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Introduction

The PlanToPoint is a iOS mobile application is intended to help people organise their journeys. By giving users a personalised, simple, and effective way to plan their trips, this app seeks to enhance the present travel planning experience.

By enabling users to design unique travel itineraries that are catered to their individual needs and tastes, PlanToPoint aims to make the process of organising a trip simpler and effective. Users of the app may look up flights, hotels, and activities all within the app and add to their itineraries. Personalized suggestions for activities and attractions are also offered to users by PlanToPoint based on their preferences, past travel experiences, and other pertinent information.

The application provides a streamlined and tailored experience for its intended audience. The key functions of the app include tailored recommendations for sites and activities based on user preferences, the ability to search for flights, hotels, and activities and add it to single itinerary.

The ability for users to make individual travel plans that can be readily adjusted and updated as needed is one of the app's primary advantages. This allows consumers to modify their plans in response to changing circumstances or preferences, ensuring that their travel experience is pleasurable and stress-free.

To offer a more individualised experience, PlanToPoint aims to also have services like weather updates, travel advice, and local recommendations post its MVP is created. In general, PlanToPoint is created to make trip planning for its users easier, more effective, and more pleasant.

Target Audience

PlanToPoint's target market consists of those who are interested in planning their vacations, including tourists, travellers, and adventure seekers. This audience can be of any gender, represent any profession, and be of any age. They often range in age from 18 to 55, though. This audience is passionate about travelling, experiencing new cultures, and creating priceless memories.

Weekenders and Backpackers could decide to embark on travels on a passion and won't have enough time to speak with tour operators or travel consultants. This problem will be solved by PlanToPoint, which will allow users to schedule their trips while they are on the go.

The lengthy and frequently difficult travel planning procedure is the challenge affecting this audience. They may spend hours researching travel destinations online, referring to travel manuals, and making reservations for various aspects of their trip on numerous travel websites, only to find that they are underusing their trip or overspending their budget.

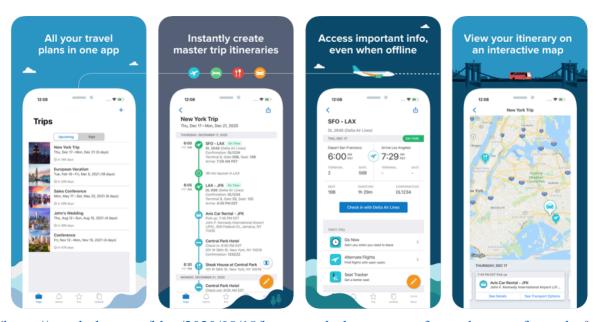
PlanToPoint, a one-stop shop for all travel planning needs, provides a solution to this problem. By allowing users to search flights, hotels and activities all in one place, it saves them time and effort. PlanToPoint's unique recommendations for attractions and activities based on user choices make the planning process more efficient and tailored to the individual's interests. The app's capability to create customised travel itineraries further simplifies the planning process by enabling users to quickly organise their vacation and share their itinerary with others.

The application's main goals is to include a larger level of journey personalisation in the shortest period of time, so there won't be many phases the user must go through before receiving a drafting itinerary.

Comparing PlanToPoint to the apps that are currently accessible, it offers a more efficient and effective approach of trip planning. By using only one app, users can simply discover flights, hotels, and activities without having to visit many websites or consult various sources. The app's individualised recommendations and capacity to create unique itineraries enhance the planning process and allow it to be more efficient and tailored to the user's demands. PlanToPoint ultimately streamlines the process of planning a vacation, saving users time and effort and ensuring they get the most out of their trip.

Competitor Analysis

Triplt



(https://wanderlog.com/blog/2020/08/18/best-travel-planner-apps-for-each-type-of-traveler/)

TripIt is a popular travel planning app that helps users organize their travel itineraries. Here is a thorough overview of TripIt's rivals:

Key Functionality:

- It enables users to forwards travel-related confirmation emails to a particular email address, including flight bookings, hotel reservations, rental car reservations, and meal reservations. The user is then provided with a thorough itinerary via the app.
- The schedule provided by the app contains a variety of crucial information, including flight information, hotel locations, and confirmation numbers. Additionally, it provides users with up-to-the-minute flight information, including gate changes and delays, and reminds them of any other crucial details pertaining to their travel plans.

