

# Travel Companion App

Florida International University - Modesto A. Maidique Campus



*Discover Beyond, Explore Within*

Team 4

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**Abstract:**

This document serves as a comprehensive guide to our pioneering travel app. Within these pages, you will find a detailed exploration of our app's features, development process, and the critical decisions made throughout its creation. Discover how our app redefines travel with personalized recommendations, itinerary planning, and user security enhancements. This document offers a deep dive into the inner workings of our innovative travel solution, shedding light on its functionality, design, and the principles that drive it. Join us in this journey through the foundations and possibilities of modern travel.

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# 1. Introduction

## a. **Description of the customer/setting for this project**

This project is designed to improve individuals' travel experiences, offering customized journeys, developing a vibrant travel community, and guaranteeing budget-friendly stays and memorable experiences.

### i. **Main characteristics of the customer or sponsoring organization**

1. Adventurous travelers pursuing sustainable and enriching experiences.
2. Budget-conscious explorers looking for customized and safe travel options.
3. Well-versed or novice travelers looking to make the most of their adventures with AI-driven guidance, local ratings, and tailored suggestions.

### ii. **Description of the main characteristics of the application/tool**

The main characteristics of the travel companion app include a personalized assistance service for any customer seeking recommendations for accommodations with a focus on the consumer's needs, price range, budget, and time they plan to stay at their travel destination. This would be done via use of AI technology in order to deliver the most efficient and budget-efficient guidance to any user of the app. The app will also bring up the ratings of nearby attractions, restaurants and much more.

## 1. **What is the background of the project idea? What is the problem?**

The project idea is driven by the desire to improve travel experiences. The main problem we aim to solve is the lack of personalized, immersive, and budget-friendly travel options. To address this, we plan to use AI technology to offer real-time local insights and tailored guidance, making travel hassle-free for all of our users. Another problem is the fact that there are too many options to choose from. We want to change that and be the go-to app when it comes to everything related to travel. There are also many apps that are used in conjunction, examples include translators, maps, messenger apps, etc. We would also want to limit the amount of apps people need by including all that within our app.

## 2. **How is your application/tool different from what already exists?**

Our application/tool redefines the travel experience by focusing on personalization, sustainability, and real-time guidance. Unlike existing platforms, we offer personalized recommendations that align with each user's interests while promoting responsible travel. With AI-driven technology, we provide up-to-the-minute local insights and budget-friendly options.

## 3. **What are the implications of the tool you develop?**

The implications of our tool encompass enhanced travel experiences, real-time information, budget-conscious travel, community building, and potential industry-wide innovation. Through integration with

external services like Google Maps and airline booking systems, our app elevates the user experience, offering accurate and up-to-date navigation details and streamlined flight booking functionalities. The inclusion of Google Translate further enhances the app's global utility, breaking down language barriers and facilitating communication for users exploring destinations worldwide. This comprehensive integration not only contributes to a more inclusive and user-friendly travel planning tool but also opens avenues for continuous improvement and adaptation to emerging industry trends.

iii. **Other important contextual issues especially any external constraints placed on the application/tool.**

- Internet Connectivity: Many of the app's characteristics will require internet connectivity. Users in areas with unreliable or limited network coverage may face some challenges accessing certain app functionalities such as restaurant suggestions, attraction ratings, nearby stores, etc.
- Data Availability: The app's efficiency counts on the availability of real-time data. Limited data can impede the app's ability to provide valuable information to users at the time of use.
- User Reviews and Feedback: Handling user reviews and feedback, both positive and negative, is fundamentally important but can be challenging when dealing with a large user base.

iv. **Outline (visually) a proposed schedule for your project**

TravBud	8/22/2023	8/29/2023	9/5/2023	9/12/2023	9/19/2023	9/26/2023	10/3/2023	10/10/2023	10/17/2023	10/24/2023	10/31/2023	11/7/2023	11/14/2023	Percent Complete:
Project Kick Off	2 weeks													100%
Gather Requirements			2 weeks											100%
System Design					3 weeks									100%
UI Development									1 week					93%
Acceptance Testing										1 week				100%
Implementation												1 week		92%
Maintenance												1 week		90%

v. **Describe your team and the proposed roles and responsibilities for your teammates**

Team	Roles		
Luis Abreu	-	Team Lead/ Developer/ QA/ SCRUM Master	

Ericka Joseph		- QA/ Database Management
Camila Castaneda		- Developer/ Graphics Design/ Business Analyst
Hermes Bonilla		- Designer/ Developer/ Product Owner
Giuliana Russi		- Designer/ Developer
Chloe Posthuma-Coelho		- Graphics Design/ Mockups

**b. Your motivation for selecting this project**

As university students, our motivation in working towards this project centers on providing users with an app that provides the best recommendations with cost efficiency in mind. As students, we usually have to make a decision by weighing the pros and cons, and cost is usually the biggest factor, as we have to keep the most economically efficient solution in mind. This is due to the fact that we usually have to work either full or part time jobs while working on our studies, and thus, we usually need to budget or find the most budget friendly option when choosing an option or making a decision. It is with this target goal in mind that we decided on creating this travel recommendation app.

**i. Your own expertise in the area**

Most members of the team have traveled and have used a number of travel companion apps over the years. Although there are a couple of good app selections out there, we believe that we can make a better one. This app is not solely a creation for others but a tool we wholeheartedly intend to use and enjoy ourselves, reflecting our deep love for exploration and adventure. Not only are we well versed in travel companion apps, we also have skills in AI integration, development, designing and most importantly, collaboration amongst our members.

**ii. How this might be useful to you in your career**

In terms of usefulness to our career, the creation of such a project teaches us valuable skills, such as group collaboration and participation in all steps of the app creation and prototyping process. From setting up meetings to recapping project goals to discussing next steps, the ability to work on an app and focus on our goals in a group setting is very important when working on our career goals, since communication and collaboration is equally as important in a workforce setting.

## 2. Requirements

### a. Define requirements elicitation

Requirements elicitation refers to the process of identifying, gathering, and recording the petitions, expectations, and constraints of stakeholders concerning a particular system or product, in this case our traveling companion app. This process involves understanding the wants and needs of stakeholders/customers. The aim of requirements elicitation is to guarantee that the final solution not only meets the criteria set by customers but also aligns seamlessly with the project's intentions.

#### **Home Screen:**

- Upon logging in, users should be directed to the app's home screen

#### **Navigation:**

- The app should feature a tab bar at the bottom of the screen
- Tabs are:
  - o Home
  - o Discover
  - o Itineraries
  - o Bookings
  - o Chats
  - o Profile (Account settings included)

#### **Home Page:**

- Users can browse customized travel recommendations and itineraries
- The app will exhibit travel stories and experiences from other users
- Users can explore and discover related travel content based on their interests

#### **Discover:**

- Users can search and discover new travel destinations
- The search bar allows users to find specific travel options
- Users can view details about each travel destination, including descriptions, reviews, and recommendations

#### **Itineraries:**

- Users can access and create personalized travel itineraries based on preferences
- The app provides suggestions for activities, attractions, and local experiences

#### **Bookings:**

- Users can book flights, accommodations, and activities directly through the app
- Real-time travel advisories and updates are provided
- Users can access booking details and travel documents



**Chat:**

- Users can directly message other users
- Messages are encrypted and safe
- Messages sent in chat are saved for later viewing
- Messages can be deleted but have a 10 minute time limit before they can no longer be deleted
- Users are able to send recommendations they've received to friends, family, etc.
- Users are able to share both text and pictures
- Users are able to share Discover Tab posts

**Profile:**

- Users can view and edit their profile information
- Users can select which info gets to be visible and which remains private
- Users can choose to remain completely private
- The app can display the user's travel history and previous trips if user wishes to make that public
- Users can access messages and notifications
- Account settings are within profile tab

**Posting Traveling Experiences:**

- Users can share their travel experiences by creating posts
- Posts can include captions, photos, and descriptions of their journeys
- Users can engage with other travelers through their posts
- Users can create reviews for others to read

**Discussion Forums:**

- Users can take part in travel-related discussions
- Discussion topics cover various aspects of travel, including tips, recommendations, and advice
- Users can reply to discussion posts and mention others using @username

**b. Introduce your requirements elicitation process**

1. We start the requirements elicitation process with a creative brainstorming session. Project stakeholders, designers, developers, and travel experts, come together to foresee the app's potential. During this imaginative session, we encourage everyone to think beyond conventional boundaries and generate innovative ideas for the app's features and functionalities.

2. To grasp the attention of our target audience, we conduct user-centric interviews and surveys. We engage with devoted travelers and adventure enthusiasts to understand their unmet needs and aspirations when it comes to travel planning. Their real-life experiences and insights form the core of our requirements.

3. We organize an empathy mapping workshop where our team immerses themselves in the shoes of travelers. By relating with users, we gain a deeper understanding of their emotions and desires. This approach helps us find hidden requirements that can truly elevate the travel experience.

4. We believe in the power of storytelling. In specialized workshops, we encourage stakeholders/customers to narrate experiences and travel stories. Through these descriptions, we extract implicit requirements that contribute to the creation of memorable and engaging travel journeys within the app.

5. We establish an ideation and prioritization board that acts as a visual representation of feature ideas. Project members use sticky notes to jot down requirements, and together, we prioritize them based on their impact. This dynamic board guarantees that our app's functionality aligns with user expectations.

6. We tap into the expertise of seasoned travelers, tour guides, and travel bloggers. Expert think-tank sessions involve in-depth discussions with these individuals to gather insights and recommendations that can enhance the app's value proposition.

7. As requirements take shape, we speedily create prototypes of the app's key features. These prototypes are exposed to rigorous user testing sessions. User feedback is then integrated into the requirements, guaranteeing that the app's design lines up with user expectations.

8. Throughout the project, we maintain an open and continuous feedback loop with stakeholders and users. This iterative approach allows us to adapt and refine requirements as the project progresses and as new insights arise.

By incorporating this unique requirement elicitation process, our travel companion app project makes certain that user-centric, innovative, and emotionally resonant features are at the heart of our app's development.

**c. Describe five major features for your project**

1. Login/Register screen: Users can choose to either log in with their account or have the option to make one.

2. Favorite Destinations: Users can save and revisit their favorite travel destinations with ease for later uses.

3. AI-Powered Destination Recommendations: Users receive personalized travel suggestions based on contributing factors. (Preferences, budget, location, ratings, etc.)

4. Booking Flights and Accommodations: Users can search, compare, and book flights, hotel rooms, and other accommodations directly through the app.

5. Travel Itinerary Planning: This will allow users to create and manage detailed travel itineraries. (Based on destinations, activities, etc.)

- d. **Create at least 10 stories for each feature including at least 3 acceptance criteria for each story.**

**Feature 1: Login/ Register Screen**

**Story 1:** As a new user, I want to create an account to access the app's features.

- AC #1:
  - Given: I'm a new user
  - When: I open the app
  - Then: The system provides an option to create a new account.
- AC #2:
  - Given: I choose to create a new account
  - When: I enter my email and password
  - Then: The system validates the email format and password strength.
- AC #3:
  - Given: I enter valid registration details
  - When: I submit the registration form
  - Then: The system creates my account and logs me in automatically.

**Story 2:** As a user, I want to log in to my existing account with my credentials.

- AC #1:
  - Given: I'm a registered user
  - When: I open the app
  - Then: The system provides a login option.
- AC #2:
  - Given: I choose to log in
  - When: I enter my registered email and password
  - Then: The system validates my credentials.
- AC #3:
  - Given: I enter valid login credentials
  - When: I submit the login form
  - Then: The system logs me in and takes me to the home screen.

**Story 3:** As a user, I want the app to remember my login session for convenience.

- AC #1:
  - Given: I'm a registered user and have logged in before
  - When: I open the app
  - Then: The system automatically logs me in without requiring me to re-enter my credentials.
- AC #2:
  - Given: I have an active login session
  - When: I close and reopen the app

- o Then: The system retains my login status and takes me directly to the home screen.

- AC #3:

- o Given: I'm a registered user but haven't logged in yet
- o When: I open the app
- o Then: The system shows me the login screen to enter my credentials.

**Story 4:** As a user, I want to reset my password if I forget it.

- AC #1:

- o Given: I'm a registered user
- o When: I click on the "Forgot Password" link on the login screen
- o Then: The system provides a password reset option via email.

- AC #2:

- o Given: I've requested a password reset
- o When: I check my email
- o Then: The system sends me a password reset link with instructions.

- AC #3:

- o Given: I've received a password reset link
- o When: I click on the link
- o Then: The system allows me to reset my password and log in with the new credentials.

**Story 5:** As a user, I want to log in using my Google account for quick access.

- AC #1:

- o Given: I'm a registered user and have a Google account
- o When: I open the app
- o Then: The system provides a "Log in with Google" option.

- AC #2:

- o Given: I choose to log in with Google
- o When: I select my Google account from the list
- o Then: The system authenticates my Google account and logs me in.

- AC #3:

- o Given: I've logged in with my Google account
- o When: I log out from my account
- o Then: The system logs me out but retains the option to log in with Google.

**Story 6:** As a user, I want to log in using my Apple ID for flawless access.

- AC #1:

- o Given: I'm a registered user and have an Apple ID
- o When: I open the app
- o Then: The system provides a "Log in with Apple" option.

- AC #2:

- o Given: I choose to log in with Apple

- o When: I use my Apple ID credentials to authenticate
- o Then: The system logs me in using my Apple ID.
- AC #3:
  - o Given: I've logged in with my Apple ID
  - o When: I log out from my account
  - o Then: The system logs me out but retains the option to log in with Apple.

**Story 7:** As a user, I want to receive a verification email after registering my account.

- AC #1:
  - o Given: I've successfully registered a new account
  - o When: I submit my registration details
  - o Then: The system sends a verification email to the registered email address.
- AC #2:
  - o Given: I receive the verification email
  - o When: I open the email and click the verification link
  - o Then: The system confirms my email and activates my account.
- AC #3:
  - o Given: I've registered a new account but haven't verified my email
  - o When: I attempt to log in
  - o Then: The system prompts me to check my email and verify my account.

**Story 8:** As a user, I want to log in using my biometric data (fingerprint or face recognition) for added security and convenience.

- AC #1:
  - o Given: I'm a registered user with a device that supports biometric login
  - o When: I open the app
  - o Then: The system provides a biometric login option.
- AC #2:
  - o Given: I choose biometric login
  - o When: I use my fingerprint or facial recognition to authenticate
  - o Then: The system logs me in securely with my biometric data.
- AC #3:
  - o Given: I've logged in using biometric data
  - o When: I log out from my account
  - o Then: The system logs me out and retains the biometric login option for future logins.

**Story 9:** As a user, I want to change my password for added security.

- AC #1:
  - o Given: I'm a registered user and logged into my account
  - o When: I access my account settings
  - o Then: The system provides an option to change my password.

- AC #2:
  - Given: I choose to change my password
  - When: I enter my current and new password
  - Then: The system updates my password and confirms the change.
- AC #3:
  - Given: I've changed my password
  - When: I log out and attempt to log in again
  - Then: The system requires me to use the updated password for login.

