

# SCIT

## School of Computing and Information Technology Faculty of Engineering & Information Science

### CSIT321 - Project

#### Project Topic: TripAid based on LOLs

System Requirement Specification		
Version 1.0		
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## 1. Introduction

### 1.1 Purpose

The purpose of this document is to facilitate the team by constructing an organized methodology to ratify the mobile application. The document will aid the team to finalize and determine the functional and non-functional requirements necessary, along with the features required to be implemented for each user. Details such as constraints and assumptions will also be documented.

### 1.2 Document Convention

Terminology	Definition
POI	Place Of Interest
LOL	Local Opinion Leaders
FEA	Feature
OE	Operating Environment
CON	Constraint
ASD	Assumptions and Dependencies

### 1.3 Targeted Audience and Reading Suggestions

The document is intended for individuals involved in the project, such as the project team, project supervisor and assessor. As such, the document is highly recommended to only be read by individuals with prior knowledge.

### 1.4 Project Scope

The Project will be developed and deployed with the target of achieving a mobile application that caters to the needs of the stakeholders. Stakeholders include travelers, typically tourists visiting Singapore, referred to as 'Users', businesses who want to advertise or promote their business, identified as 'Business Owner' and Influencers who share their experience, otherwise referred to as 'Local Opinion Leaders (LOLs)'.

## 2. Overall Description

### 2.1 Product Perspective

The product that the team will be developing is a mobile application for various stakeholders but mainly users. The application will allow users to interact with LOLs using the in-built forum, post questions, facilitate them in their trip while exploring Singapore.

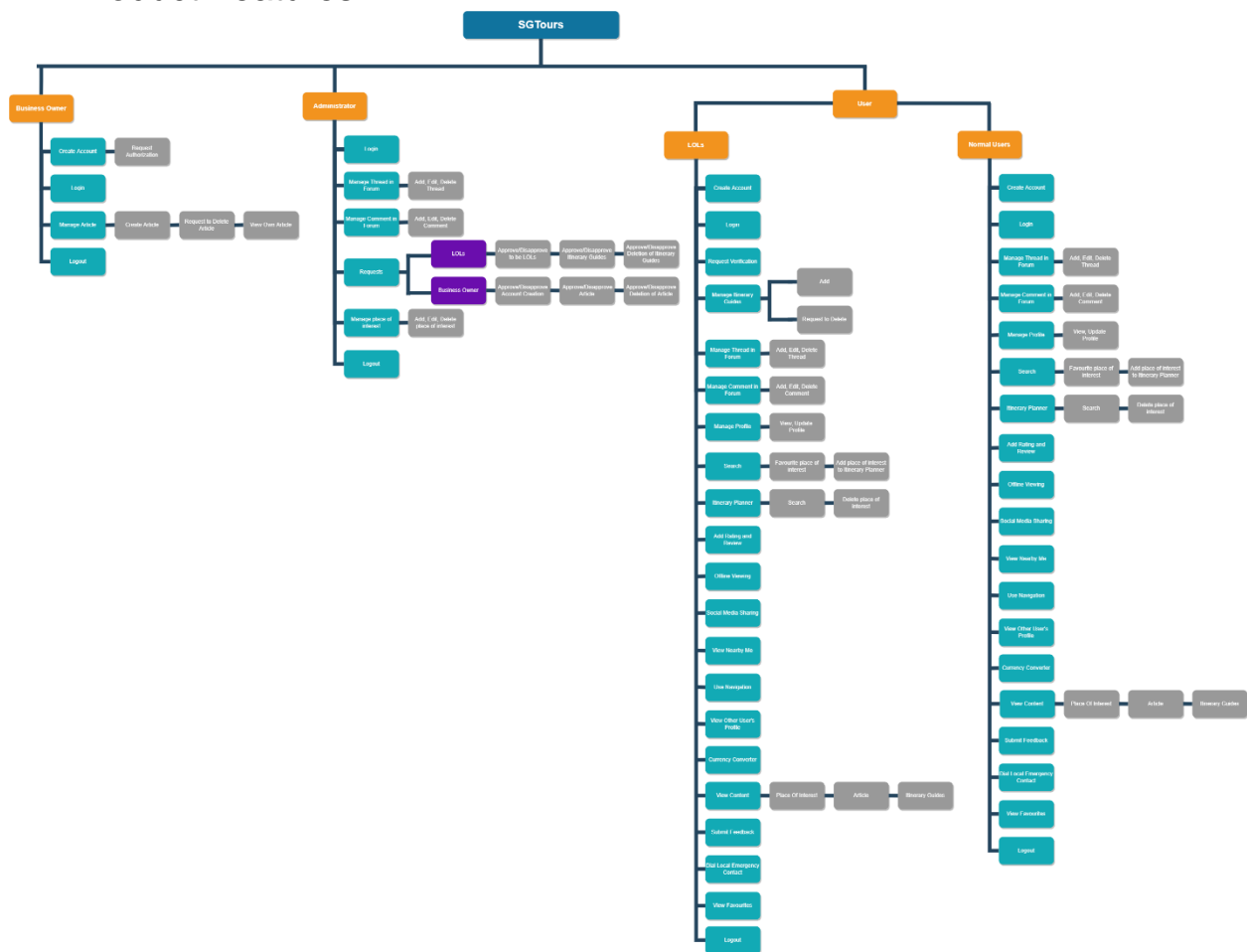
The users will have to register for an account to log into the application. The team believes that this will provide the best user experience as the user will get to utilize full functionalities and empowers them with a sense of ownership, encouraging them to use features such as the forum. The application will also allow users to view itinerary guides posted by Local Opinion Leaders (LOL), articles from business owners and places of interest.

LOL, like normal users, will have the functionalities to log in to the application and utilize it as well. However, the key difference is that as LOL large social influence with many followers, the application provides a platform for them to share their experience and post itinerary guides. To add on, LOLs will be identified distinctively in the application, and will be able to answer all questions in the forum posted by normal users.

Business Owners, by collaborating with the application, allows them to promote their businesses by posting articles. The articles raise awareness for the businesses while the users are browsing, as the articles may include destinations of their interest. The articles may also interest LOLs, encouraging them to visit the specified location and in turn sharing their experience by including in the itinerary guide. As such, this may reach out to more users.

Lastly, Administrators will be moderating the application and approval the requests submitted by LOLs and Business Owners and will also provide a list of places of interests (POI) for users to visit.

## 2.2 Product Features





Normal Users	
FEA-1	Create Account
FEA-2	Login
FEA-3	Manage Thread In Forum
FEA-3.1	Add, Edit, Delete Thread
FEA-4	Manage Comment In Thread
FEA-4.1	Add, Edit, Delete Comment
FEA-5	Manage Profile
FEA-5.1	View, Update Profile
FEA-6	Search
FEA-6.1	Favourite POI
FEA-6.2	Add POI To Itinerary Planner
FEA-7	Itinerary Planner
FEA-7.1	Search
FEA-7.2	Delete POI
FEA-8	Add Rating and Review
FEA-9	Offline Viewing
FEA-10	Social Media Sharing
FEA-11	View Nearby Me
FEA-12	Use Navigation
FEA-13	View Other User's Profile
FEA-14	Currency Converter
FEA-15	View Content
FEA-15.1	POI
FEA-15.2	Article
FEA-15.3	Itinerary Guides
FEA-16	Submit Feedback
FEA-17	Dial Local Emergency Contact
FEA-18	View Favourites
FEA-19	Logout

LOLs	
FEA-1	Create Account
FEA-2	Login
FEA-3	Request Verification
FEA-4	Manage Itinerary Guides
FEA-4.1	Add Itinerary Guides
FEA-4.2	Request To Delete Itinerary Guides
FEA-5	Manage Thread In Forum
FEA-5.1	Add, Edit, Delete Thread
FEA-6	Manage Comment In Thread
FEA-6.1	Add, Edit, Delete Comment
FEA-7	Manage Profile
FEA-7.1	View, Update Profile
FEA-8	Search
FEA-8.1	Favourite POI
FEA-8.2	Add POI To Itinerary Planner
FEA-9	Itinerary Planner
FEA-9.1	Search
FEA-9.2	Delete POI
FEA-10	Add Rating and Review
FEA-11	Offline Viewing
FEA-12	Social Media Sharing
FEA-13	View Nearby Me
FEA-14	Use Navigation
FEA-15	View Other User's Profile
FEA-16	Currency Converter
FEA-17	View Content
FEA-17.1	POI
FEA-17.2	Article
FEA-17.3	Itinerary Guides
FEA-18	Submit Feedback
FEA-19	Dial Local Emergency Contact
FEA-20	View Favourites
FEA-21	Logout

Administrator	
FEA-1	Login
FEA-2	Manage Thread In Forum
FEA-2.1	Add, Edit, Delete Thread
FEA-3	Manage Comment In Thread
FEA-3.1	Add, Edit, Delete Comment
FEA-4	Requests
FEA-4.1.1	Approve/Disapprove To Be LOLs
FEA-4.1.2	Approve/Disapprove Itinerary Guides From LOLs
FEA-4.1.3	Approve/Disapprove Deletion Of Itinerary Guides From LOLs
FEA-4.2.1	Approve/Disapprove Account Creation
FEA-4.2.2	Approve/Disapprove Article
FEA-4.2.3	Approve/Disapprove Deletion Of Article
FEA-5	Manage POI
FEA-5.1	Add, Edit, Delete POI
FEA-6	Logout