Strengths:

- Consolidating travel-related information from several sources into a single itinerary is one of TripIt's key features. Those who travel regularly and need to keep track of several bookings and reservations may find this feature to be especially helpful.
- TripIt also interacts with a number of well-known travel providers, such as Airbnb, Uber, and OpenTable, making it a simple one-stop-shop for vacation planning.

Weaknesses:

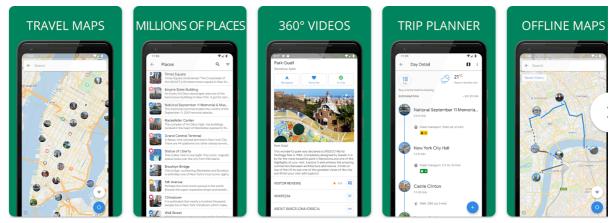
- The free version of TripIt has limited functionality, and users must upgrade to TripIt Pro to access features such as real-time flight alerts and seat tracking.
- The app's user interface can be confusing for some users, especially those who are not tech-savvy.

PlanToPoint aspires to be more than TripIt by offering users a more comprehensive travel planning and management solution. Rather than forcing users to manually enter all of their trip information, the app may provide a more smooth and integrated experience by allowing users to search for flights, hotels, and attractions right within the app.

PlanToPoint can also deliver real-time updates and recommendations to users during their route, such as navigation, notifications, and places/activity options based on live data. The software also has social components, allowing users to interact with family and friends and share recommendations and experiences. Users could design and share itineraries with friends and family, or find new eco-friendly travel destinations and activities based on the recommendations of other users.

Sygic Travel Maps & Trip Planner

Sygic Travel Maps is a popular app that allows users to plan trips, browse maps, and read tourist guides for over 50,000 sites worldwide. The application is free to download from the iOS App Store, however certain advanced functions require a premium membership.



(Images: https://play.google.com/store/apps/details?id=com.tripomatic&hl=en&gl=US)

Strengths:

- Maps: The application includes detailed offline maps for all major cities and tourism locations across the world. Users can view maps even when they do not have an internet connection, making it simple to traverse unfamiliar areas.
- Sygic Travel Charts provides comprehensive travel information, such as opening hours, entry rates, and reviews for popular tourist locations. Users may also peruse the app's curated trip guides, which offer suggestions for sightseeing, food, and entertainment.
- Trip Planning: The application enables users to plan their journeys by selecting destinations and attractions and then creating an offline travel schedule. Users can save notes and photographs to their itinerary and access them across various devices by saving them to the cloud.

Weaknesses:

- Advanced Features: While the app is free to download and use, some advanced functions, such as city walks and guided tours, necessitate a premium subscription.
- With various features and options available on the home screen, the app's user interface can be intimidating for first-time users. It may take some time for users to become accustomed to the app's features and navigation.
- Slow Loading: While looking for locations or attractions, the app can be slow to load. This can be aggravating for users who require immediate access to trip information.

Overall, Sygic Travel Maps is a fantastic tool for travelers who want to plan their journeys, access detailed maps, and tourist guides for destinations all over the world. The app's user interface, on the other hand, can be confusing, and certain sophisticated capabilities require a premium membership.

While both PlanToPoint and Sygic Travel Maps are travel planning apps, PlanToPoint focuses on assisting users with all elements of trip planning, such as locating flights, hotels, and attractions, as well as guiding users along the way with live navigation and recommendations.

PlanToPoint is a trip planning app that lets users to search and book flights, hotels, and attractions all in one place. By removing the need to look for each of them independently, users save time and effort. PlanToPoint allows users to share their travel plans and experiences with friends and family through social media. This feature is not available in Sygic Travel Maps. PlanToPoint will also help user deliver real-time places / activity recommendations based on real-time data to assist users along their travel.