**Story 10:** As a user, I want to review the login history of my account for security purposes.

- AC #1:
  - Given: I'm a registered user
  - When: I access my account settings
  - Then: The system displays a "Login History" section.
- AC #2:
  - Given: I've accessed the login history
  - When: I view a specific login entry
  - Then: The system provides details about the login, including date, time, and device used.
- AC #3:
  - Given: I've reviewed my login history
  - When: I notice suspicious login activity
  - Then: The system allows me to report or take necessary security actions, such as changing my password or logging out of other devices.

## **Feature 2:** Favorite Destinations

**Story 1:** As a user, I want to discover a new travel destination and add it to my favorites so that I can go back to them.

- AC #1:
  - Given: I'm a user browsing through recommended travel destinations
  - When: I find a new destination that piques my interest
  - Then: The system allows me to add it to my list of favorite destinations for future reference (Heart icon button).
- AC #2:
  - Given: I've added a new destination to my favorites
  - When: I revisit the destination's page
  - Then: The system displays it as one of my favorite locations, ready for me to explore further.
- AC #3:
  - Given: I've favorited a new destination
  - When: I access my favorites list

- o Then: The system shows the newly added destination at the top of the list for easy access.

**Story 2:** As a user, I want to organize my favorite destinations into personalized travel lists so that I can plan accordingly.

- AC #1:

- o Given: I'm a user with a list of favorite destinations
- o When: I tap on the "Create List" button
- o Then: The system enables me to create a new travel list and assign destinations to it.

- AC #2:

- o Given: I've organized my favorite destinations into multiple travel lists
- o When: I access a specific travel list
- o Then: The system displays only the destinations assigned to that list, making it easy to plan my trips.

- AC #3:

- o Given: I've created travel lists for different favorited trip ideas
- o When: I explore a destination's page
- o Then: The system allows me to assign it to one or more travel lists, helping me plan multiple trips.

**Story 3:** As a user, I want to set a reminder for my saved destinations so that I never forget about specific ones I'm really interested in.

- AC #1:

- o Given: I'm a user with saved favorite destinations
- o When: I tap on the reminder icon next to a favorited destination
- o Then: The system allows me to set a reminder for a specific date and time.

- AC #2:

- o Given: I've set reminders for my favorite destinations
- o When: The reminder time arrives
- o Then: The system sends me a notification with details about the destination and my planned visit.

- AC #3:

- o Given: I've set multiple reminders for various favorited destinations
- o When: I access my reminders list
- o Then: The system displays all upcoming reminders, allowing me to stay organized for my trips.

**Story 4:** As a user, I want to view recommendations from fellow travelers and add them to my favorites so I have more options to choose from.

- AC #1:

- o Given: I'm a user exploring the app's travel community
- o When: I come across a fellow traveler's recommendation
- o Then: The system allows me to add their suggested destination to my favorites.

- AC #2:

- Given: I've saved a fellow traveler's recommendation to my favorites
- When: I access the recommendation
- Then: The system provides me with an option to explore the destination further and plan my trip.

- AC #3:

- Given: I've saved recommendations from several fellow travelers
- When: I view my saved favorited recommendations
- Then: The system ensures that I can distinguish them from personally discovered destinations.

**Story 5:** As a user, I want to view my favorite destinations on a map so I am aware of the surrounding locations.

- AC #1:

- Given: I'm a user with a list of favorite destinations
- When: I access the map view within the app
- Then: The system displays markers for my saved destinations on the map for easy visualization.

- AC #2:

- Given: I've explored my favorite destinations on the map
- When: I tap on a specific map marker
- Then: The system provides detailed information about the destination and options for further planning.

- AC #3:

- Given: I'm viewing my favorite destinations on the map
- When: I adjust the map's filters
- Then: The system enables me to filter my favorite destinations by type, distance, or other criteria for a customized view.

**Story 6:** As a user, I want to share my favorite destinations with friends through the app's messaging feature so that they can too be involved.

- AC #1:

- Given: I'm a user with saved favorite destinations
- When: I tap on the share icon and select a friend from my contacts
- Then: The system allows me to send the destination to my friend within the app.

- AC #2:

- Given: I've shared a favorite destination with a friend
- When: My friend receives the shared destination in their message inbox
- Then: The system establishes that my friend can access the destination details and consider planning a trip together.

- AC #3:

- Given: I'm a user who has shared multiple favorited destinations
- When: I want to review the destinations I've shared



- o Then: The system provides a history of shared favorited destinations, making it easy to revisit the recommendations and potentially send it to others.

**Story 7:** As a user, I want to discover travel stories and tips related to my favorite destinations shared by other travelers so that I can read their experiences/advice.

- AC #1:

- o Given: I'm a user with several favorite destinations saved in the app.
- o When: I access my list of favorite destinations.
- o Then: The system displays a feed of travel stories and tips specific to the destinations in my list, shared by other users.

- AC #2:

- o Given: I'm viewing a travel story related to one of my favorite destinations.
- o When: I find the content helpful or inspiring.
- o Then: The system allows me to bookmark the story or related tips and have them show up at the top of that specific favorite destination so that I can find them easily.

- AC #3:

- o Given: I've bookmarked travel stories and tips within my favorite destinations.
- o When: I revisit a destination in my favorite destinations list.
- o Then: The system presents a list of bookmarked stories and tips relevant to that destination for a more personalized and enriching travel experience.

**Story 8:** As a user, I want to receive travel alerts for my favorite destinations so that I can be up to date.

- AC #1:

- o Given: I'm a user with saved favorite destinations
- o When: The system detects a new event or special offer associated with one of my favorites
- o Then: The system highlights the event or offer within the app, making sure I don't miss exclusive opportunities.

- AC #2:

- o Given: I've discovered an exclusive event or offer related to a favorited location
- o When: I tap on the event or offer
- o Then: The system provides me with in-depth details, such as event schedules, promotional codes, and booking information, making it easy to take advantage of these opportunities.

- AC #3:

- o Given: I'm an active user with favorite destinations and specific interests
- o When: The system identifies a travel deal or event related to one of my favorite destinations

- o Then: The system suggests the offer and gives me the option to either accept it or skip it, allowing me to wait for a more suitable offer if the current one doesn't match my preferences. This provides me with greater control over the deals and events associated with my favorite destinations.

**Story 9:** As a user, I want to add personal notes and photos to my favorite destinations so that I can view them later.

- AC #1:

- o Given: I'm a user with a list of favorite destinations
- o When: I access a destination's page
- o Then: The system allows me to add personal notes and photos to that destination's profile.

- AC #2:

- o Given: I've added notes and photos to a favorite destination
- o When: I revisit the destination
- o Then: The system displays my personal notes and photos, enhancing my memories and planning.

- AC #3:

- o Given: I've added notes and photos to multiple favorite destinations
- o When: I access my notes and photos library
- o Then: The system organizes them by destination for easy retrieval and browsing.

**Story 10:** As a user, I want to view recommendations from the app's AI and add them to my favorites.

- AC #1:

- o Given: I'm a user exploring recommendations generated by the app's AI
- o When: I come across an AI-recommended destination
- o Then: The system allows me to add the AI-generated recommendation to my favorites for future trips by tapping the heart icon.

- AC #2:

- o Given: I've saved an AI-recommended destination to my favorites
- o When: I access the recommendation
- o Then: The system provides me with detailed information and options for trip planning.

- AC #3:

- o Given: I've favorited AI-generated recommendations
- o When: I view my saved AI-recommended destinations
- o Then: The system makes sure that I can easily distinguish them from other saved destinations.

**Feature 3:** AI-Powered Destination Recommendations

**Story 1:** As a user, I would like to receive AI-powered help when planning my trip so that I can take off some stress that comes with planning.

- AC #1:

- Given: I have picked the top travel destinations and saved them to my favorites
- When: I select “yes” for a notification requesting whether I would like additional AI recommendations
- Then: The request is processed and a notification is sent once the AI recommendations are finalized

- AC #2:

- Given: The top recommendations are given to me by the AI
- When: I enjoy the recommendations given to me
- Then: I can press a “thumbs-up” icon button to display that the AI can keep giving recommendations like this one

- AC #3:

- Given: The recommendations have been given
- When: I do not enjoy the particular recommendations given by the AI
- Then: I can provide feedback or press/select a “thumbs-down” icon to show that I want further recommendations

**Story 2:** As a user, I want to receive recommendations for restaurants in the area I am traveling in ahead of time so that I can plan reservations.

- AC #1:

- Given: I input information about a trip I am going to go to.
- When: The app’s recommender system found a restaurant I would like.
- Then: I will receive a notification prompting me to open the app and look at a new restaurant recommendation it made for me.

- AC #2:

- Given: The app is constantly keeping track of selected destinations.
- When: I have selected a destination I am going to go to in the near future.
- Then: Restaurants will be kept track of and recommended based on my previous trip information.

- AC #3:

- Given: The app recommended a new restaurant to me.
- When: I open up the app to the section about recommended food/restaurant options.
- Then: I will see outlined summaries about restaurants and why they were recommended to me (distance to important landmarks, proximity from hotels I booked, reviews, etc.)

**Story 3:** As a user, I want to be notified when new flights are recommended.

- AC #1:

- o Given: I have selected some favorite potential destinations and favorited them.
- o When: The recommender system recommends a new flight based on favorite potential destinations.
- o Then: I will receive a banner notification telling me that a new flight has been recommended.
- AC #2:
  - o Given: I have been notified of a new recommended flight.
  - o When: I received a banner notification on my phone.
  - o Then: I can select the notification and have the option to book the flight to lock it in or view further information about it.
- AC #3:
  - o Given: I have received notifications from the app.
  - o When: I want to stop notifications or lower the quantity of notifications I receive.
  - o Then: I can select separate notification settings for all flight recommendations within the app.

**Story 4:** As a user, I would like to not worry about booking restaurant reservations.

- AC #1:
  - o Given: I am selecting a restaurant I want to go to.
  - o When: I confirm that a restaurant is an option I want to go to during my trip.
  - o Then: Using my calendar, the app will recommend three (3) options for me to book.
- AC #2:
  - o Given: I have received and considered the three restaurant booking options the app recommends me.
  - o When: I select one of these three options to book.
  - o Then: The app will go ahead and set the reservation with the restaurant.
- AC #3:
  - o Given: The restaurant options have been given to me.
  - o When: I confirm the option that best suits me and my preferences.
  - o Then: The reservation will be set in my app calendar for me to view and be reminded of.

**Story 5:** As a user, I would like to not worry about searching several websites to find the hotel that best suits me within my price range.

- AC #1:
  - o Given: I have a price range for hotels in mind and have marked the areas I am interested in.
  - o When: I input my price range in the app.
  - o Then: Several hotels appear with short summaries and why they were recommended.
- AC #2:

- o Given: Several hotels are recommended to me within my price range.
- o When: I go to view the choices that were recommended.
- o Then: I will see them all listed one by one and ranked based on price, preferences, reviews, and more.

● AC #3:

- o Given: I have all recommended hotels listed one by one.
- o When: I click on a hotel's summary to see it more in depth.
- o Then: I will see what website the offer is from and the guaranteed price I would have to pay if I wanted that offer.

**Story 6:** As a user, I would like to see the important landmarks that I should go to when I visit a destination.

● AC #1:

- o Given: I selected one or more destinations I am interested in.
- o When: I access my itinerary/trip view.
- o Then: I will be able to see some recommended destinations with their locations on the map.

● AC #2:

- o Given: I have some potential hotels selected and landmarks recommended.
- o When: I view my itinerary/trip view.
- o Then: I will be able to see the proximity of any hotels I have already selected and the distance that landmarks are at from that hotel on a map to allow me to make a more informed choice.

● AC #3:

- o Given: Several landmarks are recommended.
- o When: I view which landmarks to select and add to my trip itinerary.
- o Then: I will be able to view reviews on each landmark and what they entail so that I can determine which ones I would like to go to.

**Story 7:** As a user, I would like to be able to specify what type of recommendations I am looking for.

● AC #1:

- o Given: I am looking for places to stay during my trip.
- o When: I select my recommendation setting to include hotels, bed and breakfasts, and other accommodations.
- o Then: I will receive recommendations that align to those places.

● AC #2:

- o Given: I am looking for activity recommendations.
- o When: I select that I am looking for activities in particular.
- o Then: I will receive recommendations that are activity-based.

● AC #3:

- o Given: I am looking for famous landmark recommendations.
- o When: I select my recommendation preferences to be landmark specific.

- o Then: I will receive recommendations that are landmark focused.

**Story 8:** As a user, I would like to be able to receive recommendations of different activities in the area just as if a local were to help me plan my trip.

- AC #1:

- o Given: I have my destination preferences inputted already.
- o When: I look at my itinerary/trip view.
- o Then: I will receive any recommendations of activities that I could do in the area.

- AC #2:

- o Given: I have family or other traveling members I would like to keep in mind.
- o When: I look for recommended activities.
- o Then: The recommendations will take in account family/traveling members.

- AC #3:

- o Given: I have recommendations that I do not want or have preferences in mind of activities I do not want to take part of.
- o When: I input any restrictions I have or activities I would not want to take part of
- o Then: I will not receive recommendations that include those activities.

**Story 9:** As a user, I would like to be able to give feedback on any recommendations to me.

- AC #1:

- o Given: I have received some recommendations.
- o When: I click the recommendation.
- o Then: I will be able to “thumbs up” or “thumbs down” a recommendation to let the AI recommender system my preferences.

- AC #2:

- o Given: I have received some recommendations.
- o When: I absolutely do not want a similar recommendation to appear.
- o Then: I can report the recommendation as one that I don't want to see at all and the recommendation system will remove it from being recommended in the future.

- AC #3:

- o Given: I have received some recommendations.
- o When: I want to see where these recommendations come from.
- o Then: I would be able to see information pop up with where the recommendation system is getting the idea to recommend from.

**Story 10:** As a user, I would like to be able to receive destination recommendations to my email so that I can easily share and keep track of AI-powered suggestions.

- AC #1:
  - Given: I have selected some potential trip itineraries.
  - When: I receive another recommendation that has high compatibility with my itinerary.
  - Then: I will receive an email notification with the recommendation.
- AC #2:
  - Given: I have received a recommendation that has a high compatibility with my trip itinerary.
  - When: I receive the email notification outlining a summary of the recommendation and why it fits perfectly with my plans.
  - Then: I can click on the summary to lead me to the app with more details on the recommendation.
- AC #3:
  - Given: I have received a recommendation that sends an email notification.
  - When: I receive an email notification.
  - Then: I can mute emails or decrease the frequency I receive them by clicking the preferences.

#### **Feature 4: Booking Flights and Accommodations**

**Story 1:** As a user, I want to search for flights based on my travel preferences.

- AC #1:
  - Given: I'm a user looking to book a flight
  - When: I enter my departure and destination locations, travel dates, and passenger details
  - Then: The system should provide me with a list of available flights with prices and details, and I can select and book the preferred flight.
- AC #2:
  - Given: I'm a user looking for specific airlines or flight options
  - When: I filter my flight search by airline, duration, or other preferences
  - Then: The system refines the search results according to my specified criteria
- AC #3:
  - Given: I've selected a flight to book
  - When: I proceed to book the flight
  - Then: The system should guide me through the booking process, allowing me to add passenger details and make payment securely.

