RMIT University Vietnam

School of Science and Technology (SSET)

COSC2659 – IOS Development

Semester B – Year 2023

ASSIGNMENT 1 REPORT

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Tutorial Group: Friday 10.30 – 12.00

Submission Date: August 7, 2023

"I declare that in submitting all work for this assessment I have read, understood and agree to the content and expectations of the Assessment declaration ."

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1. Introduction

1.1. Inspiration

The launch of the 'VietAir' application was inspired by my countless hours spent in bustling airport terminals, where I observed fellow travelers struggling with the complexities of modern travel. When I was young, I never developed any fondness for the long waits before boarding my flights and enduring a 3-hour wait, sometimes even much longer if the flight was delayed, often left me feeling depressed. It was not until I stepped into Changi International Airport (SIN) during my visit to Singapore that I have completely changed my mind. The experience was nothing short of transformational, and it opened my eyes to the incredible possibilities that the airport could offer. Changi Airport was not just merely a place of travel connection, but also a masterpiece made by human ingenuity. Since then, my perspective on airports has revolved. As I traveled to various countries, I marveled at the diverse designs and unique features of each airport. This newfound appreciation for airport architecture sparked the motivation to create “VietAir” – an app designed to enhance the overall travel experience.

1.2. Welcome to “VietAir” application!

Step into the world of "VietAir”, you will discover the best airports worldwide, ensure you embark on journeys that are not only seamless but also delightful. With this app, users would no longer get bored during those long waiting hours at the airport, as they can access to a plethora of entertainment options, from luxurious business lounges where you can relax and unwind before your boarding or during your transit, to various tax-free shopping areas where you can indulge in retail therapy. I believe that travel should be about more than just reaching your destination, it should be an immersive and pleasurable experience from the moment you step into the airport. "VietAir" ensures that every aspect of your airport journey is taken care of, making waiting an opportunity to savor delightful moments.

2. Project Description

2.1. About “VietAir” application

VietAir is an innovative and user-friendly IOS-based mobile application that aims to transform the way travelers experience airports worldwide. This application focuses on two primary aspects: highlighting the best airports around the world and offering a curated list of to-do activities to make the airport waiting time enjoyable.

2.1.1. Find out about top airports around the world

“VietAir” app presents users with in-depth data about each airport, including its international name, International Air Transport Association (IATA) code, local time, rating, and exact location. This enables travelers to easily identify and select the airports that best suit their travel itineraries and preferences. Delving deeper into the world of aviation enthusiasts, “VietAir” caters to those intrigued by airport architecture and design. The app also offers intriguing statistics about airport terminals and runways, providing an engaging perspective for users who are fascinated by the mechanics and aesthetics of airports.

2.1.2. Explore wonderful things at the airports

An airport is more than just a place where travelers wait for their flights, it is a path to adventure, brimming with hidden treasures waiting to be explored. With this application, the airport experience transforms into a captivating journey of discovery, where every corner holds a delightful surprise.

- **Culinary Delights**: With “VietAir”, users will explore the diverse culinary offerings, from local delicacies to global gourmets. They will indulge in a culinary tour that mirrors the destinations they are traveling to, right within the airport.
- **Retail Therapy**: Users will experience luxury shopping like never before. Immerse yourself in a realm of high-end boutiques, showcasing the latest fashion trends and exclusive brands. The airport visit becomes a shopping escapade that rivals the best shopping districts.
- **Relaxation Havens**: Find unwind and rejuvenate in serene airport lounges and experience unparalleled comfort as you await your departure, surrounded by plush furnishings, quiet spaces, and impeccable service.
- **Cultural Heritage**: Some airports feature cultural zones that transport you to the heart of the region you're visiting. Experience traditional architecture, design, and even performances which symbolize the local culture.

2.2. User Manual

2.2.1. Text Instruction

Open the “VietAir” application by tapping on the icon, then wait for 4.5 seconds for the Welcome screen to display and you will be automatically switched to the Onboard screen. You can swipe horizontally to see the Onboard screen. Tap on “About me” button on the first tab to see the author’s name, student id and the application’s name. Otherwise, tap on “Get Started” button to go to the home screen.