Feasibility and Technology

Features

PlanToPoint is an app for people who travel regularly for work or pleasure who want a simple way to plan their trips, organize their schedule, and keep track of their spending. The PlanToPoint application's main features that can assist its users are as follows:

Trip Planner

As previously stated, the major aim of the app will be to assist users in simply planning trips based on their preferences and choices. Users can plan their journeys from start to finish using the PlanToPoint. It allows you to enter vacation dates, choose a destination, and add activities and lodgings to your itinerary. Users can also examine their itinerary in a PDF making it easier to visualise and arrange their vacation. The application would also allow users to receive real-time alerts during their journey, aiming to make their journey more comfortable and enjoyable. Various key features are incorporated, as mentioned below.

Flight Search

Users will be able to search flights from their point of origin to their final destination. The Skyscanner API would be used to enable the flight search capability. The flight search API is required to retrieve information about flights from multiple airlines, such as timetables, availability, costs, and other pertinent information.

The app will be able to communicate with the API and retrieve information about various possible flights and user search criteria. There are numerous Flight Search APIs available for retrieving flight details and rates from multiple airlines. The 2 of the API I have shortlisted for creating the flight search feature are: Skyscanner Flight search API or Amadeus Flight Offers Search API.

Some of the capabilities I intend to include in the Search flight functionality are as follows:

1. Filter Flights: This feature allows users to select flights based on a variety of parameters, including price, number of stops, and airline. The flight search API retrieves all available flights depending on the user's search parameters, and the filter function narrows the results based on the user's preferences.

- 2. Choose Flights: This feature allows users to choose one or more flights from a list of available flights based on their preferences and timetable. When a user selects a flight, the flight information is saved in the user's itinerary.
- 3. See Flight Details: This capability allows users to view individual flight details such as the airline, flight number, departure and arrival timings, duration, and other pertinent information.
- 4. Change Search Criteria: This option allows users to change their search criteria, such as the trip dates or the number of passengers they want to add or remove. The flight search API is used to retrieve updated flight information based on amended search criteria.
- 5. Budget calculator: Once the user has confirmed its flight details, the ticket fees will automatically be added in the budget for the trip enabling user to keep track of all his expense from the start.

To improve the user experience and ease, the application will attempt to accommodate the booking feature (once the MVP is ready) at a later stage.

Hotel Search

The iOS app's hotel search page will provide a streamlined and user-friendly experience for users to find the ideal hotel for their needs. The app will be able to present a wide choice of hotel options that match the user's interests and budget by using the hotel search API and numerous sorting and filtering capabilities.

In order to develop a hotel search feature in an iOS app, integration with a hotel search API that delivers hotel information, availability, and pricing data from various vendors is must. I plan to use the Amadeus hotel search API for this functionality because they offer a free tutorial on how to access the API and develop the page.

Some of the primary features I plan to incorporate in my app are as follows:

- 1. Hotel search form: On the hotel search page, there will be a search form where users can enter their destination, check-in and check-out dates, number of guests, and other pertinent information. Users can use this form to specify their choices and filter the search results based on their needs.
- 2. Hotel search results: After the user enters their search criteria, the app will use the hotel search API to return a list of hotels that meet their criteria. The search results will include pertinent information such as the name of the hotel, its location, cost, ratings, and amenities. The results will be presented in a user-friendly format, such as a list or grid view, allowing users to easily navigate among the selections.
- 3. Sorting and filtering options: To help consumers focus their search results, the hotel search page can offer sorting and filtering options. Users can, for example, sort the results by price, ratings, or distance from a specific spot. Users can also narrow down the results by amenities, hotel type, or guest ratings.
- 4. Budget Calculator: Once the user confirms its stay details, the stay fees will be instantly added to the trip budget, allowing the user to keep track of all his expenses.

The initial app will not be able to accommodate the booking process, but users will be able to select their stay. Later, the booking option will be added to the app to improve the user experience.

Activities Search

The PlanToPoint attraction/activity page is a critical feature since it allows users to search for, examine details on, and add attractions and activities to their travel schedule. PlanToPoint will use APIs such as the Google Places API to achieve these capabilities.