**Story 2:** As a user, I want to search for accommodations based on my preferences.

- AC #1:
  - Given: I'm a user searching for accommodations

- o When: I enter my destination, check-in and check-out dates, and the number of guests
  - o Then: The system should display a list of available hotels and accommodations with prices and features, and I can select and book the desired accommodation.
- AC #2:
  - o Given: I'm a user with specific accommodation preferences
  - o When: I filter my accommodation search by amenities, price range, or other criteria
  - o Then: The system refines the search results based on my chosen filters.
- AC #3:
  - o Given: I've selected an accommodation to book
  - o When: I proceed to book the accommodation
  - o Then: The system should guide me through the booking process, allowing me to add guest details and make payment securely.

**Story 3:** As a user, I want to review my booked flights and accommodations.

- AC #1:
  - o Given: I'm a user with booked flights and accommodations
  - o When: I access the "My Bookings" section
  - o Then: The system displays a list of my booked flights and accommodations, including booking references and details.
- AC #2:
  - o Given: I'm reviewing my booked flights and accommodations
  - o When: I need to make changes to a booking
  - o Then: The system should allow me to modify booking details, such as changing travel dates or adding passengers (subject to airline and accommodation policies).
- AC #3:
  - o Given: I want to cancel a booked flight or accommodation
  - o When: I initiate the cancellation process
  - o Then: The system should guide me through the cancellation procedure, including any applicable refund policies.

**Story 4:** As a user, I want to receive booking confirmations and travel itineraries.

- AC #1:
  - o Given: I've successfully booked a flight or accommodation
  - o When: The booking is confirmed
  - o Then: The system should generate a booking confirmation with all the necessary details, such as booking references, itinerary, and payment receipts.
- AC #2:
  - o Given: I'm about to travel
  - o When: The departure date is approaching



- o Then: The system should provide me with a detailed travel itinerary, including flight schedules, accommodation check-in/check-out times, and any other essential travel information.
- AC #3:
  - o Given: I'm at the airport or accommodation
  - o When: I need to access my booking details
  - o Then: The system should allow me to view my booking information within the app for easy reference.

**Story 5:** As a user, I want to compare flight prices from different airlines.

- AC #1:
  - o Given: I'm looking for a flight
  - o When: I search for flights to a specific destination
  - o Then: The system should display a list of available flights from various airlines with their respective prices, allowing me to compare and select the best option.
- AC #2:
  - o Given: I want to filter my flight search
  - o When: I apply filters, such as sorting by price, departure time, or airline
  - o Then: The system should adjust the flight results according to my chosen criteria, making it easier for me to find the most suitable option.
- AC #3:
  - o Given: I've chosen a flight
  - o When: I'm ready to book
  - o Then: The system should guide me through the booking process, allowing me to add passenger details and make payment securely.

**Story 6:** As a user, I want to find last-minute deals on accommodations.

- AC #1:
  - o Given: I'm in need of last-minute accommodation
  - o When: I search for accommodations with check-in dates within the next 48 hours
  - o Then: The system should highlight last-minute deals, if available, with discounted prices and details for quick booking.
- AC #2:
  - o Given: I'm interested in last-minute accommodations
  - o When: I tap on a last-minute deal
  - o Then: The system should display detailed information about the accommodation, including amenities, guest ratings, and location.
- AC #3:
  - o Given: I've decided to book a last-minute accommodation
  - o When: I proceed to book

- o Then: The system should guide me through the booking process, allowing me to add guest details and make payment securely.

**Story 7:** As a user, I want to receive special offers and promotions for flights and accommodations.

- AC #1:
  - o Given: I'm a user who has expressed interest in receiving offers
  - o When: The system identifies a special offer for a flight or accommodation
  - o Then: The system sends me a notification with details about the offer, including discounts, promotional codes, and booking information.
- AC #2:
  - o Given: I've received a special offer notification
  - o When: I tap on the offer
  - o Then: The system provides me with in-depth details, such as offer expiration dates and terms, enabling me to take advantage of the promotion.
- AC #3:
  - o Given: I've set preferences for the types of special offers I want to receive
  - o When: The system generates new offers
  - o Then: The system ensures that it aligns with my preferences, providing tailored and relevant offers based on my interests and previous bookings.

**Story 8:** As a user, I want to view my booking history for reference and review.

- AC #1:
  - o Given: I'm a user with a history of booked flights and accommodations
  - o When: I access the "Booking History" section
  - o Then: The system displays a list of my past bookings, including travel dates, booking references, and destinations, allowing me to review my travel history.
- AC #2:
  - o Given: I'm reviewing my booking history
  - o When: I need to retrieve specific booking details
  - o Then: The system should allow me to access comprehensive information about each past booking, such as flight itineraries, accommodation check-in/check-out times, and payment receipts.
- AC #3:
  - o Given: I want to provide feedback on my previous bookings
  - o When: I select a past booking
  - o Then: The system should offer an option for me to leave reviews and ratings for the flights and accommodations I've experienced, contributing to the app's travel community.

**Story 9:** As a user, I want to receive weather and destination-related information for my upcoming trip.

- AC #1:
  - o Given: I've booked a trip
  - o When: The departure date is approaching
  - o Then: The system provides me with real-time weather updates for my destination, helping me pack and prepare accordingly.
- AC #2:
  - o Given: I'm interested in knowing more about my destination
  - o When: I access my upcoming trip details
  - o Then: The system offers information about local attractions, activities, and cultural highlights, enhancing my travel experience.
- AC #3:
  - o Given: I've chosen to receive notifications about my upcoming trip
  - o When: The system detects important updates or changes regarding my booked flight or accommodation
  - o Then: The system sends me timely notifications to keep me informed and prepared for my travel.

**Story 10:** As a user, I want to explore nearby attractions and experiences based on my booked destination.

- AC #1:
  - o Given: I've booked a trip to a specific destination
  - o When: I'm interested in exploring the area
  - o Then: The system provides me with a list of nearby attractions and experiences, including museums, restaurants, and outdoor activities, for consideration.
- AC #2:
  - o Given: I'm looking for a particular type of attraction, such as family-friendly places or historical sites
  - o When: I apply filters to my search
  - o Then: The system refines the results, guaranteeing that I can easily find attractions that match my preferences.
- AC #3:
  - o Given: I've decided to explore a nearby attraction
  - o When: I access the attraction's details
  - o Then: The system offers comprehensive information about the attraction, including opening hours, entry fees, and visitor reviews, to help me plan my visit.

## **Feature 5:** Travel Itinerary Planning

**Story 1:** As a user, I want to know the culture of my destination to be knowledgeable of proper customs.

- AC #1:
  - o Given: I am traveling to foreign countries
  - o When: I use the app
  - o Then: the system should give me a rundown of offensive mannerisms and proper behaviors
- AC #2:
  - o Given: I may not have easily accessible internet connection
  - o When: I am traveling
  - o Then: the app should also have a download feature to save the customs
- AC #3:
  - o Given: I want to learn in my travels
  - o When: I go to the app
  - o Then: There should be a place that tells me historically significant locations

**Story 2:** As a user I want the system to track the possible dates that I am looking to travel to have an idea of the pricings.

- AC #1:
  - o Given: I need to ask for time off from my job
  - o When: Looking for travel dates
  - o Then: I want the app to be able to store multiple variations of the same travel but with different dates.
- AC #2:
  - o Given: I want to know what the best cost effective date is
  - o When: I am picking the dates to travel
  - o Then: The system should be able to organize possible pricings of how much id spend on hotel and flight
- AC #3:
  - o Given: I want to know what dates have the most activities to travel
  - o When: I go on the app
  - o Then: I should be able to see big events happening in the area such as oktoberfest

**Story 3:** As a user I want to be able to see what hotels would have the best city life to plan places to go to.

- AC #1:
  - o Given: I have to choose a hotel
  - o When: I log into the app checking my destination
  - o Then: I want to know what popular restaurants and activities are near my hotel
- AC #2:
  - o Given: I have to choose a hotel to stay there
  - o When: I log into the app

- o Then: I should be able to see the reviews of the hotel in terms of staff
- AC #3:
  - o Given: I have to choose a hotel
  - o When: I log into the app
  - o Then: The system should tell me how much each hotel would cost to make an efficient budget

**Story 4:** As a user I want the system to see what special activities there would be for the time of my stay, so that I can attend.

- AC #1:
  - o Given: I am interested in foods
  - o When: I travel to places for authentic cuisine
  - o Then: I want the app to tell me good restaurants in the area I should visit
- AC #2:
  - o Given: I am interested in events
  - o When: I log into the app
  - o Then: it should optimize the dates where big scale events are happening. For example oktoberfest or diwali.
- AC #3:
  - o Given: I am interested in activities
  - o When: I put activities im interested in
  - o Then: the app should be able to optimize my day to include as many activities as possible

**Story 5:** As a user I want a guide to navigate the city including local phrases and a transportation guide.

- AC #1:
  - o Given: I am traveling to a foreign place
  - o When: I have no internet
  - o Then: Then there should be a downloadable common phrases to get around the city section
- AC #2:
  - o Given: I am traveling to a foreign place not knowing the language
  - o When: I have internet connection
  - o Then: There should be a way to voice record our conversation and have the app translate from one language to the next
- AC #3:
  - o Given: I am traveling without a car
  - o When: I am in the city
  - o Then: there should be a transportation guide such as bus schedules and routes

**Story 6:** As a user I want a packing list of recommended items to take.

- AC #1:
  - o Given: It is my first time traveling to said country
  - o When: I have the reservation complete
  - o Then: The next steps would be packing for the location such as will i need sunscreen or winter clothes
- AC #2:
  - o Given: It is my first time traveling in general
  - o When: I let the app know first time traveler
  - o Then: It should provide a detail list of acceptable items needed for tsa and what I should pack
- AC #3:
  - o Given: it is my first time traveling
  - o When: I have the app open
  - o Then: The app should also give me recommended brands or places to purchase necessary items based on reviews

**Story 7:** As a user I want the ability to see the reviews of restaurants recommended to book reservations.

- AC #1:
  - o Given: I am going to a location because of the food
  - o When: I am on the app
  - o Then: I should see recommendations for restaurants based off of the reviews
- AC #2:
  - o Given: I am looking for a particular cuisine
  - o When: I search it up on the app
  - o Then: I should receive a list of recommendations based off of the cuisine
- AC #3:
  - o Given: I chose a restaurant
  - o When: I am logged in
  - o Then: I should have the contact information of the restaurant or be able to make a reservation right on the app

**Story 8:** As a user I want to know the currency exchange rates so that I have accurate change.

- AC #1:
  - o Given: This is my first time traveling to that country
  - o When: I am arrive
  - o Then: the app should have a location or way to exchange money from one currency to the other
- AC #2:
  - o Given: This is my first time traveling to that country
  - o When: I am looking for preparations items
  - o Then: I should see the exchange rates of money.
- AC #3:

- o Given: This is my first time traveling to that country
- o When: I am on the app
- o Then: The system should also tell me how much money is too much to be charged for common items.

**Story 9:** As a user I would like to know a weather forecast that is kept updated so I know what clothes to take.

- AC #1:
  - o Given: I have to pack
  - o When: in preparation for my flight
  - o Then: The system should be able to give me weather forecast of if it should be sunny or raining
- AC #2:
  - o Given: I have to prepare with necessary items
  - o When: I am packing
  - o Then: The system should also give me recommendations on what items I should pack
- AC #3:
  - o Given: I need to purchase clothes
  - o When: I am on the app
  - o Then: The system should recommend places or brands based on reviews and the item i need

**Story 10:** As a user I would like to have important documents saved and important contact information saved on the app.

- AC #1:
  - o Given: That I have an emergency
  - o When: abroad in the country
  - o Then: The app should have my emergency contact list and be able to send them a text or email
- AC #2:
  - o Given: That I am robbed
  - o When: I go on the app
  - o Then: There should be a confidential place to scan important documentation
- AC #3:
  - o Given: I have an emergency
  - o When: I am abroad
  - o Then: The system should also have contact information to the local emergency services.

e. **Explicitly state the software requirements specification**

i. **External interface requirements (e.g., inputs and outputs)**

**Inputs:**

The customer will input dates that they wish to travel within and a budget that they would like to spend on this trip. They will also be able to input a location that they would like to travel to and have a checklist of some activities they would like to do to check if they have that in the place they are visiting. For example, If a user wants to travel to a beach place but wants to snowboard that option would not be available. The customer can also set what rated hotels they want to visit or if they would prefer to be closer to the city as opposed to being further away.

**Outputs:**

The system should be able to output viable activities and prices for the location selected. It should also output flight options to the location selected with different prices and options for hotels and prices. The output should also focus on giving recommendations based on the places and activities the user said they prefer to do.

ii. **Requirements - Functions (including validity checks on inputs, responses to abnormal situations, etc.)**

**Validity checks:**

The date is formatted correctly and a valid existing date not in the past. That the location that they want to travel to exists and has flights that go to it. For their system we would have to check that the hotel they are booking exists and has availability for the customer and it would be the same thing for flights. We would also have to check whether the activity can be done there and what companies are available for said activity. Responses to abnormal activities would be checking if the person is not a bot would be a check we would need, check if they are connected to the internet. We would need a part for personal information checking such as if the credit card information they inputted is correct, and that the information such as email and password also match with the system.

iii. **Non-functional requirements - Performance requirements**

**Non-functional requirements:**

Security:

Security is top priority in our travel app, guaranteeing the protection of sensitive user data and delivering a trusted experience. We are committed to safeguarding the following categories of information:

- User Registration and Login:



- Users must have the ability to register for an account
- Users should be able to log in using their credentials
- A password and username are required for secure access
- User Profiles: Users' personal information, including names, email addresses, and profile photos, are securely stored and encrypted to protect against unauthorized access or data breaches.
- Location Data: Location data is used to provide travel recommendations and map features. We are dedicated to protecting user location information from misuse and adhere to stringent privacy policies.
- Payment Data: In cases where users make in-app purchases or bookings, we prioritize the safety of financial information. Payment data is processed through secure and trusted payment gateways, keeping the confidentiality of financial details.
- Travel History: To enhance user experience, our app retains travel history, favorite destinations, itineraries, and notes. This data is stored securely to maintain the privacy and integrity of users' travel records.
- User-Generated Content: Photos and personal notes created by users within the app are treated as sensitive data and are safeguarded against unauthorized access. Only users with valid credentials can access and modify their content.
- Biometric Data: For users who choose to use biometric login methods, we ensure that fingerprint and facial recognition data is stored securely and only used for authentication purposes.

The security of this information is reinforced through robust encryption, regular security audits, and compliance with relevant data protection regulations. User privacy is a core principle in the design and development of our travel app.

#### Performance:

- The system must provide responsive and fast user interface interactions.
- Data retrieval, especially when fetching recommendations and destination details, must be efficient.
- The system should support a large user base without compromising performance.

#### Scalability:

- The application must be able to scale to accommodate a growing user base.

- The backend must be designed to handle increased data storage and processing requirements.

#### Usability:

- The user interface must be intuitive and user-friendly.
- The application should provide clear navigation and meaningful feedback.
- Accessibility features should be implemented to support users with disabilities.