Business Owner	
FEA-1	Create Account
FEA-1.1	Request Authorization
FEA-2	Login
FEA-3	Manage Article
FEA-3.1	Create Article
FEA-3.2	Request To Delete Article
FEA-3.3	View Own Article
FEA-4	Logout

## 2.3 User Classes and Characteristics

Users	Characteristics
Normal Users	<ol style="list-style-type: none"> <li>1. Log in and log out of the system</li> <li>2. Manage profile</li> <li>3. Manage thread in forum</li> <li>4. Manage user's own comment in thread</li> <li>5. Search for POI</li> <li>6. Plan itinerary</li> <li>7. Review and rate POI</li> <li>8. Social media sharing</li> <li>9. View POI nearby user</li> <li>10. Navigate to POI with navigation map</li> <li>11. View POI offline</li> <li>12. View POI</li> <li>13. View itinerary guides by SGTours &amp; LOLs</li> <li>14. View articles by SGTours Business Owner</li> <li>15. Convert currency from user's local currency to Singapore Dollars and vice versa</li> <li>16. View Emergency Contact Information</li> <li>17. Feedback to SGTours on application experience</li> </ol>
LOLs	<ol style="list-style-type: none"> <li>1. Log in and log out of the system</li> <li>2. Manage user's own comment in thread</li> <li>3. Search for POI</li> <li>4. Plan itinerary</li> <li>5. Review and rate POI</li> <li>6. Social media sharing</li> <li>7. View POI nearby user</li> <li>8. Navigate to POI with navigation map</li> <li>9. View POI offline</li> <li>10. View POI</li> <li>11. View itinerary guides by SGTours &amp; LOLs</li> <li>12. View articles by SGTours Business Partner</li> <li>13. Convert Currency from user's local currency to Singapore Dollars and vice versa</li> <li>14. View Emergency Contact Information</li> <li>15. Feedback to SGTours on application experience</li> <li>16. Apply to be a LOL by submitting documents</li> <li>17. Dedicated Section in the forum to interact with users</li> <li>18. Create itinerary guides for SGTours users</li> </ol>
Administrator	<ol style="list-style-type: none"> <li>1. Log in and log out of the system</li> <li>2. Add, edit, and delete threads in forum</li> <li>3. Add, edit, and delete comments in threads</li> <li>4. Add, edit, and delete POI</li> </ol>

	5. Manage requests from LOL 6. Manage requests from Business Owner
Business Owner	1. Log in and log out of the system 2. Create article for SGTours users 3. View Own Articles 4. Request to Delete Articles

## 2.4 Operating Environment

OE-001	The smart phone device must be embedded with geo-tracking and permits the use of location access.
OE-002	The mobile application that will be installed on must be minimally iOS 10 OR Android 9.
OE-003	All personal data should be encrypted.
OE-004	The mobile application requires access to internet connection.

## 2.5 Design and Implementation Constraints

CON-001	Mobile devices require a minimal of iOS 10 or Android 9.
CON-002	Data will be stored in Firebase
CON-003	User Interface will be curated via Flutter and Github.
CON-004	All information of the User, LOL, Administrator and Business Owner will be stored in the “secured database”

## 2.6 User Documentation

The application begins with a login page, whereby the user signs up for an account. For LOL, they will have to send in a verification request to get verified. A business owner will sign up as a business account.

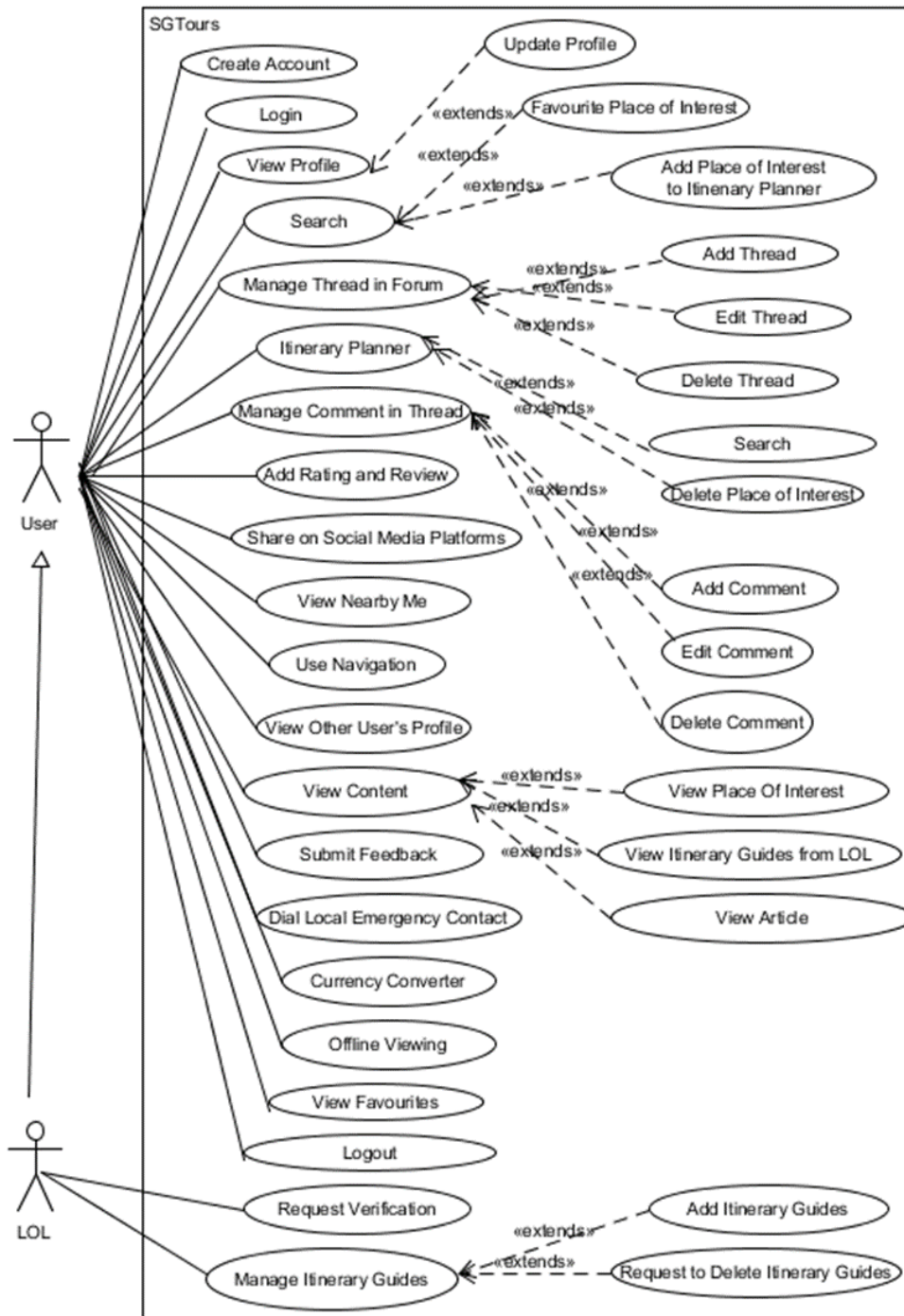
Upon successful login, the user can view the application to use functionalities such as itinerary planner, view itinerary guides posted by LOLs and read articles by Business Owners. The portal will also allow users to communicate with LOLs by posting questions in the forum by leaving comments. Users will also be able to customize their own itinerary planner.

