
Use Cases

for

MyTripDiary

Version 1.0 approved

Prepared by

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Revision History

Name	Date	Reason For Changes	Version
Goel Armaan	15/02/2023	Edit use cases VT01, ET02	Alpha 2
Goel Armaan	23/03/2023	Fill in missing details	Alpha 3
Goel Armaan	01/04/2023	Update use cases	1.0

Use Cases

Use Case ID:	RR01		
Use Case Name:	Register		
Created By:	Tan Ming Rui, Ezra	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/23

Actor:	User
Description:	The user registers an account with their email address and password.
Preconditions:	<ol style="list-style-type: none"> 1. The User's device must be connected to WiFi/Cellular Data. 2. The email address given is not registered in the System.
Postconditions:	<ol style="list-style-type: none"> 1. The registered user account is stored in the database. 2. The User can login to the System using the registered account.
Priority:	High
Frequency of Use:	Once per User
Flow of Events:	<ol style="list-style-type: none"> 1. The System requests the User to input the following information fields: <ul style="list-style-type: none"> • Email address • Password • Confirm Password 2. The System validates the required fields. 3. User clicks on the Register button 4. The System sends an email with a confirmation link to the registered email address. 5. If the User clicks on the confirmation link, the user account is successfully created. 6. Return to User Login menu after confirmation of account creation.
Alternative Flows:	<p>AF-S4: Text fields are not filled in appropriately</p> <ol style="list-style-type: none"> 1. The System will prompt the User to fill in the required fields. 2. The System returns to Step 1. <p>AF-S2: Email already exists in the database</p> <ol style="list-style-type: none"> 1. The System will prompt an error message "Email address is already in use" <p>AF-S2: Username already exists in the database</p> <ol style="list-style-type: none"> 1. The System will prompt an error message "Username is already in use"

Exceptions:	-
Includes:	-
Special Requirements:	<ol style="list-style-type: none">1. The system must be able to send a verification link to the user's email for confirmation.2. The system must use encryption when saving sensitive details such as a user's password.
Assumptions:	The connection of the app and Firebase is established
Notes and Issues:	-

Use Case ID:	LL01		
Use Case Name:	Login		
Created By:	Tan Ming Rui, Ezra	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/23

Actor:	User
Description:	Login to System through verification of User's account email and password.
Preconditions:	<ol style="list-style-type: none"> 1. The User's device must be connected to WiFi/Cellular Data. 2. The System currently does not have a User logged in. 3. User has an existing and verified account associated with the email stored in the database. 4. The System must be able to communicate with the Database. 5. The hosted Database must be online.
Postconditions:	The user is logged in and their data is fetched and stored locally
Priority:	High
Frequency of Use:	Once per Session
Flow of Events:	<ol style="list-style-type: none"> 1. The User inputs the email address and password 2. The User clicks the "Login" button. 3. The System verifies the login credentials. 4. If the login credentials are verified, the User successfully logs in. 5. The User can proceed to use the System.
Alternative Flows:	AF-S4: If the login credentials are invalid <ol style="list-style-type: none"> 1. The System informs the User the login has failed. 2. The System returns to Step 1.
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	The connection of the app and Firebase is established
Notes and Issues:	-

Use Case ID:	AT01		
Use Case Name:	Add Trip		
Created By:	Tan Ming Rui, Ezra	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/23