#### Reliability:

- The system should be available and reliable 24/7 with minimal downtime.
- Data integrity must be maintained, making sure user data is not lost or corrupted.

#### Compatibility:

- The application should work across multiple devices and platforms, including web, iOS, and Android.
- Compatibility with various web browsers and mobile devices should be available.

#### Privacy:

- The application must comply with data privacy regulations (e.g., GDPR) and include features like data export and deletion.
- Users should have control over the data they share, including the ability to delete their accounts.

#### Data Backup and Recovery:

- Regular backups of user data should be performed to make certain that data can be restored in case of data loss or system failure.

#### External Integrations:

- Integrations with third-party services (e.g., Google and Apple authentication) must be reliable and secure.

#### Feedback and Logging:

- The system should log events and errors for debugging and analysis.
- Users should have the ability to provide feedback and report issues within the app.

#### **Functional requirements:**

#### User Registration and Authentication:

- Users can create new accounts.
- Users can log in with valid credentials.
- Users can reset their passwords.
- Users can log in using external authentication providers (Google, Apple).

#### User Profile:

- Users can edit their profile information.
- Users can upload a profile picture.

#### Favorite Destinations:

- Users can add travel destinations to their list of favorites.
- Users can organize their favorite destinations into personalized travel lists.
- Users can set reminders for their favorite destinations.
- Users can add personal notes and photos to their favorite destinations.
- Users can view a map showing their favorite destinations.
- Users can share favorite destinations with friends.

#### Recommendations:

- Users receive personalized travel recommendations based on preferences.
- Users can receive and act on travel alerts related to their favorite destinations.
- Users can view AI-generated travel recommendations.
- Users can save AI-generated recommendations to their favorites.

#### Community and Sharing:

- Users can share travel recommendations and stories with the app's community.
- Users can view travel stories and tips related to their favorite destinations.
- Users can bookmark stories and tips for future reference.

#### **Performance requirements:**

From the user side the application should have enough space and memory to run on a phone or computer. The app should be able to be

scalable because as the AI learns and improves it will take up more of the system. The app should be secure because the user will be able to purchase information that means credit card information and personal information would be on the memory. Because the app will be used by android and iPhone users it needs to move smoothly through other environments.

iv. **Design constraints:**

- o Time limitations: The design and implementation process of this app is being done throughout a semester period of around three months, meaning that any potential updates that are desired after the app's design is sent in its final form to our instructor may prove to be difficult to implement.
- o More accessible user interfaces: The app project and its design hope to keep accessibility in mind for users, however, it may be more of a hurdle due to such time constraints to implement UI centered around the most accessible app navigation experience possible. For example, the implementation of various assistive technologies such as visual and audio-based navigation assistance within the app may not be possible.

### 3. Design

a. **Define design**

Design incorporates the planning, creation, and organization of the visual and user experience aspects of the application. Design plays a crucial role in shaping how the app looks and feels, as well as how users interact with it. It covers various elements.

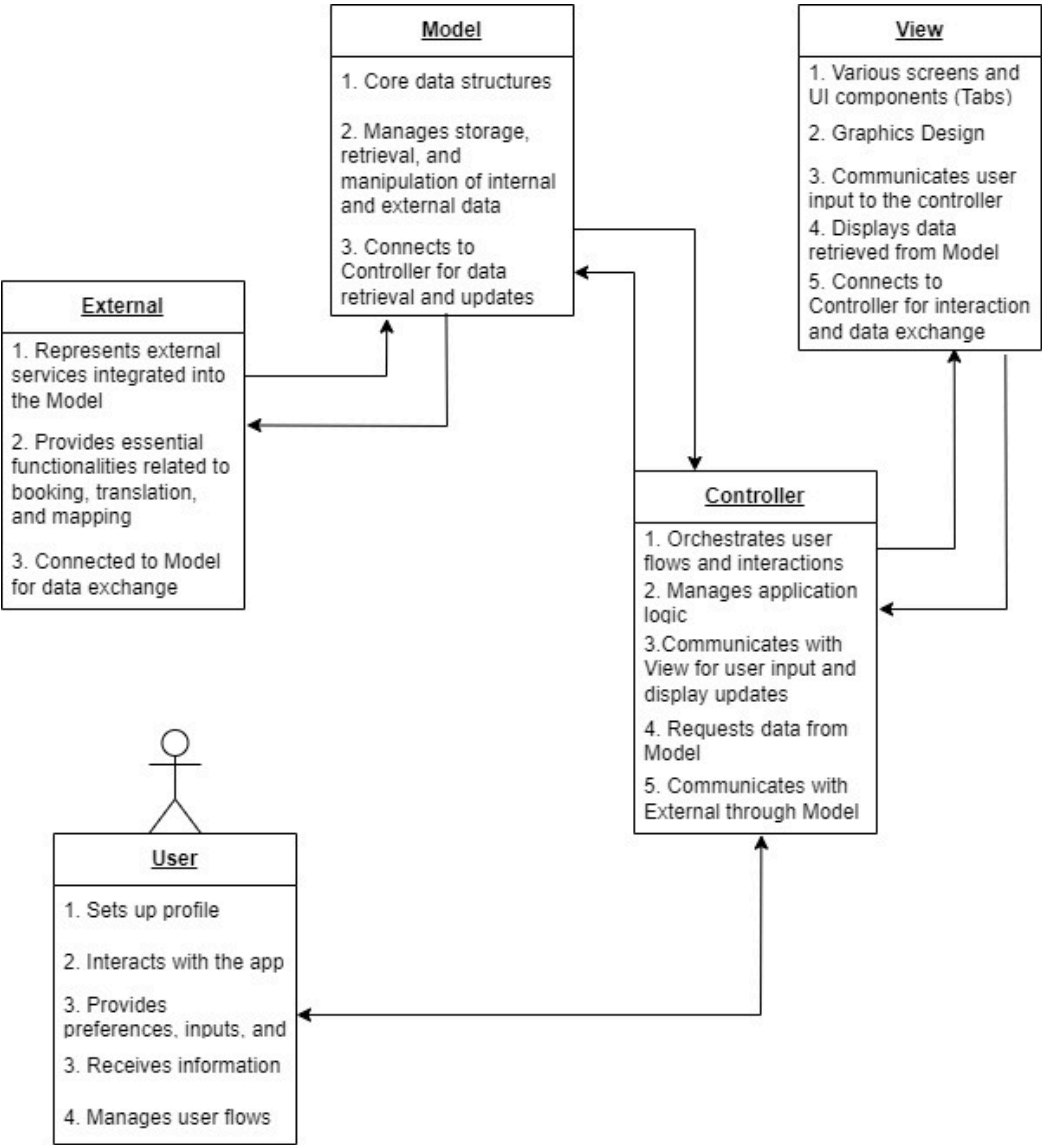
b. **Introduce your design process**

Our design follows the Model-View-Controller (MVC) architecture, providing a well-structured app:

- **Model (Data Layer):** Defines data structures and access mechanisms for user preferences, recommendations, and travel stories.
- **View (User Interface Layer):** Focuses on creating visually appealing, responsive, and accessible user interfaces.
- **Controller (Application Logic):** Manages user flows and interactions, with interactive prototyping for iterative refinement.

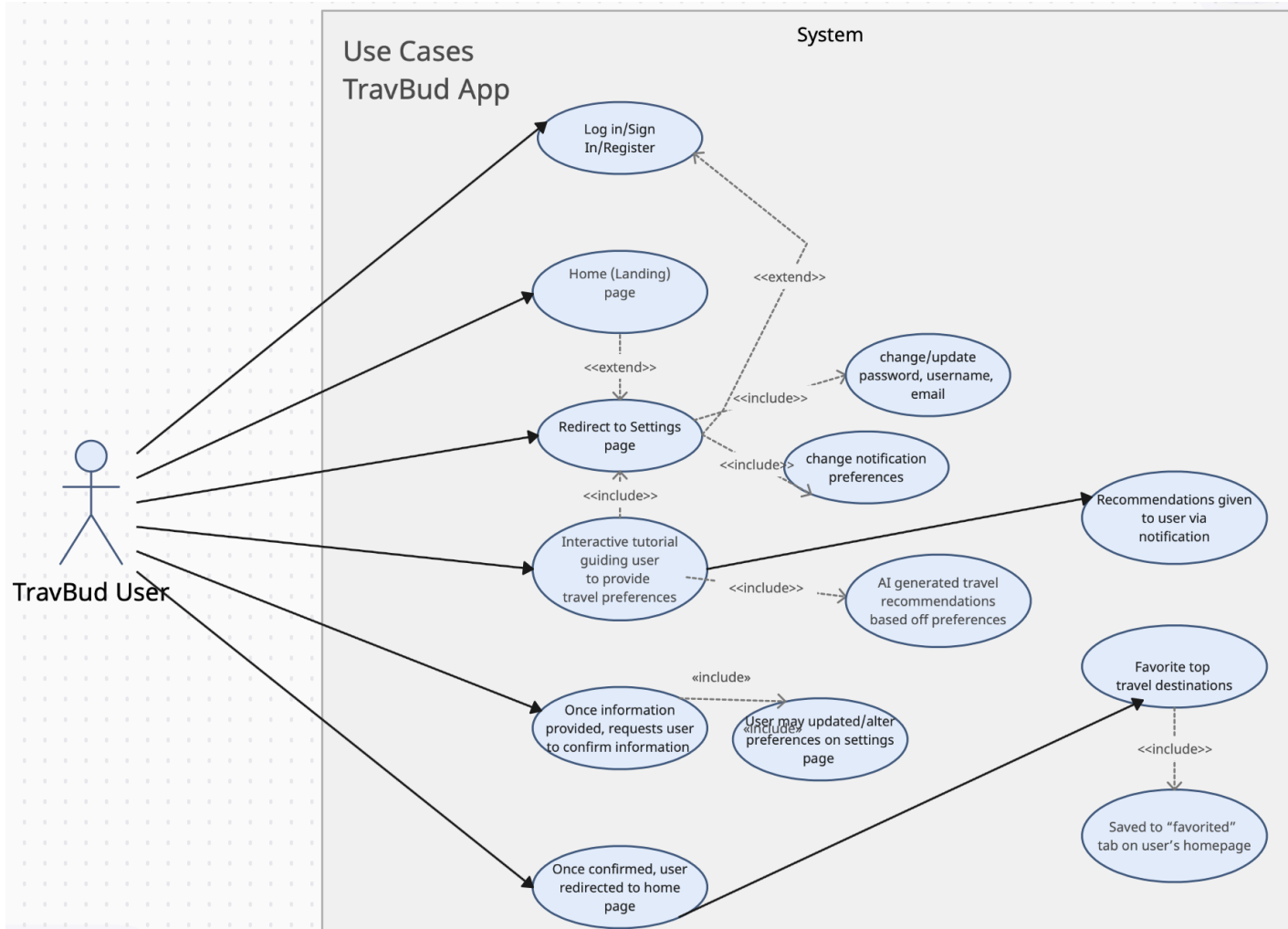
This MVC approach ensures an engaging and user-friendly experience, guiding travelers efficiently through the app.