## 2.7 Assumptions and Dependencies

ASD-001	Mobile devices require a minimal of iOS 10 or Android 9.
ASD -002	Users must create an account to use the application
ASD -003	Devices owned by users must possess enough storage for download and installation.
ASD -004	Users must have access to internet connection to download and use the application

### 3. System Features

#### 3.1 Use Case Diagram – User and LOL



## 3.1.1 Use Case Description – User

<b>Name: Create account</b>	<b>ID: #U01</b>
<b>Stakeholders and Goals:</b> User – User create an account successfully	
<b>Description:</b> A User wants to create an account	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on “Register” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User will enter their username, password, and email.</li> <li>2. Application will check if the account is registered before against database records.</li> <li>3. Application will register an account based on given username and password.</li> <li>4. Application will display “Account successfully registered”.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> <p>2a. Application will display “Username/email already registered” If Username/email has already been used.</p> <p>2b. Application will display “Invalid email” if the user enters an invalid email address to register.</p> <p>2c. Application will display an error message according to password validation</p>	

<b>Name: Login</b>	<b>ID: #U02</b>
<b>Stakeholders and Goals:</b> User - User want to login successfully	
<b>Description:</b> User want to access the application features after they login with their user credentials at Login page	
<b>Actors:</b> User	
<b>Trigger:</b> User tap on “Login” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will prompt User for their registered username and password.</li> <li>2. User inputs the details and taps on the login button to submit.</li> <li>3. Application will check if account records exist against database records.</li> <li>4. Application verifies the account holder and allows the account holder into the application.</li> <li>5. User will be greeted with the home page of the application.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. Incorrect Username/Password: Application will prompt account holders to enter the correct username and password	

<b>Name: Logout</b>	<b>ID: #U03</b>
<b>Stakeholders and Goals:</b> User - User can successfully logout of the Application	
<b>Description:</b> User want to end the current session and logout of the application	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on “Logout” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the logout button.</li> <li>2. Application will end the session and direct them to the login page.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	



<b>Name: View Profile</b>	<b>ID: #U04</b>
<b>Stakeholders and Goals:</b> User - User wants to view their profile	
<b>Description:</b> User wants to be able to view their current profile	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the 'Profile' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User will tap on the profile button.</li> <li>2. Application will display the profile page with all the available settings and features.</li> <li>3. User can access the profile and check his information by tapping on user details.</li> <li>4. Application will display all the details of the user like username, email address, phone number, age, gender etc.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> 4a. When User wants to edit their Profile, the Update Profile use case is triggered.	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Update Profile</b>	<b>ID: #U05</b>
<b>Stakeholders and Goals:</b> User - User wants to update their profile	
<b>Description:</b> User wants to update their profile details	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the 'Edit Profile' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application directs the user to the 'Edit Profile' page.</li> <li>2. User updates profile and taps on 'Confirm'.</li> <li>3. The updated information is saved and updated in the database.</li> <li>4. Application displays the updated information to the user.</li> <li>5. Application directs the user to the Profile page.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Search</b>	<b>ID: #U06</b>
<b>Stakeholders and Goals:</b> User - User are able to view the details of their search result	
<b>Description:</b> User are able to search for attractions in the search bar and the Application will display the list of attractions with the city or the country.	
<b>Actors:</b> User	
<b>Trigger:</b> User taps the search bar.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User will tap on the search button or search bar.</li> <li>2. Application will display an on-screen keyboard for the user to type in the attraction they like.</li> <li>3. User can type in the attraction name and taps on the search button.</li> <li>4. Application will search for the attraction and display the search results in a list format with the best recommendations on top.</li> <li>5. User can tap on a particular result or place and access the information about the place, navigation, user reviews etc.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Favourite Place of Interest</b>	<b>ID: #U07</b>
<b>Stakeholders and Goals:</b> User – User can add a Place of Interest to their Favourites	
<b>Description:</b> User can “favourite” a Place of Interest to “My Favourites” for future viewing or easy access.	
<b>Actors:</b> User	
<b>Trigger:</b> User wants to be able to add a Place of Interest to their favourites.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User sees a Place of Interest they would like to favourite.</li> <li>2. User taps on the heart shaped icon beside the Place of Interest.</li> <li>3. Application receives the request backend and adds the Place of Interest to User’s favourites.</li> <li>4. Place of Interest of User’s Choice is reflected under their “My Favourites” tab.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Place of Interest to Itinerary Planner</b>	<b>ID: #U08</b>
<b>Stakeholders and Goals:</b> User - User to add a place of interest by utilizing the "Itinerary Planner"	
<b>Description:</b> User wants to add a place of interest into their itinerary planner	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on "+" button beside "Place of Interest"	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User searches for a place of interest.</li> <li>2. Application displays the place of interest with two buttons, a heart shape and a + button.</li> <li>3. User taps on the '+' button and the place of interest is added to the itinerary planner.</li> <li>4. Application displays the itinerary planner updated with the place of interest.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>1a. User can add the place of interest into the itinerary planner from the 'My Favourites' tab as well.</li> <li>2a. If the heart shape button is tapped, 'Favourite Place of Interest' use case is triggered.</li> <li>3a. If user wants to delete the place of interest from the Itinerary Planner, 'Delete Place Of Interest' use case is triggered.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Thread</b>	<b>ID: #U09</b>
<b>Stakeholders and Goals:</b> User - User to be able to create a thread in the forum	
<b>Description:</b> User to create a thread in the forum to ask questions	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the "Create Thread" button in the forum	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the "Create Thread" button in the forum to post.</li> <li>2. Application will display the empty post section to write about a topic.</li> <li>3. User inputs the details in the post in the forum and publishes the thread.</li> <li>4. The thread is created and updated in the database.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Edit Thread</b>	<b>ID: #U10</b>
<b>Stakeholders and Goals:</b> User - User to be able to edit the thread they have previously posted in the forum.	
<b>Description:</b> User can edit their thread topic details, such as adding more information or edit spelling mistakes	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “Edit Thread” Button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the “Edit Thread” button in the forum that they have posted previously.</li> <li>2. Application displays the editable version, allowing the user to edit.</li> <li>3. The user edits accordingly and saves the thread with the updated information.</li> <li>4. The thread is updated in the database and the application displays the thread to the user with the updated information.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Delete Thread</b>	<b>ID: #U11</b>
<b>Stakeholders and Goals:</b> User - User to be able to delete the thread they have previously posted in the forum.	
<b>Description:</b> User can delete their thread	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “Delete thread” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the “Delete thread” button of the post they want to delete.</li> <li>2. Application will display a dialog box asking the user if they want to delete the thread.</li> <li>3. User confirms by tapping on the delete button.</li> <li>4. Application will delete the entire thread posted previously and the record is removed from the database.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>3a. User taps on the “Cancel” button if they want to cancel deletion of the thread.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Itinerary Planner - Delete Place of Interest</b>	<b>ID: #U12</b>
<b>Stakeholders and Goals:</b> User - User wants to delete a place of interest which they have added into their Itinerary planner previously.	
<b>Description:</b> User can delete the place of interest inside the Itinerary planner	
<b>Trigger:</b> User tap on the 'x' button beside the Place of Interest in the itinerary planner	
<b>Actors:</b> User	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on Itinerary planner.</li> <li>2. Application displays the Itinerary planner.</li> <li>3. User taps on the 'x' button beside the Place Of Interest to delete the place of interest from the planner.</li> <li>4. Application will delete the place of interest and display the updated itinerary planner.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Comment</b>	<b>ID: #U13</b>
<b>Stakeholders and Goals:</b> User - User to able to add comments into the forum	
<b>Description:</b> User can add comments into the forum of a thread for discussion and questions	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on 'Add Comment' button in a forum thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application displays a text area for user to input comments.</li> <li>2. User enter their comment into the text area.</li> <li>3. User taps on the 'Submit' to publish the comment.</li> <li>4. Thread is updated and the application will display with their added comment.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Edit Comment</b>	<b>ID: #U14</b>
<b>Stakeholders and Goals:</b> User - User are able to edit comments into the forum successfully	
<b>Description:</b> User can edit their comments posted in the forum	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on 'Edit' button on their comment in the forum thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User locates their comment in the thread and taps on the "Edit" comment button.</li> <li>2. Application displays an editable version of the user's comment, allowing the user to edit their comment.</li> <li>3. User taps on the 'Update' button to update their comment.</li> <li>4. Application will display their updated comment in the thread.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Delete Comment</b>	<b>ID: #U15</b>
<b>Stakeholders and Goals:</b> User - User to delete comments in the forum	
<b>Description:</b> User can delete their comments posted previously in the forum	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on 'Delete' button on their comment in the forum thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display a dialog box asking the user if they want to delete the comment.</li> <li>2. User taps on the delete button.</li> <li>3. Application will delete the comment and the database will delete the record.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>2a. User taps on the "Cancel" button if they don't want to delete the comment.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Rating and Review</b>	<b>ID: #U16</b>
<b>Stakeholders and Goals:</b> User - User to add rating and review of a place of interest	
<b>Description:</b> User can add the rating and review of a place of interest based on their experience.	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the 'Add Rating and Review' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"><li>1. User searches for the Place of Interest.</li><li>2. Applications displays Place of Interest.</li><li>3. User taps on the 'Add Rating and Review' button.</li><li>4. Application displays a textbox for user to input review and up to 5 stars for user to rate.</li><li>5. User taps on the 'Submit' button once they are done with their review and rating.</li><li>6. End.</li></ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Share on Social Media platforms</b>	<b>ID: #U17</b>
<b>Stakeholders and Goals:</b> User - User wants to have the ability to share content of their choice in the application to other social media platforms	
<b>Description:</b> User can share content such as itinerary plan/guides, places of interest and reviews to social media platform of their choice.	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on 'Share' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User selects the type of content they would like to share.</li> <li>2. User taps on the 'Share' button and chooses the social media platform of their choice.</li> <li>3. Application prompts user for authorization request to their selected social media platform to share.</li> <li>4. User accept authorization request and generate a post on their selected social media platform.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 4a. User will not be able to share on social media platforms due to permission not granted.	