Actor:	User
Description:	Adds a trip, which is defined by the trip's start point and end point. Each trip also has a name.
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in. 2. User device has a working WiFi or Cellular connection
Postconditions:	The user is able to Execute trip
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User fills in the name, start point, and end point of the trip they wish to create. 2. User clicks "Add to Saved Trips"
Alternative Flows:	-
Exceptions:	EX-S2: User clicks the back button <ol style="list-style-type: none"> 1. System returns to homepage
Includes:	GR01
Special Requirements:	<ol style="list-style-type: none"> 1. 80% of first-time users must be able to add their first trip to the app within 2 minutes. 2. The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	<ol style="list-style-type: none"> 1. The Maps API is online and queryable 2. The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	VT01		
Use Case Name:	View Saved Trips		
Created By:	Nepal Aaradh	Last Updated By:	Goel Armaan
Date Created:	02/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Displays the previously saved trips to the user
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in 2. The user must have saved trips previously
Postconditions:	The user can view the previously saved trips
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects the trips tab 2. The previously saved trips are displayed
Alternative Flows:	AF1: <ol style="list-style-type: none"> 1. If user has not saved any trips, display “No trip available”
Exceptions:	-
Includes:	DT01, ST01, ET01
Special Requirements:	-
Assumptions:	The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	DT01		
Use Case Name:	Delete Trip		
Created By:	Nepal Aaradh	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Delete a trip that has been saved
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in 2. The trip being requested to be deleted must exist
Postconditions:	The trip is no longer existent
Priority:	High
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects a trip to delete from a list of previously saved trips 2. The user confirms that the deletion should take place
Alternative Flows:	AF-S2: <ol style="list-style-type: none"> 1. The user does not confirm the deletion and instead decides to cancel the delete request
Exceptions:	-
Includes:	-
Special Requirements:	The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	ET01		
Use Case Name:	Edit Trip Name		
Created By:	Nepal Aaradh	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Edit the name of a previously saved trip
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in 2. The trip being requested to be edited must exist
Postconditions:	The trip name has been updated
Priority:	High
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects a trip to edit from a list of previously saved trips 2. The user enters the new name for the trip with which to replace the current trip name 3. The user clicks the change button
Alternative Flows:	-
Exceptions:	EX1: If user cancels while editing <ol style="list-style-type: none"> 1. System returns to “Saved Trips” screen
Includes:	-
Special Requirements:	The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	ST01		
Use Case Name:	Star Trip		
Created By:	Nepal Aaradh	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	‘Star’ a trip (indicate a trip as a frequently used trip)
Preconditions:	<ol style="list-style-type: none"> 1. The user must be logged in 2. The trip being requested to be starred must exist
Postconditions:	The trip is pinned to top of the list of previously saved trips making it easily accessible to the user
Priority:	Low
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects a trip to star from a list of previously saved trips 2. The user presses the star button which toggles the state from starred to unstarred or from unstarred to starred
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	ET02		
Use Case Name:	Execute Trip		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/23

Actor:	User
Description:	Records an instance of a saved trip with the user's selected mode of transport.
Preconditions:	<ol style="list-style-type: none"> 1. User is logged in 2. User has the trip saved 3. User device has a working WiFi or Cellular connection
Postconditions:	An instance of the saved trip is added to the user's trip history
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User clicks a saved trip 2. User chooses their preferred mode of transport 3. User reviews the estimated price and route details 4. User clicks the execute trip button 5. An instance of the saved trip is recorded in the system
Alternative Flows:	AF-S3: <ol style="list-style-type: none"> 1. If the respective pricing APIs is unavailable then the user is told that the system cannot estimate the price.
Exceptions:	EX1: User cancels execution <ol style="list-style-type: none"> 1. User can choose not to execute a trip, at which point the use case exits at either step 2 or step 3
Includes:	GP01
Special Requirements:	The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	<ol style="list-style-type: none"> 1. The user executes a trip right before they embark on it 2. The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	GR01		
Use Case Name:	Get Route		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/23

Actor:	Google Maps API
Description:	Retrieves the route between a trip's starting point and destination point for the chosen mode of transport
Preconditions:	<ol style="list-style-type: none"> 1. User is logged in 2. User has click on a saved trip 3. User device has a working WiFi or Cellular connection
Postconditions:	The correct route from the trip's starting point to the trip's destination point with the chosen mode of transport is displayed
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User is executing a saved trip 2. The API is queried and the route for a private car is displayed by default.
Alternative Flows:	<p>AF-S2: User chooses another mode of transport</p> <ol style="list-style-type: none"> 1. If the user chooses another mode of transport, the API is queried again and a route with the new mode of transport is displayed.
Exceptions:	<p>EX1: No route can be found</p> <ol style="list-style-type: none"> 1. If there is no route between the start and destination point for the selected mode of transport, a route cannot be displayed. 2. The user is informed of this limitation and is asked to try another mode of transportation <p>EX2: API is unavailable</p> <ol style="list-style-type: none"> 1. If the Google Maps API is unavailable or cannot be queried, a route cannot be displayed. 2. The user is informed of this limitation and is asked to try again later.
Includes:	-
Special Requirements:	-
Assumptions:	The Google Maps API is online and queryable
Notes and Issues:	-