MVC Architecture Diagram

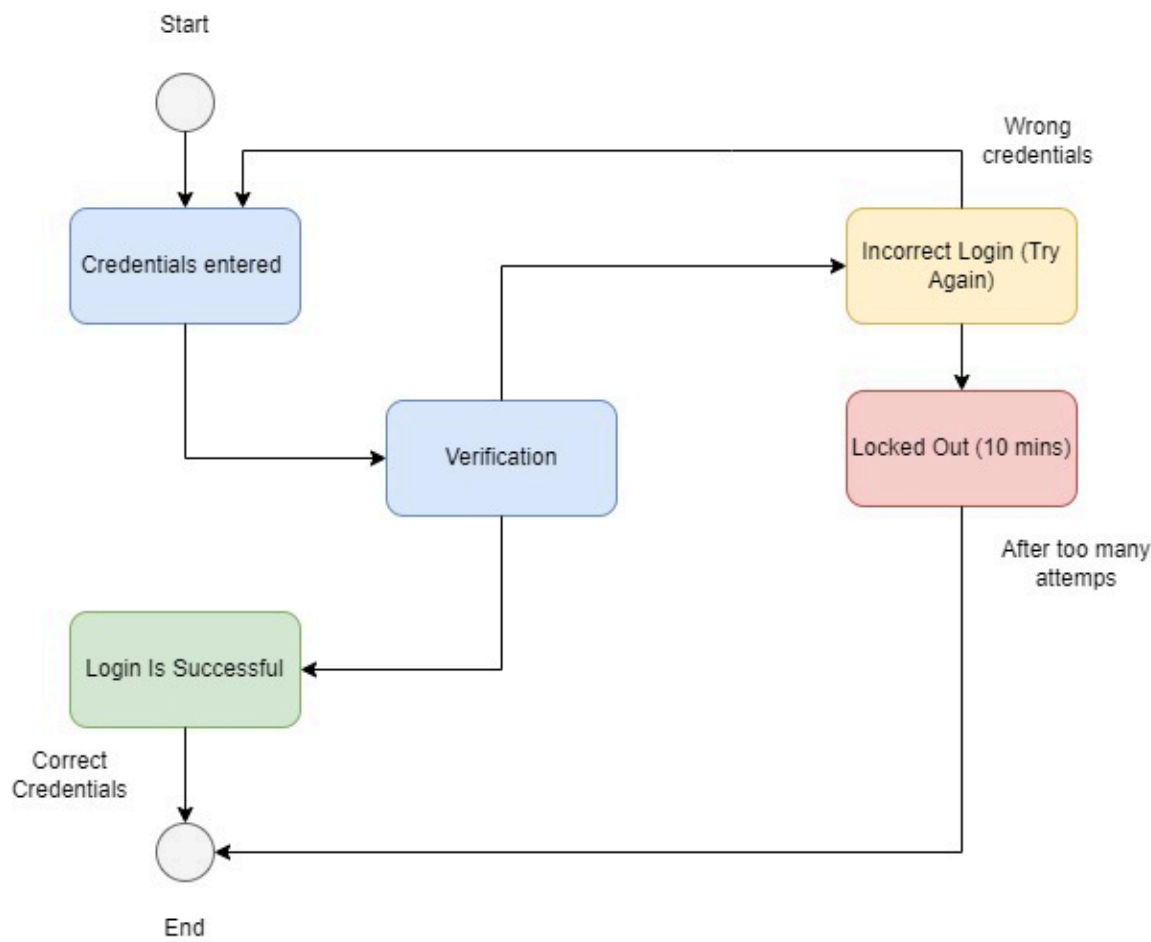


c. Demonstrate the design graphically

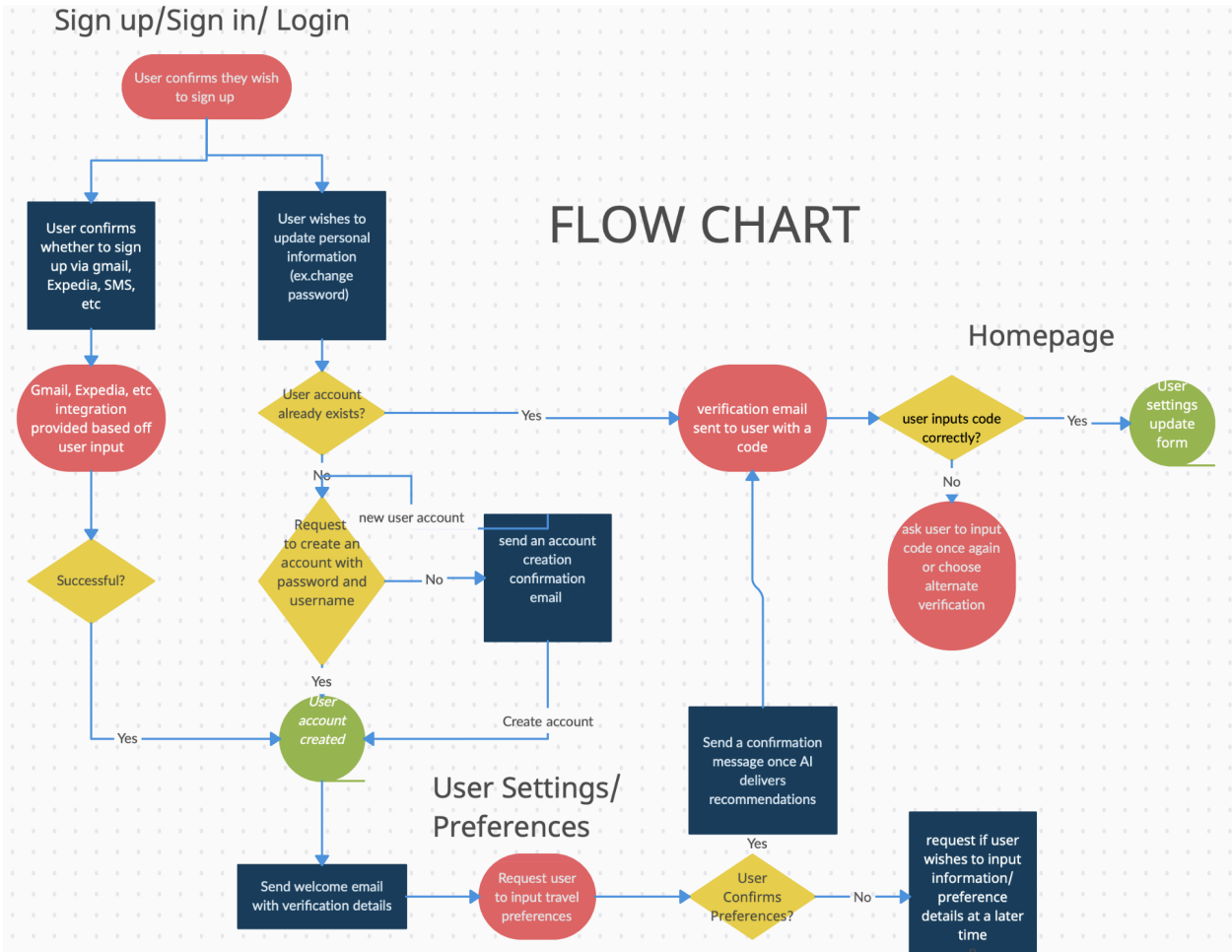
Use Cases



State Diagram (Login)

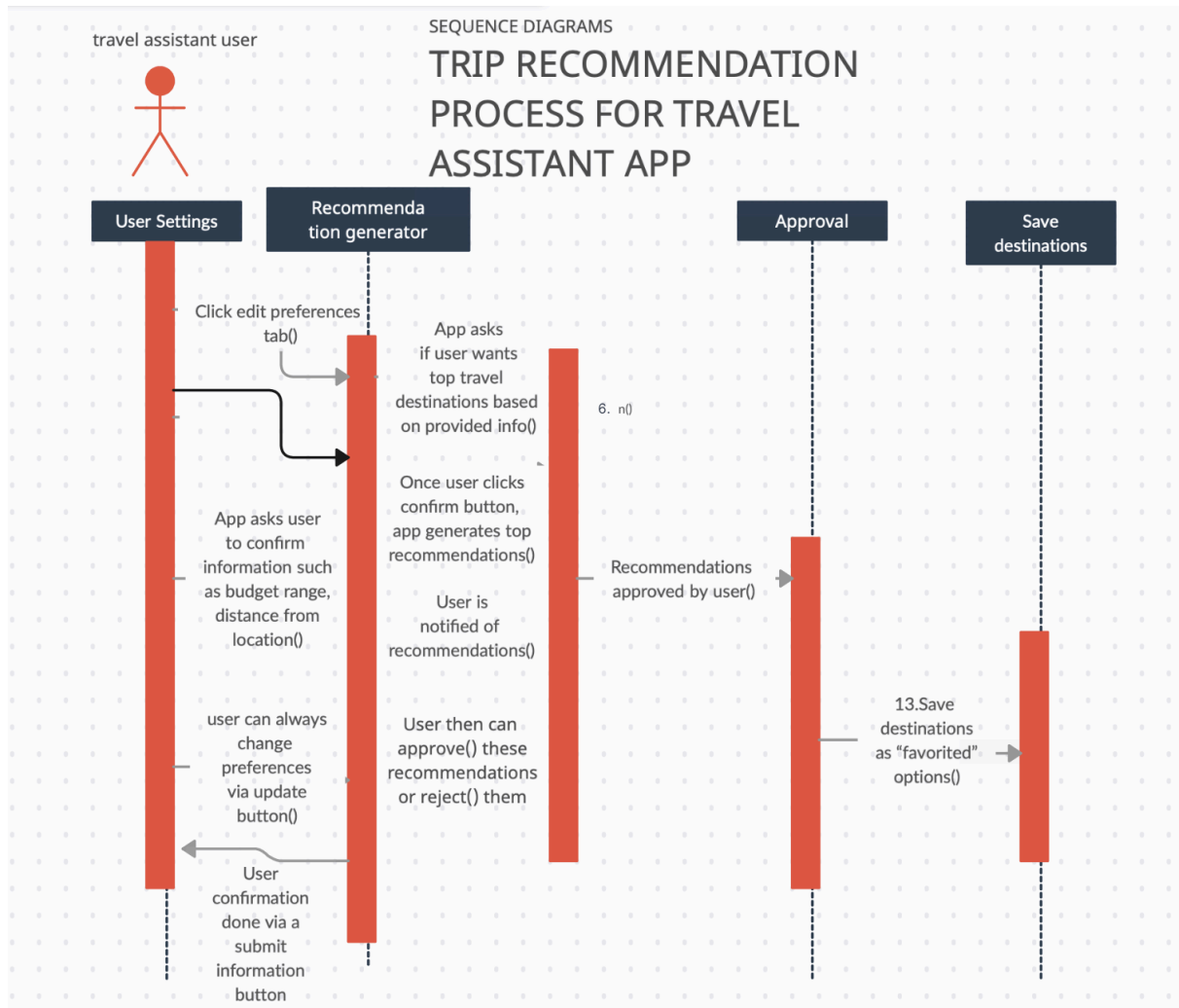


Flow Chart





## Sequence Diagram



### d. Document design process attributes

#### User:

- UserID (Primary Key): An identifier for each user.
- Username: The user's chosen username for their account.
- Password: The user's password, which should be securely stored (hashed and salted) for authentication.

#### TravelPost:

- PostID (Primary Key): A unique identifier for each travel post.
- Caption: A text caption or title for the travel post.
- Photo: The content of the post, which could be a reference to an image file or a binary representation of an image.
- Description: A longer description or content for the travel post.

- **Timestamp:** The date and time when the travel post was created.

#### **ChatMessage:**

- **MessageID (Primary Key):** A unique identifier for each chat message.
- **Content:** The text content of the chat message.
- **Timestamp:** The date and time when the message was sent.
- **SenderUserID (Foreign Key):** A reference to the user who sent the message (relates to the "User" entity).
- **ReceiverUserID (Foreign Key):** A reference to the user who received the message (relates to the "User" entity).

#### **Discussion:**

- **DiscussionID (Primary Key):** A unique identifier for each discussion.
- **Topic:** A title or topic for the discussion.
- **Description:** A longer description or content for the discussion.
- **CreationDate:** The date and time when the discussion was created.

### **i. Data Design (i.e., data structures)**

#### **User:**

The "User" entity is the representation of app users. They register for accounts and engage with various features such as creating posts, sending messages, and participating in discussions. The entity likely includes attributes such as "UserID," "Username," "Password," and additional user profile information.

#### **TravelPost:**

The entity "TravelPost" represents users' shared travel experiences, which can include text captions, photos, descriptions, and timestamps. Attributes of "TravelPost" typically include "PostID," "Caption," "Photo," "Description," and "Timestamp."

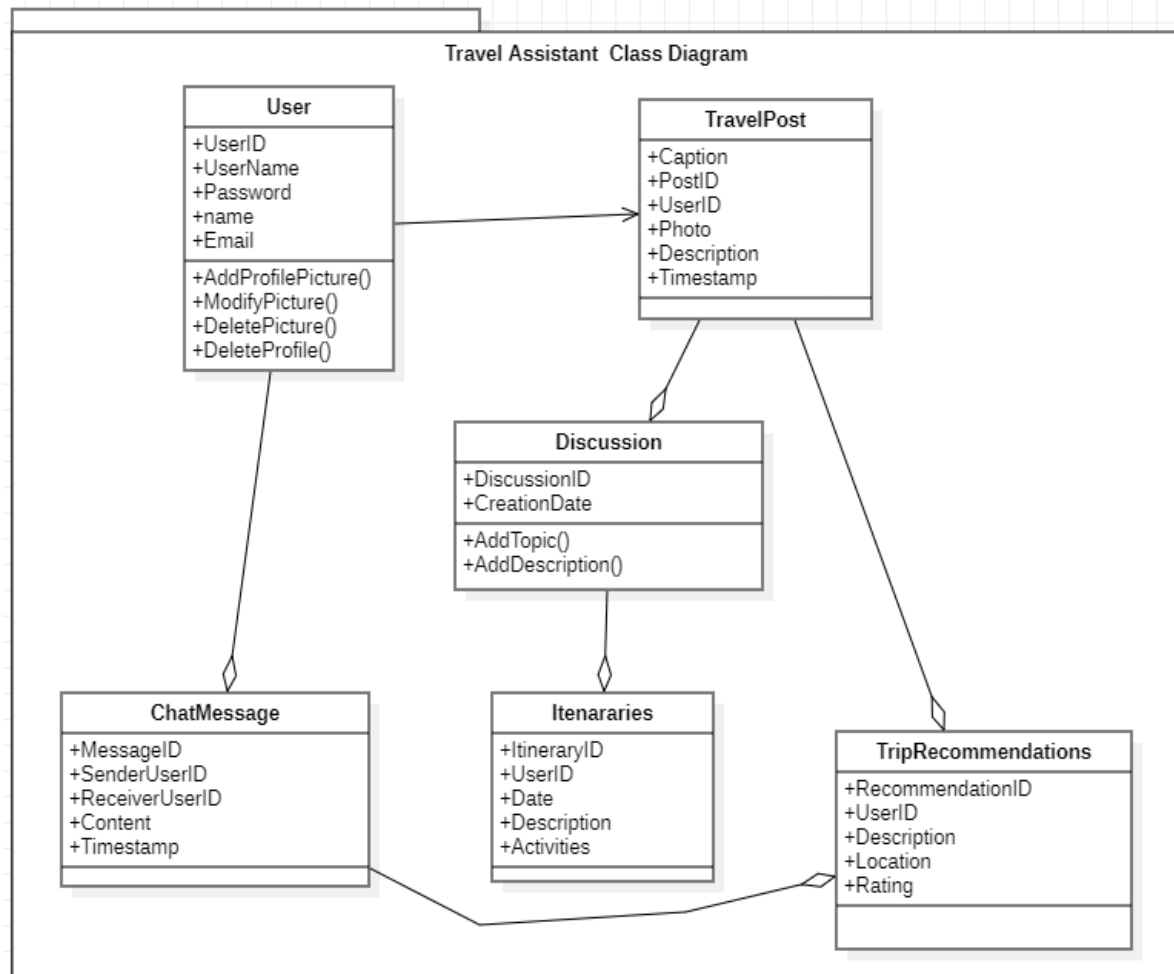
#### **ChatMessage:**

This entity represents the chat messages that are exchanged between users. It has several attributes such as "MessageID," "Content," "Timestamp," "SenderUserID," and "ReceiverUserID." The "SenderUserID" and "ReceiverUserID" attributes create relationships with the "User" entity, indicating who sent and received each message.

#### **Discussion:**

The "Discussion" entity is related to travel-related discussions within the app. It includes attributes like "DiscussionID," "Topic," "Description," and "CreationDate."

## ii. Architectural Design (i.e., classes)



### User Class:

- Attributes:
  - UserID: Unique identifier for each user.
  - Username: User's chosen username.
  - Password: Securely hashed
  - Name: User's name.
  - Email: User's email address.
  - ProfilePicture: Reference to the user's profile picture.

### Methods:

- Constructor to create a new user.
- Methods for updating user profile information.

- Methods for user authentication and authorization.