Some of the functions and features that could be included on this page are as follows:

- 1. Search bar: A search bar in which consumers can look for attractions and activities by name, location, or category.
- 2. Attraction/Activity Specifics: Each attraction or activity should have a detailed page with a photo, description, hours of operation, location, and other pertinent information.
- 3. Map integration: A map integration feature that displays the location of the destination or activity and provides directions to get there.
- 4. Reviews and ratings: On the attraction/activity page, users can give reviews and ratings to help other users make better informed judgements. Due to time constraints this feature might be added later
- 5. Save to itinerary: With a single swipe, users may add an attraction or activity to their trip schedule.
- 6. Budget Calculator: Once the user confirms its activity, the fees will be instantly added to the trip budget, allowing the user to keep track of all his expenses.

The initial app would only be capable of identifying and advise users about nearby attractions, but in the future, we would like users to book for those attractions using the app so they can have a great experience during their trip.

Restaurants Search

Users will be able to see nearby restaurants based on their current location and will thus have many options to choose from. On finalizing the user would also be able to see the direction to that place and thus would easily find variety of option for restaurants based on its preference. I plan to use the Amadeus point of interest API for this functionality because they offer a free tutorial on how to access the API and develop the page.

PlanToPoint's restaurant search page can include numerous capabilities to help users discover the perfect dining spot throughout their vacation. Some of the functions that could be included are as follows:

- 1. A search box might be incorporated so that consumers can look for restaurants by name, cuisine, or location. The search bar can include a dropdown menu with suggestions as the user types, allowing users to rapidly identify relevant items.
- 2. Filters: Filters can be added to the search results to filter them down depending on specific criteria such as price, ratings, cuisine, and dietary requirements. Users can also narrow down the results by distance or reservation availability.
- 3. Map View: A map view that allows customers to see the location of restaurants in the vicinity can be added to the restaurant search page. Users can also view eateries based on their closeness to their present location or filter results by distance.
- 4. Restaurant Listings: Listings for restaurants can include a photo, name, and distance from the user's current location.

Due to time constraints, the initial app will have basic restaurant search page where a list of option will be selected and user can select one and appropriate location will be provided.

Finalized Itinerary

Users will be able to view their itinerary in a separate page itself to avoid complication of things. This will probably be the main interface for the user while using the app and thus is important to keep its UI simple and effective.

Budget Calculator

The budget calculator is an important feature of this app as it allows users to monitor its expense which is a feature missing in many apps travel planner app these days. This feature will aim to provide user with a more useful and convenient interface. The deployment of this feature might happen after the MVP is created as for this to be useful it is important for other features to be completed first.

Share Planner

This feature allows users to share their itinerary with relatives and friends so that they may get a general impression of how the trip went for the user. If the user is travelling in a group, he or she will not be required to make an itinerary. They might have just one itinerary as a group and save their time. Upon clicking the share button, a URL will be generated from the Finalized itinerary page, which the user can then share with their group. This feature again might happen after the MVP is created as for this to be useful it is important for other features to be completed first.

PDF compiler

Using the UIGraphicsPDFRenderer API, all of the information (trip plan) on the Finalized summary page may be turned to PDF. Yet, due to time constraints, this is a low priority activity.

Utilizing Mobile Technology

PlanToPoint, as a smartphone application, provides various innovative features that improve customers' travel planning experience. We all know a well-designed UI and its simplicity is very important for user to use the app more conveniently.

Here are some instances of how mobile technology helps PlanToPoint features:

- 1. Mobile responsive design: PlanToPoint may be adapted for mobile devices, making it easy to use on a small screen. This feature makes travel planning easier and more accessible for folks who want to plan their vacations on their smartphones.
- 2. Location-based services: PlanToPoint can use GPS technology on smartphones to offer personalized recommendations for activities and attractions based on the user's location, making the travel planning process more user-friendly and accessible for people who prefer to plan their trips using their smartphones. This function can assist users in discovering new places to visit and making the most of their trip experience.

3. Push notifications: PlanToPoint may send push notifications to users in order to remind them of future flights, hotel check-ins, or activities. This tool can assist customers in staying organized and not missing any vital details during their vacation.