Use Case ID:	GP01		
Use Case Name:	Get Price		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	31/01/23	Date Last Updated:	01/04/2023

Actor:	OneMap API, FareFinder API, TollGuru API
Description:	Calculates an estimated price of a route with the chosen mode of transportation
Preconditions:	<ol style="list-style-type: none"> 1. User is logged in 2. User is executing a saved trip 3. The trip's route is valid 4. User device has a working WiFi or Cellular connection
Postconditions:	A well-estimated price of a route with the chosen mode of transportation is displayed
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User selects a valid mode of transportation for a trip 2. The respective API is queried 3. The price for the trip's route with the chosen mode of transportation is displayed
Alternative Flows:	AF-S2: <ol style="list-style-type: none"> 1. If the mode of transportation is biking or walking, no API is queried. The price is 'free'.
Exceptions:	EX1: API is unavailable <ol style="list-style-type: none"> 1. If the API used in calculating the price for a chosen mode of transportation is unavailable, then the estimated price cannot be calculated 2. Instead, a message is shown to the user stating the estimated pricing for the chosen mode of transportation is currently unavailable
Includes:	GR01
Special Requirements:	<ol style="list-style-type: none"> 1. The system must be able to calculate the fare cost of a route within 3 seconds. 2. The system must be able to show estimated prices 95% of the time.
Assumptions:	-
Notes and Issues:	-

Use Case ID:	VH01		
Use Case Name:	View Trip History		
Created By:	Xu Yinfeng	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Get user trip history, display user trip history
Preconditions:	<ol style="list-style-type: none"> 1. User is connected to WiFi/Cellular Data 2. User has logged into their user account
Postconditions:	The user is at the trip history page where they can look at their past trip executions
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User login to their user account 2. User clicked on "History" tab 3. System retrieve user trip history from database 4. System display trip history in descending order of execution time
Alternative Flows:	AF1: <ol style="list-style-type: none"> 1. If user has not completed any trips, display “No trip history”
Exceptions:	-
Includes:	EP01
Special Requirements:	-
Assumptions:	The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	EP01		
Use Case Name:	Edit Past Trip Price		
Created By:	Xu Yinfeng	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	User enter/edit trip price information upon completion of a trip
Preconditions:	<ol style="list-style-type: none"> 1. User is connected to WiFi/Cellular Data 2. User has logged into their user account
Postconditions:	The price of a specific trip execution is changed
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User goes into trip history and long presses an execute trip 2. User changes the value in the input field 3. User clicks the change button 4. System records change
Alternative Flows:	AF-S3: <ol style="list-style-type: none"> 1. If the user chooses to not make the change, they can click the close button
Exceptions:	EX1: No Price Entered <ol style="list-style-type: none"> 1. If the user does not enter anything for the new price, inform the user to actually enter a price EX2: Invalid Price Entered <ol style="list-style-type: none"> 1. If the new price is not a positive number greater or equal to 0, inform the user that the entered price is invalid. Ask to enter again
Includes:	-
Special Requirements:	The system must be able to synchronize data to the online database within 3 seconds.
Assumptions:	<ol style="list-style-type: none"> 1. User enters the correct amount of money that they actually spent 2. The connection of the app and Firestore is established
Notes and Issues:	-

Use Case ID:	VS01		
Use Case Name:	View Stats		
Created By:	Xu Yinfeng	Last Updated By:	Goel Armaan
Date Created:	01/02/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	System get analytics data from database and display on the analytics dashboard
Preconditions:	<ol style="list-style-type: none"> 1. User is connected to WiFi/Cellular Data 2. User has logged into their user account 3. User has completed at least 1 trip
Postconditions:	The user is at the analytics page
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. User completes a trip, trip recorded in trip history 2. System functions calculate/store trip information statistics 3. System get trip statistics and display in the analytics dashboard
Alternative Flows:	AF1: <ol style="list-style-type: none"> 1. If user has not completed any trips, display “No Stats Available”
Exceptions:	-
Includes:	DV01, DV02
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