<b>Name: View Nearby Me</b>	<b>ID: #U18</b>
<b>Stakeholders and Goals:</b> User - User to be able to view nearby places of interest	
<b>Description:</b> User to view nearby places of interest	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the "View Nearby Me" button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the "View Nearby Me" button.</li> <li>2. Application prompt for location services permission.</li> <li>3. User grants location services permission.</li> <li>4. Application will display places of interest near the user via geo-tracking.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. Application not showing any nearby places of interest due to location services permission not granted	



<b>Name: Use Navigation</b>	<b>ID: #U19</b>
<b>Stakeholders and Goals:</b> User - User to be able to use maps to navigate to their place of interest	
<b>Description:</b> User can use navigation to locate directions to the place of interest from their current location	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on 'Directions' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User search for the place of interest they have in mind.</li> <li>2. Application displays all relevant information about the place of interest, including the 'Directions' button.</li> <li>3. User taps on the 'Directions' button.</li> <li>4. Application makes use of maps to navigate the user with directions from their current location to the place of interest.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 4a. Application not showing directions due to location services permission not granted	

<b>Name: View Other User's Profile</b>	<b>ID: #U20</b>
<b>Stakeholders and Goals:</b> User - User can view other user's profile	
<b>Description:</b> User can search for their desired user and to view the user's profile and their ratings and reviews.	
<b>Actors:</b> User	
<b>Trigger:</b> User search for other user's profile	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User enters a user's username they wish to view in the search bar.</li> <li>2. Application checks against database records if the user exists.</li> <li>3. Application will retrieve the records and display the user's profile based on the username searched.</li> <li>4. User taps on the search result and views the profile, with information such as their reviews and rating visible.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. User does not exist thus the application is unable to display requested user's profile.	

<b>Name: View Place Of Interest</b>	<b>ID: #U21</b>
<b>Stakeholders and Goals:</b> User - User can view all places of interest	
<b>Description:</b> User can view all of the places of interest created by Administrator	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “See All” button under the Place Of Interest section in homepage	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application redirects user to place of interest page.</li> <li>2. Application will display all places of interest.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: View Article</b>	<b>ID: #U22</b>
<b>Stakeholders and Goals:</b> User - User can view all articles	
<b>Description:</b> User can view all of the articles created by Business Owner	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “See All” button under the Article section in homepage	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application redirects user to article page.</li> <li>2. Application will display all articles.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: View Itinerary Guides from LOL</b>	<b>ID: #U23</b>
<b>Stakeholders and Goals:</b> User - User can view all itinerary guides	
<b>Description:</b> User can view all of the itinerary guides created by LOLs	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “See All” button under the itinerary guide section in homepage	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application redirects user to itinerary guide page.</li> <li>2. Application will display all itinerary guide.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Submit Feedback</b>	<b>ID: #U24</b>
<b>Stakeholders and Goals:</b> User - User to be able to leave feedback for business owners and administrators	
<b>Description:</b> Allow user to leave feedback for improvement or any bugs that user encounters, so that administrators can improve on the application to bring a better experience to the user or any content they feel should be included by business owners.	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the “Submit A Feedback” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will show a form that contains different text boxes for different fills, such as name, email and feedback.</li> <li>2. User key in their name, email address and the feedback into the feedback form.</li> <li>3. User taps on the “Submit” button and feedback is recorded.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Dial Local Emergency Contact</b>	<b>ID: #U25</b>
<b>Stakeholders and Goals:</b> User - User to be able to contact Singapore Police, Fire Brigade or Ambulance	
<b>Description:</b> To allow user to quickly contact emergency agencies without the need of knowing Singapore's emergency contact	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the "Emergency Contact" page	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the required contact number E.g. "Call Police" or "Call Fire Brigade/Ambulance" button.</li> <li>2. User is being redirected to the device's phone dial pad with the number keyed in.</li> <li>3. User calls the number in the dial pad to contact the required agency.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Currency Converter</b>	<b>ID: #U26</b>
<b>Stakeholders and Goals:</b> User - User wants to convert SGD to other foreign currency and vice versa	
<b>Description:</b> User wants to be able to convert their local currency into SGD and vice versa to for price comparison	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the 'Currency Converter' button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User taps on the 'Currency Converter' button.</li> <li>2. Application will show 2 textboxes (Left: SGD, Right: Select country) to the user.</li> <li>3. User selects the country they want their currency to be converted to.</li> <li>4. User can enter an amount in the left textbox, the right textbox will show converted currency (and vice versa).</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> <ol style="list-style-type: none"> <li>3a. User did not enter decimal/integer value, converted currency will not be displayed</li> <li>3b. No value was entered as such no figure will be displayed.</li> </ol>	

<b>Name: Offline Viewing</b>	<b>ID: #U27</b>
<b>Stakeholders and Goals:</b> User - User are able to use the application offline.	
<b>Description:</b> User can view their place of interest without internet connectivity	
<b>Actors:</b> User	
<b>Trigger:</b> User to tap on "Download" button in the place of interest page	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will download place of interest details and information into device</li> <li>2. Application to notify user download is complete</li> <li>3. User to be able to access place of interest without internet connection</li> <li>4. End</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: View Favourite</b>	<b>ID: #U28</b>
<b>Stakeholders and Goals:</b> User - User wants to view their favourited places of interest	
<b>Description:</b> User wants to view their favourited places of interest	
<b>Actors:</b> User	
<b>Trigger:</b> User taps on the 'Favourited' button.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. User will tap on the favourited button.</li> <li>2. Application will redirect User to "Favourited" page</li> <li>3. Application will display their favourited places of interest</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

## 3.1.2 Use Case Description – LOL

<b>Name: Login</b>	<b>ID: #L01</b>
<b>Stakeholders and Goals:</b> User, Administrator, Business Owner, LOL - Valid Account Holders want to login successfully	
<b>Description:</b> Valid Account holders want to access the application features after they login with their user credentials at Login page	
<b>Actors:</b> User, Administrator, Business Owner, LOL	
<b>Trigger:</b> Account Holders tap on “Login” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will prompt account holder for their registered username and password.</li> <li>2. Account Holder inputs the details and taps on the login button to submit.</li> <li>3. Application will check if account records exist against database records.</li> <li>4. Application verifies the account holder and allows the account holder into the application.</li> <li>5. Account holder will be greeted with the home page of the application.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. Incorrect Username/Password: Application will prompt account holders to enter the correct username and password	

<b>Name: Logout</b>	<b>ID: # L02</b>
<b>Stakeholders and Goals:</b> User, Administrator, Business Owner, LOL - Account Holder can successfully logout of the Application	
<b>Description:</b> Account Holders want to end the current session and logout of the application	
<b>Actors:</b> User, Administrator, Business Owner, LOL	
<b>Trigger:</b> Account Holders taps on “Logout” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Account Holder taps on the logout button.</li> <li>2. Application will end the session and direct them to the login page.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