#### **TravelPost Class:**

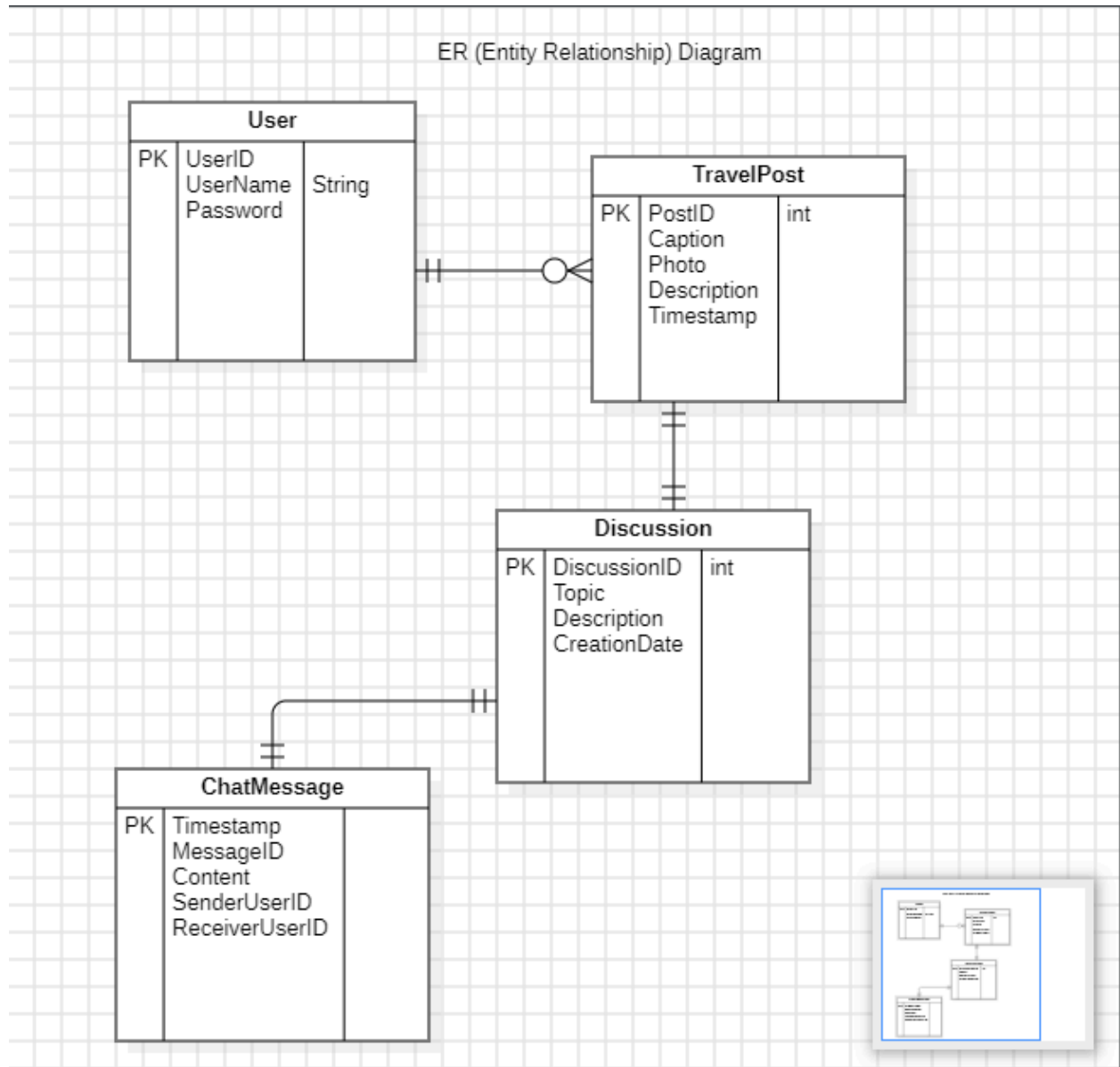
- Attributes:
  - PostID: Unique identifier for each travel post.
  - UserID: Reference to the user who created the post.
  - Caption: Caption or title for the post.
  - Photo: Reference to the post's image or binary data.
  - Description: Longer description or content for the post.
  - Timestamp: Date and time when the post was created.
- Methods:
  - Constructor to create a new travel post.
  - Methods for updating, deleting, or retrieving travel posts.

#### **ChatMessage Class:**

- Attributes:
  - MessageID: Unique identifier for each chat message.
  - SenderUserID: Reference to the user who sent the message.
  - ReceiverUserID: Reference to the user who received the message.
  - Content: Text content of the message.
  - Timestamp: Date and time when the message was sent.
- Methods:
  - Constructor to create a new chat message.
  - Methods for sending, receiving, and deleting chat messages.

#### **Discussion Class:**

- Attributes:
  - DiscussionID: Unique identifier for each discussion.
  - Topic: Title or topic of the discussion.
  - Description: Longer description or content for the discussion.
  - CreationDate: Date and time when the discussion was created.
- Methods:
  - Constructor to create a new discussion.
  - Methods for updating, deleting, or retrieving discussions.



### iii. Interface Design (i.e., interface between the units/classes)

#### User Registration and Authentication:

The "User" class or unit will provide methods or functions for user registration, including input validation and account creation.

Authentication methods will be available to verify user credentials, including usernames and securely hashed passwords.

### **User Profile and Settings:**

The "User" class will provide functionality for users to view and update their profile information, including name, email, and profile picture.

There will be methods to manage privacy settings, allowing users to choose which information is visible to others.

### **TravelPost Creation and Management:**

The "TravelPost" class will offer methods to create, edit, and delete travel posts, including setting captions, uploading photos, and adding descriptions.

It will handle the association between user accounts and their respective travel posts.

### **Messaging System:**

The "ChatMessage" class will provide methods for sending and receiving messages between users.

It will validate and store chat messages securely, ensuring that messages are associated with sender and receiver users.

### **Discussion Forum:**

The "Discussion" class will enable users to create new discussion topics and engage in existing discussions.

It will provide methods for adding, editing and deleting discussion topics and posts.

### **Database Interaction:**

Interface design will specify how classes interact with the database management system to store and retrieve data. For example, the "User" class will have methods for database CRUD (Create, Read, Update, Delete) operations related to user accounts.

### **User Interface (UI):**

The interface design will also consider the interaction between the user interface (e.g., web or mobile app) and the underlying classes. This includes defining how user input triggers actions and how the UI displays information retrieved from classes.

### **Error Handling and Validation:**

Interface design will incorporate error handling and validation mechanisms to guarantee that data passed between classes is consistent and secure.

#### iv. Procedural Design (i.e., algorithms of each method)

##### **User Registration and Authentication (User Class):**

- *User Registration Algorithm:*
  1. Validate user input (e.g., username, password, email) for correctness and completeness.
  2. Generate a random salt for the user's password.
  3. Hash the password
  4. Create a new user record in the database with the username, hashed password, and salt.
  5. Store additional user information in the database (e.g., name, email).
- *User Authentication Algorithm:*
  1. Validate user input (e.g., username, password).
  2. Retrieve the user's record from the database based on the username.
  3. Extract the stored salt.
  4. Hash the entered password with the extracted salt.
  5. Compare the resulting hash with the stored hash to verify the user's identity.

##### **TravelPost Creation and Management (TravelPost Class):**

- *Create Travel Post Algorithm:*
  1. Receive user input for the travel post (e.g., caption, photo, description).
  2. Validate the input data.
  3. Store the travel post data in the database, associating it with the user's account.
- *Edit Travel Post Algorithm:*
  1. Retrieve the existing travel post from the database.
  2. Validate user input for edits (e.g., caption, description).
  3. Update the travel post data in the database.
- *Delete Travel Post Algorithm:*
  1. Retrieve the travel post to be deleted.
  2. Verify the user's authority to delete the post.
  3. Remove the travel post from the database.

##### **Messaging System (ChatMessage Class):**

- *Send Message Algorithm:*
  1. Receive the sender's and receiver's user IDs and the message content.
  2. Create a new message record with sender, receiver, and content in the database.
  3. Save the message's timestamp.
- *Retrieve Messages Algorithm:*
  1. Retrieve messages associated with the user's account.
  2. Display messages based on sender, receiver, and timestamp.

#### **Discussion Forum (Discussion Class):**

- *Create Discussion Topic Algorithm:*
  1. Receive the user's input for the discussion topic (e.g., topic, description).
  2. Validate the input data.
  3. Store the discussion topic in the database.
- *Add Post to Discussion Algorithm:*
  1. Retrieve the existing discussion.
  2. Receive the user's input for a discussion post.
  3. Validate the input data.
  4. Add the post to the discussion and update the discussion's timestamp.



## Screen Mockups



9:41



**Hi, Chloe**

AI enhanced travel recommendations, at the tip of your fingertips



You have new  
Recommendations



### Your top travel goals

1.

**Budget  
efficient**

2.

**Close to  
Home**

### View recommended itineraries

#### **Rio de Janeiro, Brazil**

Recommended stay duration: 7 days

#### **Miami, Florida**

Recommended stay duration: 7 days



9:41



## Recommended Trip Itineraries



7 day stay

**View**

**Rio**

7 day stay

**View**

**Miami**

2 week stay

**View**

**Salvador**

9:41



## ← Trip Recommendations +

All 4

starred



### Rio de Janeiro

 Most budget friendly option



### Miami

 Cost efficient




### Punta Cana

 Budget friendly, close to home



### Salvador

 Budget Friendly



9:41



## Itineraries



Your detailed travel information

Search favorited destinations

Rio De  
Janeiro

Landing at  
Airport on 06/11

Est. 6  
day stay.

[view itinerary](#)

A  
|  
I

Day 1

arrival at  
the  
copabana  
hotel

[view details](#)

Leblon  
Beach  
tour

[view more details](#)

Day 2

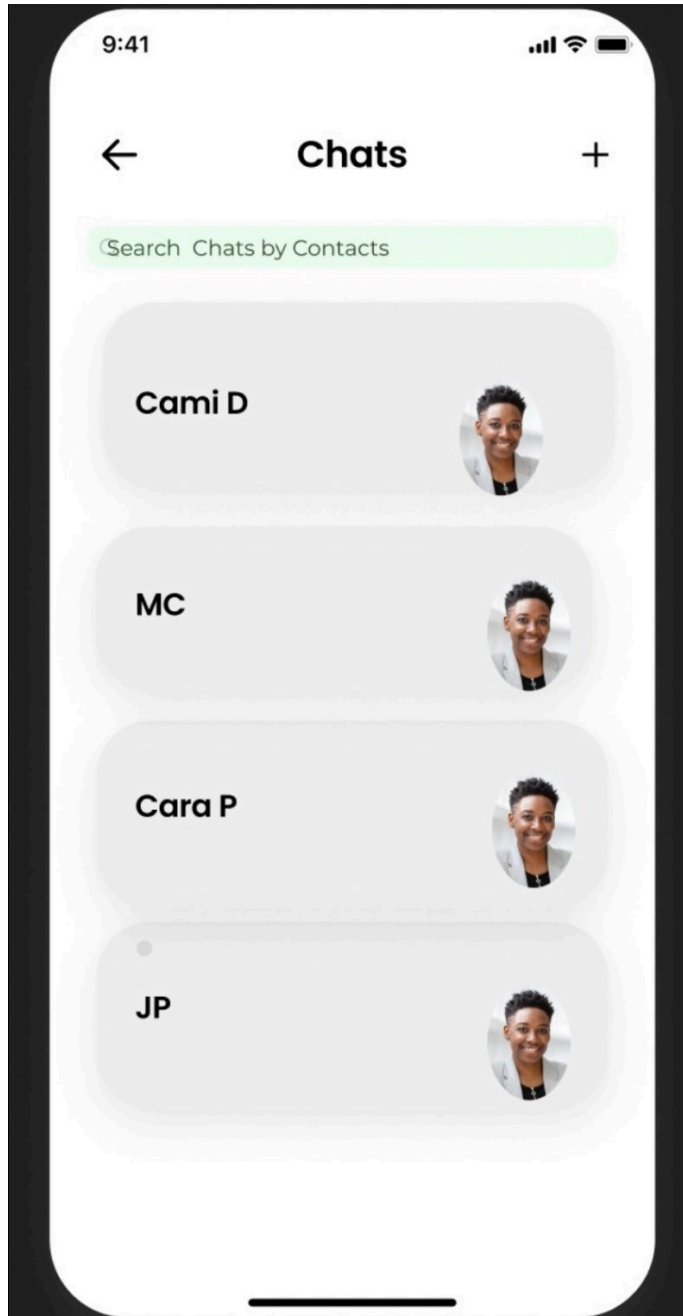
Downtown



Profile



Discover



**e. Rationale Management**

**i. The issues that were addressed**

Our travel app development journey involved a multitude of design challenges and issues spanning various features. One prominent issue was verifying smooth integration of real-time data for travel

recommendations. We encountered complexities related to data synchronization, accuracy, and the system's ability to adapt to changing user preferences.

Additionally, we tackled an issue with user data privacy, especially within the favorite destinations feature. We needed to guarantee that users' personal notes, photos, and travel history were securely stored and could only be accessed by authorized users.

The challenge of implementing real-time data integration led us to contemplate issues concerning data synchronization, precision, and adaptability to evolving user preferences. This multifaceted challenge demanded creative solutions for consistent and coherent travel recommendations.

## **ii. The alternatives that were considered**

In response to these issues, our development team delved into a pool of alternatives. For real-time data integration, we considered various third-party APIs, data providers, and caching mechanisms. With respect to user data privacy, we explored different encryption standards, user authentication methods, and secure cloud storage options.

When addressing real-time data integration challenges, we explored different third-party APIs and data providers. Additionally, we considered various caching mechanisms to enhance data synchronization and system responsiveness.

## **iii. The decisions that were made to resolve the issues**

After careful evaluation, we decided to implement a custom data synchronization mechanism for real-time data integration. This approach allowed us to maintain up-to-date recommendations and accommodate frequent user preference changes.

To address user data privacy, we opted for end-to-end encryption, making it certain that only authorized users could access their personal data within the app. We also integrated multi-factor authentication to enhance user account security.

For real-time data integration, we opted for a custom solution that balanced data accuracy with real-time synchronization. Our approach allowed us to deliver precise recommendations in near real-time, catering to users' dynamic preferences.

## **iv. The criteria used to guide decisions**

Our design decisions were guided by a comprehensive set of criteria. These included data accuracy, system responsiveness, user-friendliness, data security, scalability, and compliance with privacy regulations. We weighed each alternative against these criteria to determine the most effective solutions.

Throughout the decision-making process, we meticulously considered criteria such as data accuracy, ensuring that the information presented to users was reliable. System responsiveness was another pivotal criterion, as we aimed to provide a smooth experience with minimal delays in data updates.

**v. The debate developers went through to reach a decision**

Debates within the development team were frequent and rigorous. For real-time data integration, we engaged in discussions about the trade-offs between data accuracy and response times. Developers exchanged insights about the various third-party services and caching strategies, evaluating the impact on user experience.

Regarding user data privacy, intense debates revolved around the balance between convenience and security. The decision to implement end-to-end encryption required thorough consideration of encryption standards, key management, and usability aspects. The team collectively debated the best approach to maintain user data privacy while making sure we provide a seamless app experience.

These robust debates enriched the decision-making process, guaranteeing that the chosen solutions aligned with our objectives and met the highest standards of quality and security.

## **4. Implementation**

**a. Use SCRUM methodology**

During the development of our travel app, we successfully leveraged the agile scrum methodology to methodically organize and oversee our project. Our team met twice a week, with the designated scrum master taking charge of overseeing our progress and addressing any emerging issues. Here, we provide a comprehensive breakdown of the challenges, user stories, and project schedule that guided our development journey:

### **Sprint Planning**

**Sprint #: 1**



**Date:** 08/22/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories for this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-01	As a new user, I want to create an account to access the app's features.	Pending	Luis Abreu	2 days
TB-02	As a user, I want to log in to my existing account with my credentials.	Pending	Luis Abreu	3 days
TB-03	As a user, I want the app to remember my login session for convenience.	Pending	Hermes Bonilla	3 days
TB-04	As a user, I want to reset my password if I forget it.	Pending	Hermes Bonilla	4 days
TB-05	As a user, I want to log in using my Google account for quick access.	Pending	Camila Castaneda	2 days
TB-06	As a user, I want to log in using my Apple ID for flawless access.	Pending	Camila Castaneda	3 days
TB-07	As a user, I want to receive a verification email after registering my account.	Pending	Ericka Joseph	3 days
TB-08	As a user, I want to log in using my biometric data (fingerprint or face recognition) for added security and convenience.	Pending	Ericka Joseph	4 days
TB-09	As a user, I want to change my password for added security.	Pending	Giuliana Russi	2 days
TB-10	As a user, I want to review the login history of my account for security purposes.	Pending	Chloe Posthuma-Coelho	2 days

## Sprint Review

**Sprint #:** 1

**Date:** 08/22/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories completed in this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
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TB-01	As a new user, I want to create an account to access the app's features.	Completed	Luis Abreu	2 days
TB-02	As a user, I want to log in to my existing account with my credentials.	Completed	Luis Abreu	3 days
TB-03	As a user, I want the app to remember my login session for convenience.	Completed	Hermes Bonilla	3 days
TB-04	As a user, I want to reset my password if I forget it.	Completed	Hermes Bonilla	4 days
TB-05	As a user, I want to log in using my Google account for quick access.	Completed	Camila Castaneda	2 days
TB-06	As a user, I want to log in using my Apple ID for flawless access.	Completed	Camila Castaneda	3 days
TB-07	As a user, I want to receive a verification email after registering my account.	Completed	Ericka Joseph	3 days
TB-08	As a user, I want to log in using my biometric data (fingerprint or face recognition) for added security and convenience.	Completed	Ericka Joseph	4 days
TB-09	As a user, I want to change my password for added security.	Completed	Giuliana Russi	2 days
TB-10	As a user, I want to review the login history of my account for security purposes.	Completed	Chloe Posthuma-Coelho	2 days

## Team Retro

**Sprint #: 1**

**Date:** 08/22/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**What went according to plan?**

All the stories were carried out successfully.