Use Case ID:	DV01		
Use Case Name:	Interactive Data Visualisation		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	01/04/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Displays interactive visual analytics elements such as a pie chart that summarise the trip history.
Preconditions:	The user must have completed at least 1 trip
Postconditions:	The user can see a breakdown of their trips for the chosen mode of transport
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user selects a slice of the pie which represents the proportion of times a specific mode of transport was taken. 2. The executed trip ID, distance, time and cost for all trips with that transport are displayed in a tabular form
Alternative Flows:	AF-S1: No trips taken with a certain mode of transport 1. If there are no trips taken with a certain mode of transport then it is not displayed as a slice of the pie chart.
Exceptions:	-
Includes:	-
Special Requirements:	The system must follow data visualisation standards when displaying user analytics.
Assumptions:	-
Notes and Issues:	-

Use Case ID:	DV02		
Use Case Name:	Static Data Visualisation		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	01/04/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Displays static visual analytics elements such as cost per trip bar chart and a time taken per trip line chart.
Preconditions:	The user must have completed at least one trip
Postconditions:	The user can see a breakdown of their latest 10 trips based on the respective chart
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> 1. The user is on the analytics page and scrolls down below the pie chart 2. The static data charts for the latest 10 trips are then displayed
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	The system must follow data visualisation standards when displaying user analytics.
Assumptions:	-
Notes and Issues:	-

Use Case ID:	SE01		
Use Case Name:	Settings		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	01/04/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Shows the user some app preferences. These include altering accounting details, switching themes or logging out.
Preconditions:	The user must be logged in
Postconditions:	If the user logs out, the system must move to the login state. Any details of the previous user must be erased from memory
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user clicks the settings tab 2. The user's profile picture and name is displayed 3. User clicks any available options 4. If the user logs out, then the app goes back to the login screen
Alternative Flows:	AF-S4: <ol style="list-style-type: none"> 1. If the user clicks the 'Account' option, move to Use Case AD01 2. If the user clicks the 'Switch Theme' option, move to Use Case SE02
Exceptions:	-
Includes:	SE02, AD01
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

Use Case ID:	AD01		
Use Case Name:	Edit Account Details		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	01/04/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Allows the user to change their name or email address
Preconditions:	The user must be logged in
Postconditions:	<ol style="list-style-type: none"> 1. The user's new name is reflected in the settings page 2. The user's new email change is made to the database
Priority:	High
Frequency of Use:	Medium
Flow of Events:	<ol style="list-style-type: none"> 1. The user clicks the change name button and choose a new name 2. The user clicks the change email button and chooses a new email
Alternative Flows:	-
Exceptions:	<p>EX1: Invalid Email Address</p> <ol style="list-style-type: none"> 1. If the new email address is invalid, the user is made aware of it. No changes made to the database <p>EX2: Email Address Already Exists</p> <ol style="list-style-type: none"> 1. If the new email address is already registered, the user is made aware of it. No changes made to the database.
Includes:	-
Special Requirements:	Users must be verified before they are allowed to change their login credentials
Assumptions:	The connection of the app and Firebase is established
Notes and Issues:	-

Use Case ID:	SE02		
Use Case Name:	Set Theme		
Created By:	Goel Armaan	Last Updated By:	Goel Armaan
Date Created:	01/04/2023	Date Last Updated:	01/04/2023

Actor:	User
Description:	Changes the App's UI Theme
Preconditions:	The user must be logged in
Postconditions:	The theme of all UI elements is changed from light to dark or from dark to light
Priority:	Low
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> 1. User clicks the change theme button 2. The global theme variable is changed 3. The current page is rendered again in the new theme
Alternative Flows:	-
Exceptions:	-
Includes:	-
Special Requirements:	-
Assumptions:	Users must be able to choose between a light and dark theme that all UI elements must abide to.
Notes and Issues:	-