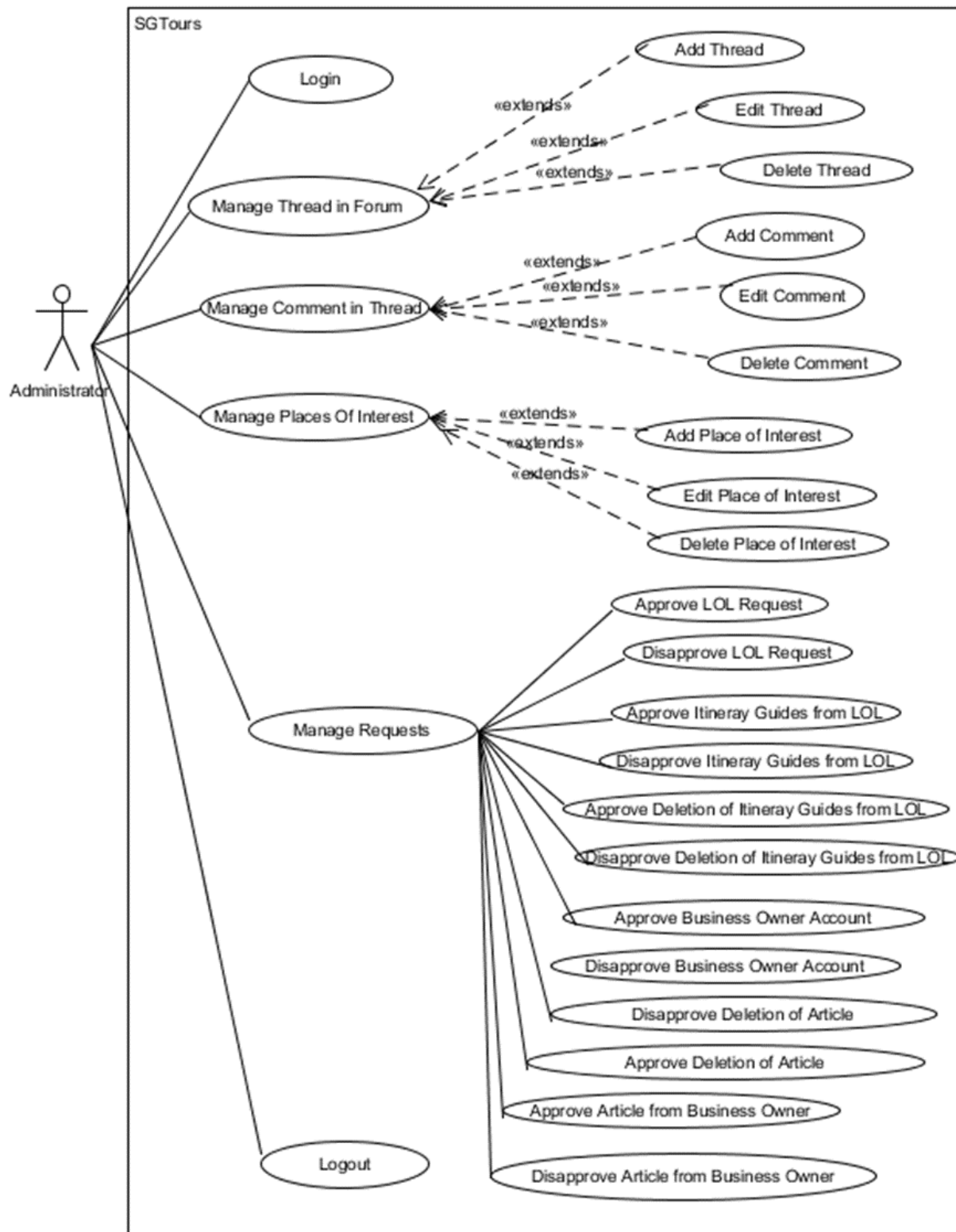
<b>Name: Request Verification</b>	<b>ID: #L03</b>
<b>Stakeholders and Goals:</b> LOL/Business Owner - User to request verification to be verified	
<b>Description:</b> LOLs and Business Owner request verification from Administrator	
<b>Actors:</b> LOL, Business Owner	
<b>Trigger:</b> LOL/Business Owner taps on the “Request Verification” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display a document verification page for LOL to submit documents.</li> <li>2. User will submit verification documents.</li> <li>3. Documents will be sent to the administrator for verification.</li> <li>4. Administrator will review the application and approve/disapprove.</li> <li>5. Application will send the verification result to the user and notify the user.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>4a. For approve, “Approve LOL Request” use case is triggered.</li> <li>4b. For disapprove, “Disapprove LOL Request” use case is triggered.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Itinerary Guides</b>	<b>ID: # L04</b>
<b>Stakeholders and Goals:</b> LOL - LOL can create itinerary guides and share their guide on the platform	
<b>Description:</b> LOL can share their itinerary with users, interested users can follow LOL's guide	
<b>Actors:</b> LOL	
<b>Trigger:</b> LOL taps on the “Create Itinerary” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application shows an empty text box and icon to import pictures.</li> <li>2. LOL writes itinerary guide and attaches pictures.</li> <li>3. LOL submit itinerary guide for SGTours administrator to approve.</li> <li>4. Application will notify LOL if their submission is successful.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>3a. ‘Approve Itinerary Guides from LOL’ use case is triggered if the Itinerary Guide is approved.</li> <li>3b. ‘Disapprove Itinerary Guides from LOL’ use case is triggered if the Itinerary Guide is rejected.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Request to Delete Itinerary Guides</b>	<b>ID: # L05</b>
<b>Stakeholders and Goals:</b> LOL - LOL request to delete their Itinerary guides from the application	
<b>Description:</b> LOL may have entered wrong information/typo into their guides. In order to make any changes, LOL have to delete and repost their itinerary guides	
<b>Actors:</b> LOL	
<b>Trigger:</b> LOL taps on 'Request Delete' in the guide	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display a text area for 'Reason of deletion'.</li> <li>2. LOL enters their reason to delete their guide.</li> <li>3. LOL taps 'Submit' to send a request to the administrator for deletion.</li> <li>4. Application will notify LOL if their request is successful.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> <p>3a. 'Approve Deletion of Itinerary Guides from LOL' use case is triggered if the request is successful.</p> <p>3b. 'Disapprove Deletion of Itinerary Guides from LOL' use case is triggered if the request is unsuccessful</p>	



## 3.2 Use Case Diagram – Administrator



## 3.2.1 Use Case Description – Administrator

<b>Name: Login</b>	<b>ID: #A01</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator want to login successfully	
<b>Description:</b> Administrator want to access the application features after they login with their user credentials at Login page	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Account Holders tap on “Login” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will prompt Administrator for their registered username and password.</li> <li>2. Administrator inputs the details and taps on the login button to submit.</li> <li>3. Application will check if account records exist against database records.</li> <li>4. Application verifies the Administrator and allows the account holder into the application.</li> <li>5. Administrator will be greeted with the home page of the application.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. Incorrect Username/Password: Application will prompt account holders to enter the correct username and password	

<b>Name: Logout</b>	<b>ID: #A02</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator can successfully logout of the Application	
<b>Description:</b> Administrator want to end the current session and logout of the application	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Account Holders taps on “Logout” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the logout button.</li> <li>2. Application will end the session and direct them to the login page.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Thread</b>	<b>ID: #A03</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator starts a thread in the forum	
<b>Description:</b> Administrator starts a thread in the forum for anything important information for the users.	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on 'Add Thread' in the forum	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will direct the administrator to a draft page.</li> <li>2. Administrator will enter the title and content into the draft page.</li> <li>3. Administrator taps on the 'Submit' and the database is updated.</li> <li>4. Application will display the new thread into the forum.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> <ol style="list-style-type: none"> <li>2a. Administrator did not enter title and/or content in the draft page</li> <li>2b. Administrator taps on 'Submit'</li> <li>2c. Application will prompt to not submit blank title/content</li> </ol>	

<b>Name: Edit Thread</b>	<b>ID: #A04</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to edit their threads in the forum	
<b>Description:</b> Administrator edits their thread to update their thread or may have entered wrong information/typo	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on 'Edit' in their thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display the draft page for the Administrator to edit.</li> <li>2. Administrator will edit content/title in the thread.</li> <li>3. Administrator selects on the 'Update' button and thread is updated in the database.</li> <li>4. Application will update and display the updated thread in the forum.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>2a. Administrator selects on 'Cancel' button when editing the thread.</li> <li>2b. Application will display a 'Do you want to cancel editing the thread' popup.</li> <li>2c. Administrator selects on the 'Yes' button.</li> <li>2d. End.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Delete Thread</b>	<b>ID: #A05</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to delete <u>ANY</u> thread	
<b>Description:</b> Administrator will have the power to delete any thread in the forum when needed	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on 'Delete' button on the thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display a 'Confirm Deletion' popup.</li> <li>2. Administrator confirms the deletion and the thread is removed from the database.</li> <li>3. Application will remove and update deleted thread in the forum.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> 2a. Administrator select on 'Cancel' button	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Comment</b>	<b>ID: #A06</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to add comment in the thread	
<b>Description:</b> To reply to users through the comment section	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on 'Add comment' button in the thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will show a text area for the administrator to enter their comment.</li> <li>2. Administrator enters their comment.</li> <li>3. Administrator taps on the 'Submit' button.</li> <li>4. Application will update and show comment in the thread</li> <li>5. End</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>3a. Administrator taps on 'Cancel' button</li> <li>3b. End</li> </ol>	
<b>Alternative/Exceptional Flows:</b> <ol style="list-style-type: none"> <li>3a. Administrator submits a blank comment</li> <li>3b. Application will prompt Administrator to enter their comment before submitting</li> <li>3c. End</li> </ol>	

<b>Name: Edit Comment</b>	<b>ID: #A07</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to edit their comment in the forum thread	
<b>Description:</b> To allow Administrator to edit their comment for any typo/misinformation	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on "Edit" button on the comment in the forum thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will show a text area draft for Administrator to edit their comment</li> <li>2. Administrator make changes to their comment</li> <li>3. Administrator taps on the 'Update' button and database records will be updated.</li> <li>4. Application will update and show updated comment in the thread</li> <li>5. End</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>3a. Administrator taps on 'Cancel' button</li> <li>3b. End</li> </ol>	
<b>Alternative/Exceptional Flows:</b> <ol style="list-style-type: none"> <li>3a. Administrator submits a blank comment</li> <li>3b. Application will prompt Administrator to enter their comment before submitting</li> <li>3c. End</li> </ol>	

