Add to My Runs' in Browse page</p>
Postconditions:	User is shown the details of the route they chose to view
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User clicks on a route.</li> <li>2. The System retrieves the route and its details from Route DB.</li> <li>3. The System navigates to the Browse page</li> <li>4. The System displays the route and its details – name, username of the creator, rating, reviews, leaderboard of fastest run times, number of users that have finished the route, distance information of the route in kilometres, terrain information (urban or trail) and estimated time of completion of the route in minutes</li> <li>5. The System calls Use Case 4.2 to display the route on the interactive map</li> <li>6. The System displays an option to add the route to the User's list of runs</li> <li>7. The System displays an option to go back to the Browse page</li> <li>8. The User selects the option 'Add to My Runs'</li> <li>9. The System calls Use Case 7.1 to add the route to the User's list of runs</li> </ol>
Alternative Flows:	<p>AL-S8: The User selects the option 'Back'</p> <ol style="list-style-type: none"> <li>1. The System brings the User to the Browse page and calls Use Case 3</li> </ol>
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	5		
Use Case Name:	Make Custom Route		
Created By:	Javen Ong Jing Hian	Last Updated By:	Wong Zi Lun
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Route DB, Leaflet Map API
Description:	User creates a custom route
Preconditions:	User is logged into their account
Postconditions:	User's created route is stored in Route DB and added to Runs DB
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the option 'Custom' on the system sidebar user interface</li> <li>2. The System displays a text field for the User to enter a starting address.</li> <li>3. The System displays a text field for the User to enter a destination address.</li> <li>4. The System displays an interactive map from Leaflet Map API.</li> <li>5. The System displays an option to search for a custom route, 'Search'</li> <li>6. The User enters a starting address and destination address.</li> <li>7. The User selects 'Search'</li> <li>8. The System verifies that valid starting and destination addresses have been input.</li> <li>9. The System displays the route on the interactive map.</li> <li>10. The System displays a text field for the User to enter additional stop-by points for the custom route.</li> <li>11. The System displays an option to add additional stop-by points for the custom route, 'Add Point'</li> <li>12. The System displays a text field for the User to enter a route name for the custom route.</li> <li>13. The System displays an option for the User to choose the terrain type of the custom route</li> </ol>

	<ol style="list-style-type: none"> <li>14. The System displays an option to create the custom route, 'Add New Route'</li> <li>15. The User enters additional stop-by point addresses.</li> <li>16. The User selects 'Add Point'</li> <li>17. The System verifies that a valid stop-by point address has been input</li> <li>18. The System adds the stop-by point into the custom route</li> <li>19. The User enters the route name and terrain type of the custom route</li> <li>20. The User selects 'Add New Route'</li> <li>21. The System verifies that a valid route name has been input.</li> <li>22. The System generates the running route based on the User's inputs using the map api's route creation algorithm</li> <li>23. The System stores the route to Route DB</li> <li>24. The System calls Use Case 7.4 to add the route to the User's list of runs</li> </ol>
Alternative Flows:	<p>AF-S9: The User did not input valid starting and destination addresses.</p> <ol style="list-style-type: none"> <li>1. The System displays the message "invalid address. Please use location provided in dropbox"</li> <li>2. The System returns to step 6</li> </ol> <p>AF-S17: The User does not input any additional stop-by point addresses</p> <ol style="list-style-type: none"> <li>1. The System jumps to step 20</li> </ol> <p>AF-S19: The User does not input a valid additional stop-by point addresses</p> <ol style="list-style-type: none"> <li>1. The System does not add the stop-by point into the custom route</li> </ol> <p>AF-S23: The User did not input valid name for the route</p> <ol style="list-style-type: none"> <li>1. The System displays the message "Please enter a name for the route"</li> <li>2. The System returns to step 16</li> </ol> <p>AF-S23: The User has already created another route with the same name</p> <ol style="list-style-type: none"> <li>1. The System displays the message "You already have another route with the same name! Please enter another name for the new route"</li> <li>3. The System returns to step 16</li> </ol>
Exceptions:	
Includes:	

Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	6		
Use Case Name:	Give Route Review		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Review DB
Description:	Give a review for a route after completing it
Preconditions:	User is logged into their account  and  User has completed a route and selected to give a review
Postconditions:	User's review is saved to the route
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User chooses to review route</li> <li>2. The System displays the Review user interface</li> <li>3. The System displays an input field for users to input their rating for a route.</li> <li>4. The System displays an input field for users to input their time taken for a route.</li> <li>5. The System displays a text field for users to input their comments for a route.</li> <li>6. The System displays a file upload field for users to upload an image for their route.</li> <li>7. The System displays an option for users to escape from the review page.</li> <li>8. The System displays an option for users to submit their review, 'Submit'.</li> </ol>

	9. The User inputs their rating, time taken, comments and image for the route 10. The User selects the option 'Submit' 11. The System verifies that a valid rating has been input 12. The System verifies that a valid time taken has been input 13. The System stores the review into Review DB
Alternative Flows:	AL-S12: The rating the User entered is invalid <ol style="list-style-type: none"> <li>1. The System displays the message "Invalid input. Please rate the route"</li> <li>2. The System returns to step 9</li> </ol> AL-S13: The time taken the User entered is invalid <ol style="list-style-type: none"> <li>1. The System displays the message "Invalid input. Please enter a valid duration"</li> <li>2. The System returns to step 9</li> </ol>
Exceptions:	EX1: The User closes the review form <ol style="list-style-type: none"> <li>1. The System returns the User to the previous page</li> </ol>
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	7.1		
Use Case Name:	Go to My Runs page		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Runs DB, Route DB
Description:	System displays User's My Runs page
Preconditions:	The User is logged into their Account
Postconditions:	User's My Runs page is displayed
Priority:	Medium



Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User clicks on the option 'My Runs' on the system sidebar user interface</li> <li>2. The System retrieves the User's runs and run details from Runs DB.</li> <li>3. The System displays the User's list of runs with their details – name, username of the creator, rating, number of users that have finished the route, distance information in kilometres, terrain information (urban or trail) and estimated time of completion in minutes.</li> <li>4. The System displays an option to mark the routes in the User's 'My Runs' as favourite.</li> <li>5. The System displays a checkmark on each route in the User's 'My Runs' to indicate whether the route has been favourited (grey = unfavourited, blue = favourited)</li> <li>6. The System retrieves the reviews of the User's list of runs from Route DB.</li> <li>7. The System displays the reviews of the routes the user has already reviewed with their details – photo uploaded, reviewer's username, rating and comments.</li> <li>8. The System displays the option to review the routes in the User's 'My Runs' that are unreviewed by the User</li> <li>9. The System displays an interactive map from Leaflet Map API.</li> <li>10. The System displays an option to filter the type of routes (All Routes, Reviewed Routes, Unreviewed Routes, Favourited Routes and Created Routes) to be displayed.</li> </ol>
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	7.2
Use Case Name:	Favourite a run

Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Runs DB
Description:	Mark a run as favourited
Preconditions:	The User is logged into their Account  and  The User is in 'My Runs' page
Postconditions:	User's chosen run is favourited
Priority:	Medium
Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the option to favourite a run.</li> <li>2. The System saves the route as favourited in Runs DB</li> <li>3. The System refreshes the My Runs page by calling Use Case 7.1</li> </ol>
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	7.3		
Use Case Name:	Filtering runs displayed in My Runs		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor)
Description:	Filters the list of runs displayed in My Runs
Preconditions:	The User is logged into their Account  and  The User is in 'My Runs' page
Postconditions:	The filtered list of runs is displayed
Priority:	Medium
Frequency of Use:	Occasionally
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects the option to filter the runs displayed</li> <li>2. The User selects the filter to use (All Routes, Reviewed Routes, Unreviewed Routes, Favourited Routes or Created Routes)</li> <li>3. The System removes the runs on display that do not match the filter applied</li> </ol>
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	7.4		
Use Case Name:	Add to My Runs		
Created By:	Javen Ong Jing Hian	Last Updated By:	Javen Ong Jing Hian
Date Created:	08/02/2024	Date Last Updated:	31/03/2024

Actor:	User (Initiating Actor), Runs DB
Description:	Adds a route to the User's list of runs

Preconditions:	<p>The User is logged into their Account</p> <p>and</p> <p>The User has selected a route to save</p>
Postconditions:	The selected route is saved to the User's list of runs
Priority:	High
Frequency of Use:	Frequent
Flow of Events:	<ol style="list-style-type: none"> <li>1. The User selects a route to save.</li> <li>2. The System saves the route to the User's list of runs in Runs DB</li> <li>3. The System calls Use Case 7.1 and opens the My Runs page</li> </ol>
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	