Finally, PlanToPoint's mobile technology improves the travel planning experience by delivering tailored recommendations and innovative features like sharing the trip plan. The app's mobile nature allows users to plan their vacations on the go and access critical information no matter where they are.

iOS Technology Consideration

For the successful development of apps, many APIs and framework would be implemented which have been described below:

Firebase Cloud Platform

The database for the application will be stored Firebase Firestore. In addition, firebase will be utilized to ease the storage of login details such as usernames and passwords for login functionality.

Core and Persistence Data

Core Data can be utilized to store user preferences, previous travel experiences, and other relevant information for providing customized recommendations for activities and destinations. Core Data, for example, can be used to store user data such as favorite vacation destinations, budget, and favorite activities and then utilized to provide personalized recommendations for travel plans.

Core Data stores data using persistent storage as the fundamental technology. When an iOS app using Core Data saves data, it stores it to disks in a persistent store.

Flight Search API

Skyscanner Flight Search API: This API allows users to obtain flight pricing and availability from over 1200 airlines and travel agents across the world. Skyscanner API also offers a variety of filtering options, including price, departure time, arrival time, stops, and many others.

Amadeus Flight Offers Search API: This API provides flight information, timetables, and prices from over 80 airlines worldwide. Amadeus API also offers a variety of search parameters, including origin and destination, trip dates, passenger count, and more.

Hotel Search API

The Amadeus Hotel Search API can be used in the PlanToPoint app to retrieve hotel info based on the user's search criteria. The API offers information such as the name of the hotel, its location, its pricing, its facilities, and its availability. Through the app, this data can

be displayed to the user, allowing them to browse and select the best choice for their needs.

Google Places API

This API allows you to look for attractions and activities based on keywords, categories, or regions. PlanToPoint can give users a comprehensive list of attractions and activities, as well as detailed information about it such as name, address, phone number, website, and opening hours, using the Google Places API. This API will also assist the user in notifying them of the times of all the locations and attractions.

We could have utilized Amadeus Points of Interest API, but we weren't sure if it would display the time of an activity, so we went with Google Places API.

Restaurant Search API

Within the PlanToPoint app, the Amadeus Points of Interest API may be used to search for restaurants. The Points of Interest API gives us access to a big database of POIs, which includes restaurants, cafes, and bars, as well as additional categories like tourist sites, museums, and shopping malls.

PDF compiler API

Using the UIGraphicsPDFRenderer API, all of the information (trip plan) on the Finalized summary page may be turned to PDF.

Deep Linking

Deep linking can be utilized to give users a consistent experience throughout multiple sections of the app. If a user receives a notification about a new attraction, for example, clicking on the notification can transport them directly to that attraction's page within the app.

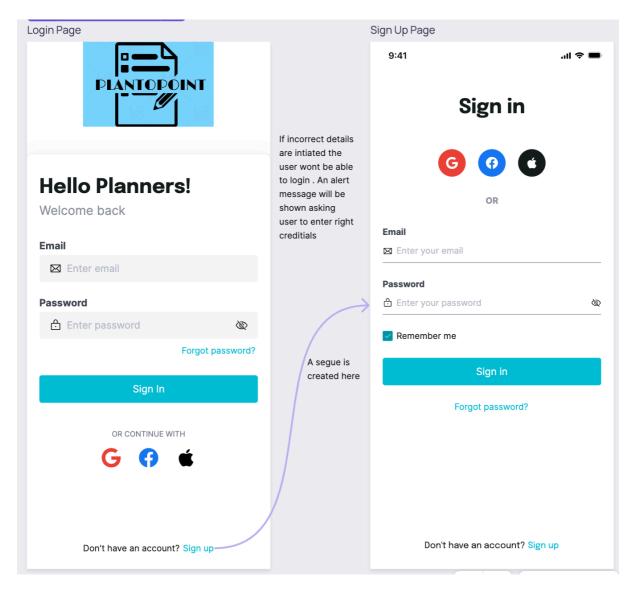
Local Notification

When users arrive at a destination, local alerts can be utilized to remind them of future activities or to propose nearby attractions. The message will assist the user remember their schedule, allowing them to have a successful journey.