<b>Name: Delete Comment</b>	<b>ID: #A08</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to delete <u>ANY</u> comment	
<b>Description:</b> Administrator have the power to delete any comment in the forum thread when needed	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator taps on 'Delete' on the comment in the forum thread	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will display a 'Confirm Deletion' popup.</li> <li>2. Administrator confirms the deletion.</li> <li>3. Application will remove and update deleted comment in the forum thread.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>2a. Administrator select on 'Cancel' button.</li> <li>2b. End.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Add Place of Interest</b>	<b>ID: #A09</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to add place of interest into the application	
<b>Description:</b> Administrator to add a new place of interest	
<b>Trigger:</b> Administrator to tap on "Add Place of Interest" button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator can tap on the "Add Place of Interest" button at the Place of Interest page.</li> <li>2. Application will display a text box for text input and an icon to import pictures.</li> <li>3. Administrator can write and import pictures.</li> <li>4. Administrator taps on the "Submit" button.</li> <li>5. Application will update the database and display a new place of interest in the "Places of Interest" page.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Edit Place of Interest</b>	<b>ID: # A10</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to change the display order of place of interest in “View Recommended” page	
<b>Description:</b> Administrator to manage the display order of places-of-interest in “View Recommended” page	
<b>Trigger:</b> Administrator to tap on “Edit Place of Interest” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the “Edit Place of Interest” button at the “View Recommended” page.</li> <li>2. Application will allow dragging of the place of interest up and down.</li> <li>3. Administrator can move the recommendations in desired order.</li> <li>4. Application will prompt whether to save changes made in “View Place of Interest”.</li> <li>5. Administrator taps on ‘Save’ button.</li> <li>6. Application will show “View Place of Interest” based on the new order.</li> <li>7. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Delete Place of Interest</b>	<b>ID: # A11</b>
<b>Stakeholders and Goals:</b> Administrator - To delete a place of interest in “View Place of Interest”	
<b>Description:</b> Administrator to manage the “View Place of Interest” by deleting existing place of interest	
<b>Trigger:</b> Administrator to tap on “Delete Place of Interest” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator can tap on the “Edit Place of Interest” button at the “View Recommended” page.</li> <li>2. Application will allow selection of Place of Interest.</li> <li>3. Administrator can delete the Place of Interest by tapping on the “Delete recommendation” button at the “View Place of Interest” page.</li> <li>4. Application will prompt for double confirmation to delete Place of Interest.</li> <li>5. Administrator taps on the “Confirm” button and Place of Interests will be removed from the database.</li> <li>6. Application will remove the selected Place of Interest from “View Recommended”.</li> <li>7. End</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Approve LOL Request</b>	<b>ID: # A12</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to approve Users to be recognized as LOL via Verification Request	
<b>Description:</b> Administrator have to check and approve the verification request for the user to be recognized as LOL	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Verification Request from User	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator to check all necessary information needed for verification requests sent by the User.</li> <li>2. Administrator taps on the 'Approve' button in the request.</li> <li>3. Application will send a notification to the user that their request has been approved.</li> <li>4. Application will mark approved user with a Verification Badge to prove that they are LOLs.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> 2a. For disapprove, 'Disapprove LOL Request' use case will be triggered.	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Disapprove LOL Request</b>	<b>ID: # A13</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to disapprove Users to be recognized as LOL via Verification Request	
<b>Description:</b> User fails to provide required information for Administrator to to approve user to be recognized as LOL	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Verification Request from User	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator to check all necessary information needed for verification requests sent by the User.</li> <li>2. Administrator taps on the 'Disapprove' button in the request.</li> <li>3. Administrator to enter reason in the text area shown by the application.</li> <li>4. Application will send a notification to the user that their request has been disapproved with reason.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> 2a. For approve, 'Approve LOL Request' use case will be triggered.	
<b>Alternative/Exceptional Flows:</b> None	



<b>Name: Approve Itinerary Guides from LOL</b>	<b>ID: # A14</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to approve Itinerary guides from LOL before published	
<b>Description:</b> Administrator approves the Itinerary guides created by LOLs to be displayed in the Application	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Itinerary guide Request from LOLs	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator will read through and check the itinerary Guides.</li> <li>2. Administrator will tap on the 'Approve' in the itinerary guide request.</li> <li>3. Application will display the itinerary guide approved by the Administrator.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> 2a. For Disapprove, 'Disapprove Itinerary Guides from LOL' use case is triggered.	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Disapprove Itinerary Guides from LOL</b>	<b>ID: #0A15</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to disapprove Itinerary guides from LOL	
<b>Description:</b> Administrator disapproves the Itinerary guides created by LOLs to be displayed in the Application	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Itinerary guide Request from LOLs	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the 'Disapprove' in the itinerary guide request.</li> <li>2. Application will ask for reason of Disapproval.</li> <li>3. Administrator will enter the reason and submit.</li> <li>4. Application will not display the itinerary guide.</li> <li>5. Application will notify LOL for rejected Article Request with reason.</li> </ol>	
<b>Sub-Flows:</b> 1a. For Approve, 'Approve Itinerary Guides from LOL' use case is triggered.	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Approve Deletion of Itinerary Guides from LOL</b>	<b>ID: #A16</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator will approve itinerary guides to be deleted by LOLs' Request	
<b>Description:</b> LOLs may enter wrong information/typo into their guides. In order to make any changes, LOLs have to delete and repost their itinerary guides	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Itinerary Guide Deletion Request from LOLs	
<b>Normal Flow:</b> <ol style="list-style-type: none"><li>1. Administrator will go through the reasons from LOLs for deletion.</li><li>2. Administrator taps on the 'Approve Deletion' button in the request.</li><li>3. Application will notify LOL approved request.</li><li>4. Application will remove and update requested itinerary guides.</li><li>5. End.</li></ol>	
<b>Sub-Flows:</b> 2a. For Disapprove, 'Disapprove Deletion of Itinerary Guides from LOL' use case is triggered.	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Disapprove Deletion of Itinerary Guides from LOL</b>	<b>ID: #A17</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator disapproves itinerary guides to be deleted by LOLs' Request	
<b>Description:</b> Administrator disapproves deletion of the Itinerary guides created by LOLs	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Itinerary Guide Deletion Request from LOLs	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator will go through the reasons from LOLs for deletion.</li> <li>2. Administrator taps on the 'Disapprove' in the itinerary guide request.</li> <li>3. Application will ask for reason of Disapproval.</li> <li>4. Administrator will enter the reason and submit.</li> <li>5. Application will notify LOL rejected request with reason.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <p>2a. For Approve, 'Approve Deletion of Itinerary Guides from LOL' use case is triggered.</p>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Approve Business Owner Account</b>	<b>ID: #A18</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to approve business owner account creation	
<b>Description:</b> Administrator will receive request for business owner account creation and will approve the business owner account	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator tap on “Approve” button in the “Requests” page	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the “Requests” page.</li> <li>2. Administrator taps on the business owner account request in the “Requests” page.</li> <li>3. Administrator vet through the business owner account request.</li> <li>4. Administrator taps on “Approve” button.</li> <li>5. Application will send an email to notify Business Owner their approved account creation.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <p>4a. For Disapprove, ‘Disapprove Business Owner Account’ use case is triggered.</p>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Disapprove Business Owner Account</b>	<b>ID: #A19</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to disapprove business owner account creation	
<b>Description:</b> Administrator will receive request for business owner account creation and will disapprove the business owner account	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator tap on “Disapprove” button in the “Requests” page	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the “Requests” page.</li> <li>2. Administrator taps on a business owner account request in the “Requests” page.</li> <li>3. Administrator vet through the business owner account request.</li> <li>4. Administrator taps on the “Disapprove” button.</li> <li>5. Application will send an email to notify Business Owner their disapproved account creation.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>4a. For Approve, ‘Approve Business Owner Account’ use case is triggered.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Approve Deletion of Business Owner Article</b>	<b>ID: #A20</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator will approve Article to be deleted by Business Owners' request	
<b>Description:</b> Business Owners may enter wrong information/typo into their article. In order to make any changes, Business Owner have to delete and repost their article.	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Article Deletion Request from Business Owner	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator will go through the reasons from Business Owner for deletion.</li> <li>2. Administrator taps on the 'Approve Deletion' button in the request.</li> <li>3. Application will notify Business Owner approved request.</li> <li>4. Application will remove and update requested Article.</li> </ol>	
<b>Sub-Flows:</b> 2a. For Disapprove, 'Disapprove Deletion of Business Owner Article' use case is triggered.	
<b>Alternative/Exceptional Flows:</b> None	