**What didn't go according to plan?**

Additional research would've helped complete tasks quicker.

**How can we improve?**

Improve user login experience.

## Sprint Planning

## Sprint #: 2

**Date:** 09/05/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories for this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-11	As a user, I want to discover a new travel destination and add it to my favorites so that I can go back to them.	Pending	Chloe Posthuma-Coelho	2 days
TB-12	As a user, I want to organize my favorite destinations into personalized travel lists so that I can plan accordingly.	Pending	Chloe Posthuma-Coelho	2 days
TB-13	As a user, I want to set a reminder for my saved destinations so that I never forget about specific ones I'm really interested in.	Pending	Ericka Joseph	2 days
TB-14	As a user, I want to view recommendations from fellow travelers and add them to my favorites so I have more options to choose from.	Pending	Ericka Joseph	3 days
TB-15	As a user, I want to view my favorite destinations on a map so I am aware of the surrounding locations.	Pending	Hermes Bonilla	4 days
TB-16	As a user, I want to share my favorite destinations with friends through the app's messaging feature so that they can too be involved.	Pending	Luis Abreu	3 days
TB-17	As a user, I want to discover travel stories and tips related to my favorite destinations shared by other travelers so that I can read their experiences/advice.	Pending	Camila Castaneda	2 days
TB-18	As a user, I want to receive travel alerts for my favorite destinations so that I can be up to date.	Pending	Camila Castaneda	3 days
TB-19	As a user, I want to add personal notes and photos to my favorite destinations so that I can view them later.	Pending	Giuliana Russi	2 days
TB-20	As a user, I want to view recommendations from the app's AI and add them to my favorites.	Pending	Giuliana Russi	3 days

## Sprint Review

### Sprint #: 2

**Date:** 09/05/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**Stories completed in this Sprint**

Story ID	Story Title	Status	Assigned To	Estimate
TB-11	As a user, I want to discover a new travel destination and add it to my favorites so that I can go back to them.	Completed	Chloe Posthuma-Coelho	2 days
TB-12	As a user, I want to organize my favorite destinations into personalized travel lists so that I can plan accordingly.	Completed	Chloe Posthuma-Coelho	2 days
TB-13	As a user, I want to set a reminder for my saved destinations so that I never forget about specific ones I'm really interested in.	Completed	Ericka Joseph	2 days
TB-14	As a user, I want to view recommendations from fellow travelers and add them to my favorites so I have more options to choose from.	Completed	Ericka Joseph	3 days
TB-15	As a user, I want to view my favorite destinations on a map so I am aware of the surrounding locations.	Completed	Hermes Bonilla	4 days
TB-16	As a user, I want to share my favorite destinations with friends through the app's messaging feature so that they can too be involved.	Completed	Luis Abreu	3 days
TB-17	As a user, I want to discover travel stories and tips related to my favorite destinations shared by other travelers so that I can read their experiences/advice.	Completed	Camila Castaneda	5 days
TB-18	As a user, I want to receive travel alerts for my favorite destinations so that I can be up to date.	Completed	Camila Castaneda	3 days
TB-19	As a user, I want to add personal notes and photos to my favorite destinations so that I can view them later.	Completed	Giuliana Russi	2 days
TB-20	As a user, I want to view recommendations from the app's AI and add them to my favorites.	Completed	Giuliana Russi	3 days

**Team Retro**

**Sprint #:** 2

**Date:** 09/05/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**What went according to plan?**

Communication was great.

All stories were carried out.

### What didn't go according to plan?

Some stories took a bit longer than expected.

### How can we improve?

Dedicate a bit more research to certain tasks.

## Sprint Planning

**Sprint #:** 3

**Date:** 09/19/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories for this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-21	As a user, I would like to receive AI-powered help when planning my trip so that I can take off some stress that comes with planning.	Pending	Hermes Bonilla	3 days
TB-22	As a user, I want to receive recommendations for restaurants in the area I am traveling in ahead of time so that I can plan reservations.	Pending	Hermes Bonilla	3 days
TB-23	As a user, I want to be notified when new flights are recommended.	Pending	Ericka Joseph	2 days
TB-24	As a user, I would like to not worry about booking restaurant reservations.	Pending	Ericka Joseph	2 days
TB-25	As a user, I would like to not worry about searching several websites to find the hotel that best suits me within my price range.	Pending	Luis Abreu	3 days
TB-26	As a user, I would like to see the important landmarks that I should go to when I visit a destination.	Pending	Luis Abreu	2 days
TB-27	As a user, I would like to be able to specify what type of recommendations I am looking for.	Pending	Giuliana Russi	4 days
TB-28	As a user, I would like to be able to receive recommendations of different activities in the area just as if a local were to help me plan my trip.	Pending	Camila Castaneda	3 days

TB-29	As a user, I would like to be able to give feedback on any recommendations to me.	Pending	Chloe Posthuma-Coelho	2 days
TB-30	As a user, I would like to be able to receive destination recommendations to my email so that I can easily share and keep track of AI-powered suggestions.	Pending	Chloe Posthuma-Coelho	3 days

## Sprint Review

**Sprint #:** 3

**Date:** 09/19/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories completed in this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-21	As a user, I would like to receive AI-powered help when planning my trip so that I can take off some stress that comes with planning.	Completed	Hermes Bonilla	3 days
TB-22	As a user, I want to receive recommendations for restaurants in the area I am traveling in ahead of time so that I can plan reservations.	Completed	Hermes Bonilla	3 days
TB-23	As a user, I want to be notified when new flights are recommended.	Completed	Ericka Joseph	2 days
TB-24	As a user, I would like to not worry about booking restaurant reservations.	Completed	Ericka Joseph	2 days
TB-25	As a user, I would like to not worry about searching several websites to find the hotel that best suits me within my price range.	Completed	Luis Abreu	3 days
TB-26	As a user, I would like to see the important landmarks that I should go to when I visit a destination.	Completed	Luis Abreu	2 days
TB-27	As a user, I would like to be able to specify what type of recommendations I am looking for.	Completed	Giuliana Russi	4 days
TB-28	As a user, I would like to be able to receive recommendations of different activities in the area just as if a local were to help me plan my trip.	Completed	Camila Castaneda	3 days
TB-29	As a user, I would like to be able to give feedback on any recommendations to me.	Completed	Chloe Posthuma-Coelho	2 days
TB-30	As a user, I would like to be able to receive destination recommendations to my email so that I can easily share and keep track of AI-powered suggestions.	Completed	Chloe Posthuma-Coelho	3 days

## Team Retro

**Sprint #:** 3

**Date:** 09/19/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**What went according to plan?**

Everything went very well

**What didn't go according to plan?**

Sprint went as best as it could

**How can we improve?**

Keep the same energy up. Very productive sprint.

## Sprint Planning

**Sprint #:** 4

**Date:** 10/03/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**Stories for this Sprint**

Story ID	Story Title	Status	Assigned To	Estimate
TB-31	As a user, I want to search for flights based on my travel preferences.	Pending	Hermes Bonilla	3 days
TB-32	As a user, I want to search for accommodations based on my preferences.	Pending	Hermes Bonilla	2 days
TB-33	As a user, I want to review my booked flights and accommodations.	Pending	Giuliana Russi	2 days
TB-34	As a user, I want to receive booking confirmations and travel itineraries.	Pending	Giuliana Russi	3 days
TB-35	As a user, I want to compare flight prices from different airlines.	Pending	Luis Abreu	3 days

TB-36	As a user, I want to find last-minute deals on accommodations.	Pending	Luis Abreu	3 days
TB-37	As a user, I want to receive special offers and promotions for flights and accommodations.	Pending	Ericka Joseph	3 days
TB-38	As a user, I want to view my booking history for reference and review.	Pending	Camila Castaneda	2 days
TB-39	As a user, I want to receive weather and destination-related information for my upcoming trip.	Pending	Camila Castaneda	3 days
TB-40	As a user, I want to explore nearby attractions and experiences based on my booked destination.	Pending	Chloe Posthuma-Coelho	3 days

## Sprint Review

**Sprint #: 4**

**Date:** 10/3/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories completed in this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-31	As a user, I want to search for flights based on my travel preferences.	Completed	Hermes Bonilla	3 days
TB-32	As a user, I want to search for accommodations based on my preferences.	Completed	Hermes Bonilla	2 days
TB-33	As a user, I want to review my booked flights and accommodations.	Completed	Giuliana Russi	2 days
TB-34	As a user, I want to receive booking confirmations and travel itineraries.	Completed	Giuliana Russi	3 days
TB-35	As a user, I want to compare flight prices from different airlines.	Completed	Luis Abreu	3 days
TB-36	As a user, I want to find last-minute deals on accommodations.	Completed	Luis Abreu	3 days
TB-37	As a user, I want to receive special offers and promotions for flights and accommodations.	Completed	Ericka Joseph	3 days
TB-38	As a user, I want to view my booking history for reference and review.	Completed	Camila Castaneda	2 days



TB-39	As a user, I want to receive weather and destination-related information for my upcoming trip.	Completed	Camila Castaneda	3 days
TB-40	As a user, I want to explore nearby attractions and experiences based on my booked destination.	Completed	Chloe Posthuma-Coelho	3 days

## Team Retro

### Sprint #: 4

**Date:** 10/03/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### What went according to plan?

Everything has gone according to plan.

Great communication between team members.

### What didn't go according to plan?

Everything went as well as it could have gone. No delays.

### How can we improve?

Keep this momentum going, work produced is great.

## Sprint Planning

### Sprint #: 5

**Date:** 10/17/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories for this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-41	As a user, I want to know the culture of my destination to be knowledgeable of proper customs.	Pending	Luis Abreu	2 days

TB-42	As a user I want the system to track the possible dates that I am looking to travel to have an idea of the pricings.	Pending	Camila Castaneda	3 days
TB-43	As a user I want to be able to see what hotels would have the best city life to plan places to go to.	Pending	Camila Castaneda	3 days
TB-44	As a user I want the system to see what special activities there would be for the time of my stay, so that I can attend.	Pending	Ericka Joseph	2 days
TB-45	As a user I want a guide to navigate the city including local phrases and a transportation guide.	Pending	Ericka Joseph	4 days
TB-46	As a user I want a packing list of recommended items to take.	Pending	Giuliana Russi	3 days
TB-47	As a user I want the ability to see the reviews of restaurants recommended to book reservations.	Pending	Giuliana Russi	3 days
TB-48	As a user I want to know the currency exchange rates so that I have accurate change.	Pending	Chloe Posthuma-Coelho	2 days
TB-49	As a user I would like to know a weather forecast that is kept updated so I know what clothes to take.	Pending	Chloe Posthuma-Coelho	3 days
TB-50	As a user I would like to have important documents saved and important contact information saved on the app.	Pending	Hermes Bonilla	2 days

## Sprint Review

**Sprint #: 5**

**Date:** 10/17/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

### Stories completed in this Sprint

Story ID	Story Title	Status	Assigned To	Estimate
TB-41	As a user, I want to know the culture of my destination to be knowledgeable of proper customs.	Completed	Luis Abreu	2 days

TB-42	As a user I want the system to track the possible dates that I am looking to travel to have an idea of the pricings.	Completed	Camila Castaneda	3 days
TB-43	As a user I want to be able to see what hotels would have the best city life to plan places to go to.	Completed	Camila Castaneda	3 days
TB-44	As a user I want the system to see what special activities there would be for the time of my stay, so that I can attend.	Completed	Ericka Joseph	2 days
TB-45	As a user I want a guide to navigate the city including local phrases and a transportation guide.	Completed	Ericka Joseph	4 days
TB-46	As a user I want a packing list of recommended items to take.	Completed	Giuliana Russi	3 days
TB-47	As a user I want the ability to see the reviews of restaurants recommended to book reservations.	Completed	Giuliana Russi	3 days
TB-48	As a user I want to know the currency exchange rates so that I have accurate change.	Completed	Chloe Posthuma-Coelho	2 days
TB-49	As a user I would like to know a weather forecast that is kept updated so I know what clothes to take.	Completed	Chloe Posthuma-Coelho	3 days
TB-50	As a user I would like to have important documents saved and important contact information saved on the app.	Completed	Hermes Bonilla	2 days

## Team Retro

**Sprint #: 5**

**Date:** 10/17/2023

**Product Owner:** Hermes Bonilla

**SCRUM Master:** Luis Abreu

**Team:** TravBud

**What went according to plan?**

Excellent communication.

No major delays.

**What didn't go according to plan?**

Everything went smoothly.

**How can we improve?**

Keep up the same energy, the team is going strong.

## Sprint Stand-up Notes

Sprint #: 1

Date: 08/22/2023

Product Owner: Hermes

Scrum Master: Luis

Team member 1: Luis

- What I did Yesterday:
  - Conducted a kickoff meeting, defined roles and responsibilities for the team.
- What I am going to do Today:
  - Set up the project management system to make sure everyone has access.
- Impediments:
  - None

Team member 2: Hermes

- What I did Yesterday:
  - Created wireframes for the login/register screens.
- What I am going to do Today:
  - Discuss design concepts with the team and finalize the screen layouts.
- Impediments:
  - None

Team member 3: Giuliana

- What I did Yesterday:
  - Assisted in creating initial design mockups for the login/register process.
- What I am going to do Today:
  - Collaborate with Hermes to refine and enhance the visual aspects of the screens.
- Impediments:
  - None

Team member 4: Ericka

- What I did Yesterday:
  - Reviewed the initial database schema for user authentication.

- What I am going to do Today:
  - Begin reviewing the database structure for the login/register functionality and preparing for testing.
- Impediments:
  - None

Team member 5: Chloe

- What I did Yesterday:
  - Created a flowchart outlining the user journey for the login/register process and worked on additional visual aids.
- What I am going to do Today:
  - Develop detailed use cases for the login/register functionality and continue working on visual assets, including a sequence diagram.
- Impediments:
  - None

Team member 6: Camila

- What I did Yesterday:
  - Set up the initial project repository and integrated design assets.
- What I am going to do Today:
  - Begin coding the basic structure for the login and registration screens.
- Impediments:
  - None

Sprint #: 2

Date: 09/05/2023

Product Owner: Hermes

Scrum Master: Luis

Team member 1: Luis

- What I did Yesterday:
  - Oversaw the completion of the login/register screens, and conducted a brief review session with the team.
- What I am going to do Today:
  - Initiate the planning session for the Favorite Destinations feature, making it certain that we have a smooth transition from the previous sprint.