Interface Design and Storyboard Mock-ups

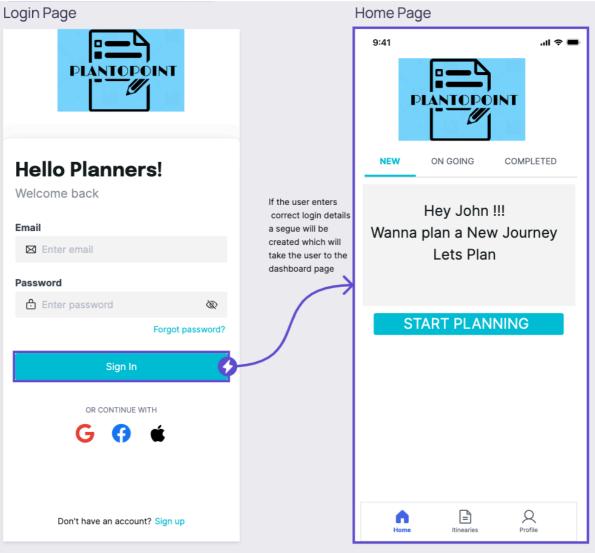
This section aims to demonstrate the interface design of PlanToPoint Application and the navigation between different views.

Login Page

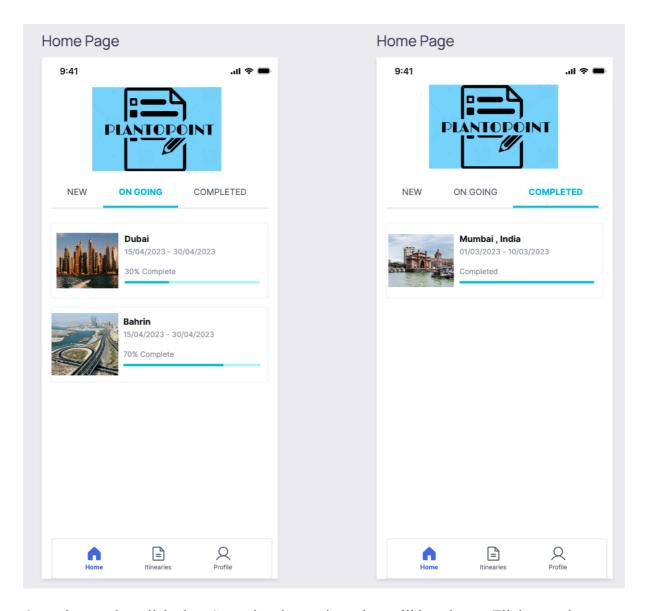


Basic UI elements will be used in login page like label, text, button etc. As suggested in the Apple HIG, login page should be simple, effective and similar to the home view.

Home Page



The home page is essentially the page user will see once correctly signed in . Tabs feature have been used in bottom of the application as it allows user to quickly switch between different interfaces in the app as recommended by Apple HIG. The tab view has also been enabled at the top due to which user will be able to see its existing travel history (On-going and Completed included)

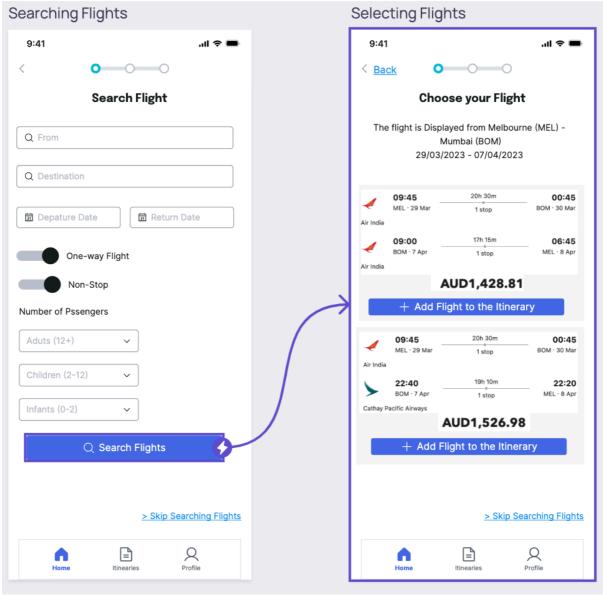


Once the user has clicked on Start planning option , they will be taken to Flight search page



with the help of a segue.