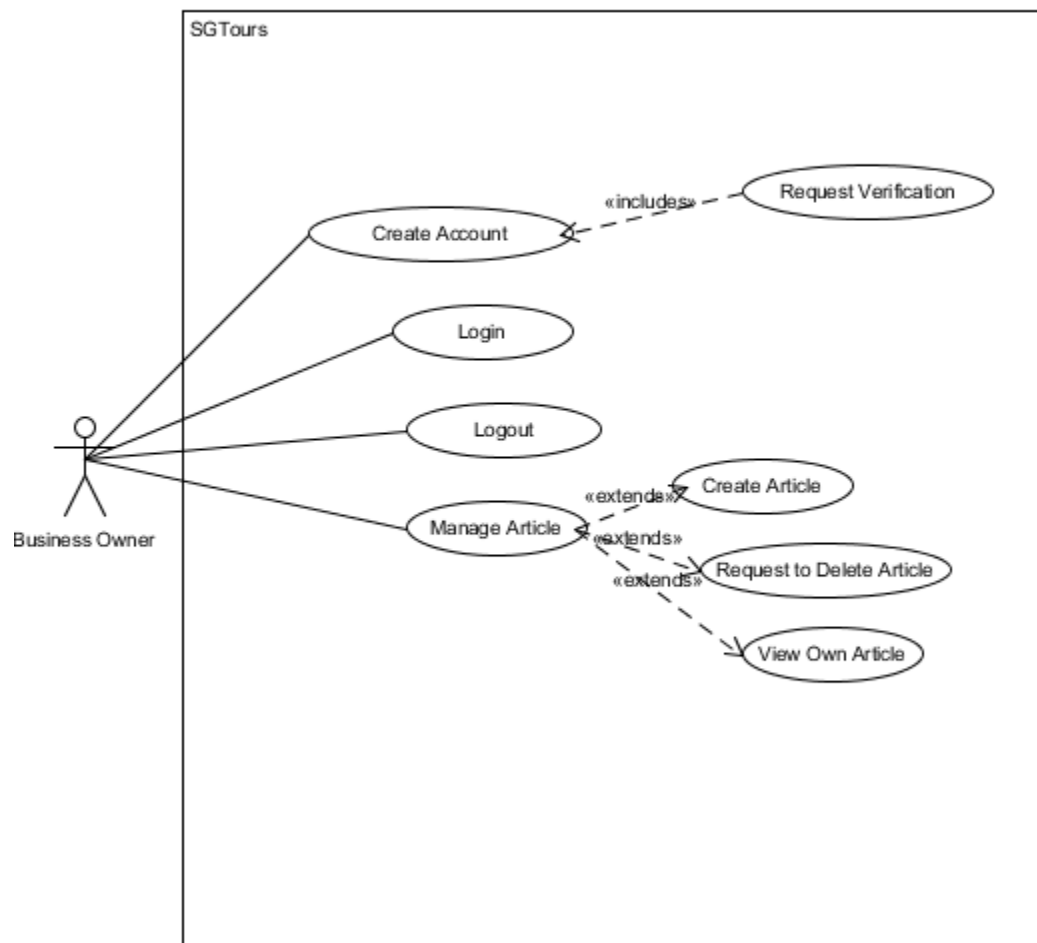
<b>Name: Disapprove Deletion of Business Owner Article</b>	<b>ID: #A21</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator disapproves Article to be deleted by Business Owners' request	
<b>Description:</b> Administrator disapproves deletion of article created by Business Owners	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Article Deletion Request from Business Owners	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator will go through the reasons from Business Owners for deletion.</li> <li>2. Administrator taps on 'Disapprove' in the article request.</li> <li>3. Application will prompt for reason of disapproval.</li> <li>4. Administrator will enter the reason and submit.</li> <li>5. Application will notify Business Owner rejected request with reason.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>2a. For Approve, 'Approve Deletion of Business Owner Article' use case is triggered.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Approve Article from Business Owner</b>	<b>ID: #A22</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to approve article request sent in by business owner	
<b>Description:</b> Administrator will receive request for article to be added to SGTours and administrator has to approve the article before it can be added to SGTours	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Article Request from Business Owners under 'Requests' Tab	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the "Requests" page.</li> <li>2. Administrator taps on an article in the "Requests" page.</li> <li>3. Administrator vets through the article.</li> <li>4. Administrator will tap on the 'Approve' in the Request.</li> <li>5. Application will display the article approved by the Administrator.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> <p>4a. 'Disapprove Article from Business Owner' use case is triggered if the article is rejected.</p>	
<b>Alternative/Exceptional Flows:</b> None	



<b>Name: Disapprove Article from Business Owner</b>	<b>ID: #A23</b>
<b>Stakeholders and Goals:</b> Administrator - Administrator to disapprove article request sent in by business owner	
<b>Description:</b> Administrator will receive request for article to be added to SGTours and administrator has to disapprove the article before it can be added to SGTours	
<b>Actors:</b> Administrator	
<b>Trigger:</b> Administrator receives Article Deletion Request from Business Owners under 'Requests' Tab	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Administrator taps on the "Requests" page.</li> <li>2. Administrator taps on an article in the "Requests" page.</li> <li>3. Administrator vet through the article.</li> <li>4. Administrator taps on the "Disapprove" button.</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> <p>4a. 'Approve Article from Business Owner' use case is triggered if the article is approved.</p>	
<b>Alternative/Exceptional Flows:</b> None	

## 3.3 Use Case Diagram – Business Owner



## 3.3.1 Use Case Description – Business Owner

<b>Name: Login</b>	<b>ID: #B01</b>
<b>Stakeholders and Goals:</b> Business Owner - Business Owner want to login successfully	
<b>Description:</b> Business Owner want to access the application features after they login with their user credentials at Login page	
<b>Actors:</b> Business Owner	
<b>Trigger:</b> Business Owner tap on “Login” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Application will prompt Business Owner for their registered username and password.</li> <li>2. Business Owner inputs the details and taps on the login button to submit.</li> <li>3. Application will check if account records exist against database records.</li> <li>4. Application verifies the Business Owner and allows the account holder into the application.</li> <li>5. Business Owner will be greeted with the home page of the application.</li> <li>6. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> 3a. Incorrect Username/Password: Application will prompt Business Owner to enter the correct username and password	

<b>Name: Logout</b>	<b>ID: #B02</b>
<b>Stakeholders and Goals:</b> Business Owner - Business Owner can successfully logout of the Application	
<b>Description:</b> Business Owner want to end the current session and logout of the application	
<b>Actors:</b> Business Owner	
<b>Trigger:</b> Business Owner taps on “Logout” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Business Owner taps on the logout button.</li> <li>2. Application will end the session and direct them to the login page.</li> <li>3. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: Create account</b>	<b>ID: #B03</b>
<b>Stakeholders and Goals:</b> Business Owner - Business Owner wants to create an account successfully	
<b>Description:</b> A Business Owner wants to create an account	
<b>Actors:</b> Business Owner	
<b>Trigger:</b> Business Owner taps on “Register” button	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. Business Owner will enter their username, password, and email.</li> <li>2. Application will check if the account is registered before against database records.</li> <li>3. Application will prompt business owner to submit proof and prompts user if information submitted is correct</li> <li>4. Application will submit a request to administrator for verification</li> <li>5. End.</li> </ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> <p>4a. “Request Verification” use case will be triggered upon successful submission of relevant documents and information.</p>	

<b>Name: Request Verification</b>	<b>ID: #B04</b>
<b>Stakeholders and Goals:</b> Business Owner - Business Owner to request verification to be verified	
<b>Description:</b> Business Owner request verification from Administrator	
<b>Actors:</b> Business Owner	
<b>Trigger:</b> Upon confirmation of business account details.	
<b>Normal Flow:</b> <ol style="list-style-type: none"> <li>1. System will auto trigger verification request back-end to administrator.</li> <li>2. Administrator receives the request and reviews.</li> <li>3. Application will send an email to notify the Business Owner of the outcome.</li> <li>4. End.</li> </ol>	
<b>Sub-Flows:</b> <ol style="list-style-type: none"> <li>3a. For approve, "Approve Business Owner Account" use case is triggered.</li> <li>3b. For disapprove, "Disapprove Business Owner Account" use case is triggered.</li> </ol>	
<b>Alternative/Exceptional Flows:</b> None	

<b>Name: View Own Article</b>	<b>ID: #B05</b>
<b>Stakeholders and Goals:</b> Business Owner – Business Owner can view their own articles they posted in the application	
<b>Description:</b> Business Owners should be able to view their own articles posted in the application to check for any typo/misinformation	
<b>Actors:</b> Business Owner	
<b>Trigger:</b> Business Owner taps on the article posted in the Articles section	
<b>Normal Flow:</b> <ol style="list-style-type: none"><li>1. Application will display the article posted previously by the Business Owner</li><li>2. End</li></ol>	
<b>Sub-Flows:</b> None	
<b>Alternative/Exceptional Flows:</b> None	

### 3.4 Normal User Features

#### 3.4.1 Create Account

Users are required to register an account with SGTours in order to use the application. An account will encourage ownership and inclusiveness in the community while using the forum to the user as well as responsibility and accountability to activities occurring within the application. SGTours will be able to uniquely identify each user and moderate them properly, especially in the forum.

#### 3.4.2 Login

To use SGTours, users are required to login with an account. After logging in, the pages accessible to each actor (LOLs, Administrator, Business Owner, and User) will differ. This is to uniquely identify and ensure that each actor is given their proper rights while using the application.

#### 3.4.3 Manage Thread In Forum

Users can add, edit, and delete threads posted by themselves. Threads will allow users to share their interest, experience and other relevant information that could benefit the community of SGTours.

#### 3.4.4 Manage Comment In Thread

Users can add, edit, and delete comments in threads posted by themselves. Comments will allow users to interact with one another, where users may answer queries posted by other users in the threads, which will benefit the community of SGTours.

#### 3.4.5 Manage Profile

Users can view and edit their profile. This will allow user to view their profile and ensure that the information they shared, which can be viewed by other users, are up to date. As such, users are also allowed to change their account information, such as name, email address and etc, tied to SGTours.

#### 3.4.6 Search

Users can search for POI, favourite the POI and add POI to itinerary planner. The application allows the user to find POI based on keywords entered in the search bar, which will benefit them hugely as it eliminates the need of having to go through each

POI individually again. POI will also have options enabled for users to favourite or add to itinerary planner directly. This increases the user experience with SGTours and provides efficiency to the user.