- Impediments:

- None

Team member 2: Hermes

- What I did Yesterday:

- Finalized the design concepts for the login/register screens after team collaboration.

- What I am going to do Today:

- Lead the design discussions for the Favorite Destinations feature, outlining wireframes and initial concepts.

- Impediments:

- None

Team member 3: Giuliana

- What I did Yesterday:

- Collaborated with Hermes to refine the visual aspects of the login/register screens.

- What I am going to do Today:

- Work closely with Hermes on creating wireframes and design concepts for the Favorite Destinations feature.

- Impediments:

- None

Team member 4: Ericka

- What I did Yesterday:

- Started reviewing the database structure for the login/register functionality.

- What I am going to do Today:

- Begin the initial planning for database modifications required for the Favorite Destinations feature and prepare for testing.

- Impediments:

- None

Team member 5: Chloe

- What I did Yesterday:

- Created detailed use cases for the login/register screens and worked on visual assets, including a sequence diagram.

- What I am going to do Today:
  - Develop flowcharts and mockups for the Favorite Destinations feature, ensuring a comprehensive understanding of the user journey.
- Impediments:
  - None

Team member 6: Camila

- What I did Yesterday:
  - Began coding the basic structure for the login and registration screens.
- What I am going to do Today:
  - Start developing the functionality for adding and viewing favorite destinations.
- Impediments:
  - None

Sprint #: 3

Date: 09/19/2023

Product Owner: Hermes

Scrum Master: Luis

Team member 1: Luis

- What I did Yesterday:
  - Oversaw the completion of the Favorite Destinations feature, conducted a review session with the team.
- What I am going to do Today:
  - Initiate the planning session for the AI-Powered Destination Recommendations feature while keeping alignment with the product vision.
- Impediments:
  - None

Team member 2: Hermes

- What I did Yesterday:
  - Led the design discussions for the Favorite Destinations feature, outlined wireframes, and initial concepts.
- What I am going to do Today:

- Define design requirements for the AI-Powered Destination Recommendations, collaborating with Giuliana.
- Impediments:
  - None

Team member 3: Giuliana

- What I did Yesterday:
  - Worked with Hermes on creating wireframes and design concepts for the Favorite Destinations feature.
- What I am going to do Today:
  - Collaborate with Hermes on refining the visual aspects of the AI-Powered Destination Recommendations, focusing on user experience.
- Impediments:
  - None

Team member 4: Ericka

- What I did Yesterday:
  - Began the initial planning for database modifications required for the Favorite Destinations feature and prepared for testing.
- What I am going to do Today:
  - Assess and plan for necessary database enhancements to support AI-powered recommendations.
- Impediments:
  - None

Team member 5: Chloe

- What I did Yesterday:
  - Developed flowcharts and mockups for the Favorite Destinations feature, establishing a comprehensive understanding of the user journey.
- What I am going to do Today:
  - Create visual assets, including use cases and mockups, for the AI-Powered Destination Recommendations feature.
- Impediments:
  - None

Team member 6: Camila



- What I did Yesterday:
  - Started developing the functionality for adding and viewing favorite destinations.
- What I am going to do Today:
  - Initiate the coding for AI-powered destination recommendations, working in collaboration with the design team.
- Impediments:
  - None

Sprint #: 4

Date: 10/03/2023

Product Owner: Hermes

Scrum Master: Luis

Team member 1: Luis

- What I did Yesterday:
  - Provided support to Camila in coding the AI-Powered Destination Recommendations.
- What I am going to do Today:
  - Conduct a review of the AI-Powered Destination Recommendations' initial codebase, addressing any integration challenges.
- Impediments:
  - None

Team member 2: Hermes

- What I did Yesterday:
  - Collaborated with Giuliana to finalize the design for AI-Powered Destination Recommendations.
- What I am going to do Today:
  - Initiate design discussions for the Booking Flights and Accommodations feature, guaranteeing a smooth user experience.
- Impediments:
  - None

Team member 3: Giuliana

- What I did Yesterday:

- Worked on refining visual elements for AI-Powered Destination Recommendations.
- What I am going to do Today:
  - Collaborate with Hermes on creating design assets for the Booking Flights and Accommodations feature.
- Impediments:
  - None

Team member 4: Ericka

- What I did Yesterday:
  - Continued assessing and planning database enhancements for AI-Powered Destination Recommendations.
- What I am going to do Today:
  - Develop and execute test cases for the AI-Powered Destination Recommendations, making sure it can provide robust functionality.
- Impediments:
  - None

Team member 5: Chloe

- What I did Yesterday:
  - Focused on creating visual assets for AI-Powered Destination Recommendations.
- What I am going to do Today:
  - Start developing flow charts and mockups for the Booking Flights and Accommodations feature.
- Impediments:
  - None

Team member 6: Camila

- What I did Yesterday:
  - Progressed with coding the AI-Powered Destination Recommendations feature.
- What I am going to do Today:
  - Begin coding the functionality for Booking Flights and Accommodations, ensuring integration with existing components.
- Impediments:

- None

Sprint #: 5

Date: 10/17/2023

Product Owner: Hermes

Scrum Master: Luis

Team member 1: Luis

- What I did Yesterday:
  - Reviewed the progress of the Booking Flights and Accommodations feature, providing assistance to Chloe in creating relevant diagrams.
- What I am going to do Today:
  - Continue overseeing the development of Booking Flights and Accommodations.
- Impediments:
  - None

Team member 2: Hermes

- What I did Yesterday:
  - Collaborated with Giuliana to finalize the design for Booking Flights and Accommodations.
- What I am going to do Today:
  - Initiate design discussions for the Travel Itinerary Planning feature, guaranteeing a cohesive design language.
- Impediments:
  - None

Team member 3: Giuliana

- What I did Yesterday:
  - Worked on refining visual elements for Booking Flights and Accommodations.
- What I am going to do Today:
  - Collaborate with Hermes on creating design assets for the Travel Itinerary Planning feature.
- Impediments:
  - None

Team member 4: Ericka

- What I did Yesterday:
  - Executed test cases for the AI-Powered Destination Recommendations, providing feedback for improvement.
- What I am going to do Today:
  - Helping develop test cases for the Booking Flights and Accommodations feature.
- Impediments:
  - None

Team member 5: Chloe

- What I did Yesterday:
  - Developed flowcharts and mockups for Booking Flights and Accommodations.
- What I am going to do Today:
  - Focus on creating detailed mockups and diagrams for the Travel Itinerary Planning feature.
- Impediments:
  - Limited access to certain graphic design software features.

Team member 6: Camila

- What I did Yesterday:
  - Progressed with coding the Booking Flights and Accommodations feature, resolving integration challenges.
- What I am going to do Today:
  - Begin coding the functionality for Travel Itinerary Planning.
- Impediments:
  - None

## 5. Verification

### a. Define verification

Software verification, a crucial facet of software development, is synonymous with establishing the quality and compliance of the developed software. In the context of our travel app, verification involves a meticulous process of checking whether the software aligns with the specified requirements and meets the

expectations of our users. The objective is to guarantee the absence of bugs or issues within the program, in return providing a reliable user experience.

To achieve this goal, our development team is committed to comprehensive documentation throughout the software engineering process. Every stage, from ideation to implementation, is meticulously recorded. This documentation serves as a reference point for validating that the software aligns with the intended functionalities and features. By emphasizing thorough verification practices, we aim to deliver a robust and error-free travel app that exceeds the expectations of our users.

**b. Introduce your verification process**

Once we had created our gantt chart we were able to understand what parts we were each responsible for. Our biggest concern was how the pieces would integrate together to make one app. We took the testing of our application very seriously and implemented various methods of testing. We started with unit testing to make sure that each method of the code written worked and was successful. In this stage we tested it with dummy data and tried to make sure that things worked as expected. When everything was perfect we would meet in person to merge code and start integration testing. One thing we always wanted to make sure of was that we had working code to fall back on so we would create a branch on our github, pull the repository and start merging code in case and applying integration testing. We took this precautionary method so that we would always have our previous working code. For our integration testing we would meet in person and start merging the code on a separate branch ensuring that any new features would integrate seamlessly into the system. After everything was integrated on the separate branch we would send it to our QA to review the code and check the testing we had done before the code was approved to be merged onto the main branch.

**c. Describe/demonstrate your test cases**

HOME PAGE: For the home page we made sure that all the buttons functionality led to the adequate places. On the home page after we ensured that the register button led to the proper places we would lead to our home page. On our home page we had the recommended itineraries for the places they had searched for and how long we recommended they stay to be able to complete the itinerary. We also had the travel goals in mind as a way for the app to track what was most important for our traveler.

DISCOVER: This part of our app allowed the user to search for destinations they wanted to go to and build an itinerary out of. This page, if focused on the building an itinerary part, would show activities they could do in their place of travel depending on what activities they had enjoyed before. This would be somewhere they would discover restaurants and activities to do in that country and we tested it by ensuring that the locations existed and that the stores and restaurants also existed. In this part you would be able to click on discover new places and it

would show destinations to travel based off of adventure goals. Here our main focus to test was ensuring that the locations existed and that it would be an appropriate time to travel.

**ITINERARIES:** For itineraries the screen would show detailed travel information of the location they were going from where they landed to each day. Here we would mostly focus on the data collection for the AI and how it was taking the data and making recommendations of an itinerary. Here the most important aspect was that the itinerary had proper locations and that it was reasonable to complete everything from the itinerary and that the person would not be overwhelmed by the schedule.

**BOOKINGS:** For the bookings section of our app, user experience is super important and ensuring accuracy is crucial. Since this part of our app allows users to book flights, accommodations, and activities directly, we needed to test that recommendations matched with their real-time bookings. For example, with flights, we rigorously tested that flight recommendations existed and matched with the airlines flight numbers. Accommodation offers needed to be double verified to avoid users booking, then showing up to their accommodations and finding out that the booking was never confirmed. We wanted to make sure as part of our testing that once the app confirmed a place, activity, or flight was booked, that the booking was guaranteed. As part of the testing, we made sure real-time advisories and updates such as flight delays were properly being conveyed in a timely manner.

**CHATS:** For our chat functionality, we validated the delivery and encryption of messages to uphold user privacy and security. We conducted tests to ensure that messages are stored for future reference and that the 10-minute deletion time limit is enforced. The sharing feature within the chat is thoroughly tested to confirm that users can successfully share received recommendations, text, pictures, and Discover posts that are the same ones they want to share.

**PROFILE:** The profile section of our app involved many checks regarding user control and privacy. Tests include verifying that users can successfully view, edit, and update their profile information. Privacy settings were repeatedly tested to confirm that changes made are accurately reflected throughout the app. In testing complete private mode, we ensure that no personal information or travel history is visible to other users. Additionally, we validate the accurate display of the user's travel history and previous trips when made public, as well as the seamless access to messages, notifications, and account settings within the profile tab.

d. Demonstrate (preferably a table) traceability between the test cases/plan and requirements

Test case Scenario	Test case Steps	Test Case Requirements	Test case Status
Home Page Functionality	1. Launch application, 2. Click on the Register button, 3. Verify recommended itineraries, 4. Check Travel Goals integration	All buttons on the home page lead to the expected destinations. The Register button navigates to the appropriate registration page. Recommended itineraries match the user's search criteria and provide appropriate stay durations. The app successfully tracks and reflects the user's travel goals on the home page.	PASS
Discover Functionality	1. Search for a destination, 2. Build an itinerary, 3. Click on "Discover New Places"	The app allows users to search for destinations and displays relevant information. Ensure the building of an itinerary includes activities based on user preferences and verifies the existence of locations, stores, and restaurants. Confirm that the feature "Discover New Places" displays destinations based on adventure goals, ensuring locations are valid and	PASS

		appropriate for travel.	
Itineraries Functionality	1. View itinerary details, 2. Check data collection for AI	The itinerary screen displays detailed travel information, and the AI-recommended data is accurate. Verify that the AI effectively collects data and provides reasonable recommendations. Ensure the itinerary is feasible, and the schedule is not overwhelming.	PASS
Bookings Functionality	1. Book a flight, 2. Book accommodation, 3. Book an activity, 4. Test real-time advisories	Test that flight recommendations exist, match real flight numbers, and provide accurate booking information. Ensure the app accurately verifies accommodation offers to avoid unconfirmed bookings. Confirm that confirmed bookings are guaranteed. Verify that activities can be booked successfully, and the booking status is accurate in the app. Simulate real-time advisories, such as flight delays, to ensure timely conveyance of	PASS



		updates.	
Chat Functionality	1. Send a direct message, 2. Test message storage and deletion, 3. Share recommendations in chat	Confirm the successful delivery and encryption of messages, ensuring user privacy and security. Ensure messages are stored for future reference and can be deleted within the 10-minute time limit. Validate that users can share received recommendations, text, pictures, and Discover posts in the chat.	PASS
Profile Functionality	1. View and edit profile information, 2. Test privacy settings, 3. Complete privacy mode, 4. Display travel history, 5. Access messages and notifications, 6. Verify account settings	Verify that users can accurately view, edit, and update their profile information. Confirm that changes in privacy settings are reflected throughout the app. Ensure that selecting complete privacy mode hides all personal information and travel history from other users. Test the accurate display of the user's travel history and previous trips when made public. Confirm seamless access to messages and notifications from the profile	PASS

		tab. Test that all relevant account settings, such as password changes or email updates, are accessible from the profile tab.	
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## 6. Lessons learned

Throughout this project, our team of dedicated students embarked on a transformative journey, gaining insights and experiences that will undoubtedly influence our future endeavors. One of the pivotal lessons we acquired revolved around the power of effective teamwork. In the midst of our demanding academic schedules, the ability to harmonize diverse skill sets, ideas, and perspectives emerged as a keystone of our progress. Efficient collaboration and open communication became the driving force behind getting over complex challenges, reinforcing the saying that a shared vision can unite individuals and empower them to overcome significant obstacles.

Our choice of project was another key takeaway. We realized the immense value of selecting a project that resonated with our interests and passions, driving our creativity and commitment. The software development life cycle deepened our understanding of the meticulous planning, design, implementation, and testing phases that underpin successful software development projects. Additionally, we recognized the importance of adaptability in this dynamic field, where changes and unexpected hurdles are commonplace. Our ability to embrace change, refine our approaches, and navigate unforeseen roadblocks provided us with valuable skills applicable not only in our academic pursuits but also in our future professional journeys. Moreover, we comprehended the implications of our tool, not only in terms of its impact on individual users but also on the broader community. Our application, with its emphasis on responsible and sustainable travel, has the potential to contribute to the larger goal of reducing the carbon footprint of the travel industry. By promoting eco-conscious travel choices and personalized recommendations, our tool aligns with the growing global awareness of sustainability and ethical travel. As a result, our project is not merely a piece of software but a step towards fostering a responsible and informed travel community, which can potentially influence the industry as a whole.