Flight Search



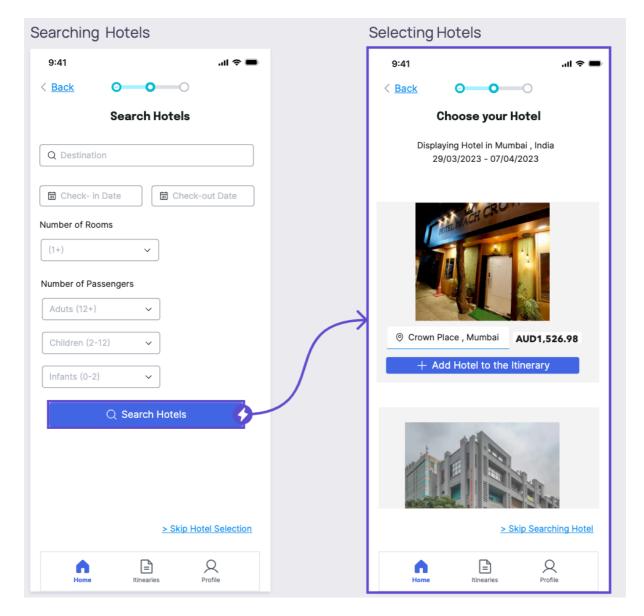
Once the user reaches the search flight page, they should enter various detail. A drop-down box will be shown based on the characters entered by user for from and destination label. A calendar menu will be shown for user to enter departure and return date. Checkbox feature is included in this page for user to select if he wants one-way flight and non-stop flight, Based on this user results would be filtered and then displayed.

A dropdown box will be displayed for user to select number of passenger.

Once the result will be displayed user will have to select one option and it will be added to finalized itinerary page and the user will be taken to Search hotel page with the help of a segue created.

If the user clicks on Skip search flight option, he will be able to directly go to the search hotel page.

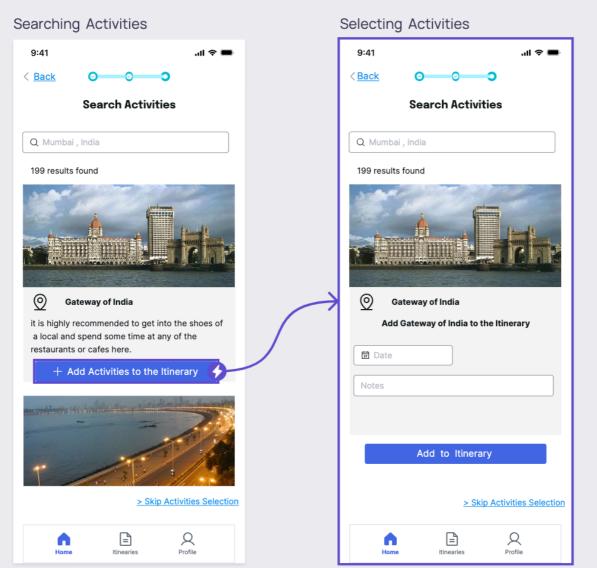
Hotel Search



Once the user reaches the search hotel page, they should enter various detail. A drop-down box will be shown based on the characters entered by user for destination text field. A calendar menu will be shown for user to enter departure and return date. A dropdown box will be displayed for user to select number of passengers. When the user clicks on search hotel page he / she will be able to view and once selected itinerary page.