#### 3.4.7 Itinerary Planner

A feature dedicated to users where a planner is simulated for them to add POI to visit without the need to record such information elsewhere. By doing so, user can save time and hassle by following their itinerary planner after they have decided where to visit.

#### 3.4.8 Add Rating and Review

Users will be able to review and give rating to the POI based on their experience, which will benefit the community of SGTours as other users will be able to utilize the ratings and reviews given about the POI for their consideration while planning.

#### 3.4.9 Offline Viewing

The application should remain accessible to users without active internet access. Users can download the information locally on their device and view it in case they do not have internet access.

#### 3.4.10 Social Media Sharing

This feature allows users to share interesting POI, articles, or itinerary guides with their friends on other social media platforms without the need to manually open other social media platforms to specifically share it. By doing such, this also spreads awareness of the application, which in turns attracts more LOLs and Business Owners to join onboard as the popularity of the application grows.

#### 3.4.11 View Nearby Me

As the user most likely is a tourist, the user might not be familiar with the POI or would like to view POI nearby their current location. As such, the user can make use of this feature to look at the POI available within the area.

#### 3.4.12 Use Navigation

This feature will show the route from user's current location to the POI. User will be able to navigate to their POI by using this feature.



#### 3.4.13 View Other User's Profile

Users can view another user's profile, mainly to look at rating and reviews done by the user and the credibility of the user. By doing so, they might be able to find other POI that they will be interested in. This is also crucial because users might want to verify if an LOL is verified in cases of identity theft.

#### 3.4.14 Currency Converter

As the user is most likely be a tourist, the currency converter features facilitate them and reduces the need for calculating the conversion between their local currency to Singapore Dollars and vice versa.

#### 3.4.15 View Content

User can view 3 types of content in SGTours, mainly POI, articles, and itinerary guides. As the main target audience will be interested at places in Singapore to visit, these contents provide the relevant information to fuel their search.

#### 3.4.16 Submit Feedback

In the occurrence where the users face any technical difficulties or issues, the feature allows them to feedback to the application developers. Application developers can consider feedbacks from the user and to improve the application to provide better services.

#### 3.4.17 Dial Local Emergency Contact

As user will most likely be a tourist that is not familiar with local emergency contacts, this feature allows the convenience of easily locating of Singapore's emergency contact. This feature will also trigger the number dial on to the dial pad with one click. Such feature eliminates the need for google search in times of emergency.

#### 3.4.18 View Favourites

This features to user to have easy access to the POI that they have favoured earlier, eliminating the need to search for the POI all over again.

### 3.4.19 Logout

Users can logout from the application to prevent any unwanted misuse of identity.

## 3.5 LOLs' Features

### 3.5.1 Request Verification

For LOLs to be verified, they are required to have a normal user account created first. They will then request to be verified by submitting necessary documents to prove that they have substantial influence in other social media platform. LOLs in SGTours are generally more trusted and reliable pertaining to rating and review, in which users will look up to. LOLs will also be answering queries or doubts posted by users regarding the guides posted.

### 3.5.2 Manage Itinerary Guides

LOLs typically will have differing experiences when visiting the different POI and attractions in Singapore. As such, they can create itinerary guides based off their personal encounters which they may deem helpful, which will be posted in SGTours. Users will be able to reference the itinerary guides posted by LOL.

## 3.6 Administrator's Features

### 3.6.1 Login

Administrators' role is crucial in SGTours, as they help to moderate the activities on the platform. After the administrator login to SGTours, they will be reviewing requests by Business Owners, LOLs and Users. They can also facilitate by including POI that might not be as well known.

### 3.6.2 Manage Thread in Forum

In the event where a user posts threads or any content not related to SGTours' topic of interest, or if the content is deemed as offensive, the administrator can remove the thread posted by the user to ensure a safe environment for other users. Mainly for administrator to moderate the threads section within the thread.

### 3.6.3 Manage Comment in Thread

In the event of a user comment within the thread is deemed offensive to other users, administrator can remove the comment posted by the user to ensure a safe

environment for other users. Mainly for administrator to moderate the comment section within the thread.

#### 3.6.4 Requests

Administrator will receive requests from LOLs and Business Owner. To prevent cases of identity theft, misuse of accounts and ensure legitimacy, it is important that we verify and check the authenticity of said accounts. Itinerary guides or articles submitted by LOLs or Business Owner must be vetted and approved by administrator, as contents posted by such accounts will be regarded as trustworthy and accurate.

#### 3.6.5 Manage POI

Administrator will be creating POI and listing the POI into the POI section of SGTours. Such contents will be viewed by users of the application. In the event when there is a new POI that administrator wants to list on SGTours, they will be able to add in. Similarly, in the event when the POI is closed, administrator can remove from the POI section.

#### 3.6.6 Logout

Administrator can logout from the application to prevent any unwanted misuse of identity.

### 3.7 Business Owner's Features

#### 3.7.1 Create Account

To access the features of the application, Business Owner must register an account for SGTours to utilize the features inside the application to promote their businesses.

#### 3.7.2 Request Authorization

To verify that the user is indeed a business entity account, the business owner will have to submit supporting documentation for administrators to approve their business status.

#### 3.7.3 Manage Article

Business Owners can create article to advertise their business and publish them upon the approval from an Administrator. Business owners can also request to delete their article as well. For example, business owner publishes an article on a campaign, and

once that has ended, they can request for it to be deleted. Business Owners can also view the articles that they have posted.

#### 3.7.4 Logout

Business Owner can logout from the application to prevent any unwanted misuse of identity.

## 4. Non-Functional Requirements

### 4.1 Security Requirements

Security refers to how safeguarded the application is against intrusive and deliberate attacks from sources that may be internal and external. As such, the application should be secure to both the user and the business. To improve the security of the application, the team should follow a secure software development methodology when developing the application. Additionally, the application should also have some safeguarding features to prevent attacks. An example of these can be:

1. Encrypting sensitive personal information before processing it. To prevent personal data from being leaked, the application should encrypt the data using encryption algorithms such as Advanced Encryption Standard (AES).
2. Limit number of tries of incorrect login. To prevent a user account from being brute forced, the application should limit the number login attempts of up to 5 times. Once the limit is hit, the application should lock the account and prevent the user from accessing it until it resets its password. User will have to contact the administrator via email to have their accounts unlocked.
3. All user inputs should be validated. To prevent malicious inputs from attackers, the application should conduct input validation such as special characters, expected data range, expected data length, and implementing a whitelist.

The team should refer to the Open Web Application Security Project (OWASP) Secure Coding Practices for a checklist of secure coding practices.

To prevent misuse of power, only the Administrator should be able to approve/disapprove any changes.

### 4.2 Reliability / Availability Requirements

Reliability refers to the how the application performs without failure for specific functions. The application should allow users to access their account 98% of the time without any issues. Application should be online 24/7 hours and 365 days to allow users to access their account from anywhere and anytime in the world. Reliability also comprises of many aspects:

Software updates: Software updates are one of the best ways to constantly update, modify and test software applications and provide bug free experience.

1. Helps boost performance
2. Initiate changes based on changing environment to stay up to date,
3. New features deployment
4. Fix bugs in the application.

Types of updates:

1. Security patches: fixing bugs and other vulnerabilities that expose the user credentials.
2. Latest Features: new features will be deployed, and any improvements to the existing features are provided in the form of a software update.

### 4.3 Performance Requirements

Performance refers to how responsive the application is pertaining to user interaction with it. As such, the application should be responsive when the user interacts with it especially after the user logs in. It should not take more than 5 seconds of loading time between each interaction on the application, including loading of information.

### 4.4 Maintainability Requirements

Maintainability refers to how easy it is to find and fix the faults in the application. The application should be easily maintainable. It should be easy to add, configure, extend, and modify features of the application. Additionally, the team should also follow good coding practices such as having meaningful names for classes, functions and adding comments to improve readability and understanding of the code.

### 4.5 Scalability Requirements

Scalability is the ability of an application to keep up with the increased operational requirements to the business. Examples of these can be a larger database, supporting new devices. This provides a long-term benefit to the business in improving the application.

Physical components: Hardware and software equipment needed for the application should provide consistently sustainable performance in the business operations for the estimation period into the future.

The Hardware equipment like servers, routers and software equipment like cloud services and other outsourcing software's subscriptions are required to sustain and to support the application growth for the next 4 to 5 years.

Future planning: Introduction of New product features to grow the application should estimate the expected volumes of systems to handle and should estimate the growth annually and ensure the equipment can cope up without any damage of loss, harm or failure.

### 4.6 Usability Requirements

Usability refers to how user-friendly the application is. The application user interface clean and elegant and should also be intuitive when using it. The icons and descriptions should be clear and precise on the function it does, and this is especially crucial as our main target are most likely tourist. This reduces the need for users to consult a manual

when using the application. The application should therefore be easy to understand and easy to use. The application must also be accessible minimally to both iOS 10 and Android 9.

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