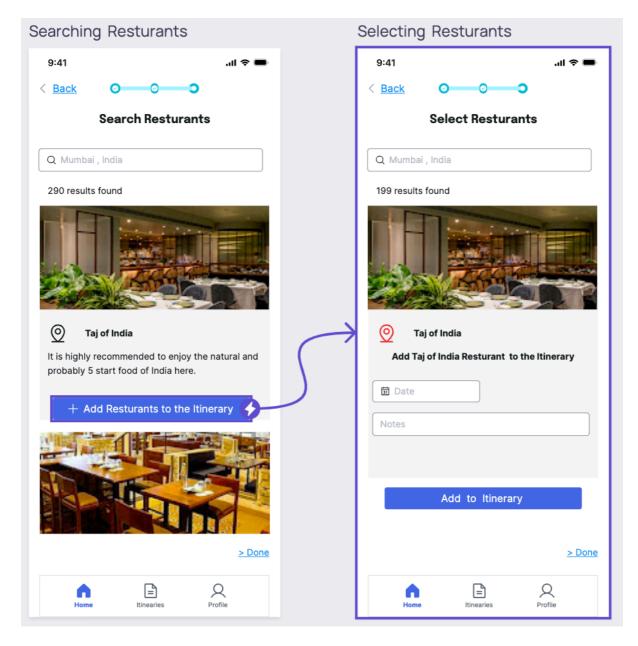
clicks on search hotel page he / she will be able to view and once selected, itinerary page will be updated. Clicking skip hotel selection or Add hotel to the itinerary will take the user to search activity page

Activities Search Page



The Activities are displayed in Table View, which is updated as the user enters the location of interest. When a user tries to add an activity to an itinerary, a sheet asking for the date and time of visit appears. This feature will help us in setting the notification / remind / alert message for user.

Restaurant Search page



The same feature as mentioned for the activity page has been included for the restaurant section to have a common UI for similar interface as suggested by Apple HIG. Once the user clicks on Done or Add to itinerary, itinerary page will be shown.

Itinerary Viewer



A summarized version of information has been shown and thus the user will also be convert it into PDF which is a additional functionality at the moment.

Some of the key observation based on the design was that the colour has been kept very standard, Table view has been preferred in majority of the cases for easy access and then most of the Apple HIG have been tried to followed in the UI

For more view on connection a link has been attached below to the mockups page (https://app.visily.ai/projects/02ddc451-12e9-434e-a142-adb4464451c8/boards/450741)

Scope and Limitations

As we all know, there are several features that can be added to the travel planner application because it is a highly open space, and the more we do, the better it is for the user. However, because the application will be developed on a very tight deadline, I have listed the

functionality required to create a useful PlanToPoint app below. A detailed explanation was given above in the Features of the app section.

MVP would consist of:

- User registration and login capabilities.
- Flight, hotel, and activity search functionality.
- Possibility to create personalized itineraries Personalized site and activity recommendations based on user preferences.
- Explore the restaurants nearby based on the user's location.
- Push alerts to keep users up to date on their travel plans and any changes to their bookings.

Once the MVP is ready, the share Planner and PDF Compiler, Budget calculator capabilities will be enabled.

Limitation

Given the opportunity, I'd like to highlight a handful of constraints I might face while developing the app:

- For starters, I don't have a Mac, therefore I have to come to campus and work on my app, which may hinder my progress later on.
- Second, later this semester, there will be numerous deadlines and submissions for me, and there may be many barriers in meeting each week's aim, therefore I will do my best to stay focused on producing this application.

Estimated Project Timeline

This section aims to provide a rough idea of what will be delivered each week as a part of creating this application.

Week 8

The login page should be created by this week were users are able to login and view their personalized dashboard with the help of their unique credentials.

Week 9

The user should be able to search flights and view all the relevant information regarding flight search and once the flight is selected it should display it in the Finalized itinerary page.

Week 10

Once the user has successfully completed the flight search, user should be able to search for its hotel and view all the relevant information. Once the stay is selected it should be displayed in the finalized itinerary page.

Week 11

Once the user is done with confirming its stay, they should be able to explore different activities based on their destination. Once the activity is selected it should be displayed in the finalized itinerary page.

Week 12

The last main feature will be that user will be able to explore restaurants nearby and will be able to access how far is it through Maps feature. All this information will now be displayed in finalized itinerary page. Users should also be able to receive alerts based on when its flight, hotels and activities are due.

If the application is completed before schedule, the additional features will be implemented depending on remaining time.