- The home screen provides easy access to information on top airports across various regions: Asia, Middle East, Europe, North America, and Oceania. Horizontal swiping enables navigation between regions, with each region featuring a selection of airports. Tapping a specific airport card opens a detailed view tailored to the chosen airport. A theme toggle button at the top offers the convenience of switching between dark and light modes via horizontal swipes. The magnifying glass icon on the tab bar seamlessly directs users to the search view.
- The search screen facilitates airport discovery through a search bar that accepts keywords such as names, IATA codes, cities, and countries. Upon input, a list displays airport previews and their locations. Selecting an entry leads to the detailed view, while an empty search triggers an error message. Users can easily return to the home page via the home button.
- The detailed view affords a comprehensive exploration of the selected airport. Horizontal swiping above yields additional airport photos. Below, essential details like the airport's name, local time, and rating are presented. A white-background table showcases key airport information, including IATA code, country, city, and region. Expanding the table via a chevron icon reveals intriguing details like the 2023 Skytrax ranking and terminal/runway count. Tapping the chevron contracts the table. The view further extends to an Overview section for a succinct airport introduction. In the "Location" section, users can access precise airport coordinates, which, when tapped, initiate a full-screen Apple Map display. Exiting the map is as simple as clicking the X button. A compact map preview

is also available. The "What's to explore" section at the view's bottom highlights popular airport destinations. Swiping left or right reveals more options, and tapping a destination card displays an image and brief overview. Returning to the detailed view can be done by clicking the back button. Exiting the detailed view leads users back to their previous screen.

2.2.2. Video Instruction

(Refer to the link in the Reference section)

2.3. Learning Outcomes

Throughout the development of “VietAir” application, I have earned a range of valuable learning outcomes and insights that have contributed to creating a more efficient, visually appealing, and user-centric application using SwiftUI framework.

2.3.1. Building UI design

The art of crafting an appealing and intuitive user interface has been elevated thanks to SwiftUI. Through the utilization of its declarative syntax, I have artfully choreographed a UI design that not only commands attention but also guarantees intuitive navigation.

2.3.2. Using Animation and Transition

Throughout the development process, I successfully learned about the usage of animation and transitions within the SwiftUI framework. This allowed me to elevate the user experience by incorporating captivating visual elements that enhance the app's overall appeal.

2.3.3. Integrating Apple Map to navigate the location of the airports

Recognizing the importance of precise airport location information within an airport guide app, I have seamlessly integrated Apple Maps through SwiftUI's built-in package. This integration empowers users to effortlessly pinpoint and navigate the locations of airports, ensuring a reliable and comprehensive travel experience.

2.3.4. Customizing Search Bar

I have adeptly customized the search bar functionality, granting users the capability to search for airports using a diverse range of criteria. Beyond mere names, users can search based on IATA code, country, or even city, enhancing the app's versatility and empowering travelers with a more comprehensive exploration experience.

2.3.5. Efficient data loading through JSON Integration

During this project, I also incorporated a JSON file as a repository for data, harnessing its potential to efficiently load and decode information into the application. This approach not only streamlined the data integration process but also bolstered the app's responsiveness and accuracy, contributing to an enhanced user experience.

3. Implementation Details

3.1. Main features

3.1.1. Welcome screen

a. Design Justification

The Welcome screen is designed to offer users an inviting and informative gateway into the application. Therefore, creating an aesthetically pleasing Welcome Screen held significant importance in capturing user attention and engagement.

b. Implementation Detail

- ***Add an attractive linear-gradient color to the background:*** Specify the linear-gradient color to make the screen more attractive by filling the "ZStack" component.
- ***Add some animations to the app's logo, name, and slogan:*** Design the icon into the double-circled layer, which will pulse constantly when the Welcome Screen is being displayed. Thus, the app's name and slogan will appear after 1 second. This can be achieved by using ".myAnimation".
- ***Auto transition:*** The whole Welcome screen will be displayed for 4.5 seconds. After that, it will automatically move to the Onboarding screen.

c. User Interface Example

Refer to Appendix A to see the Welcome screen simulated on iPhone 14 Pro.

3.1.2. Onboarding screen

a. Design Justification

The Onboarding screen is implemented to inform users about what the application is about.

b. Implementation Detail

- ***Create a Tab View to display:*** This design will make the Onboarding screen much more appealing. Users can slide horizontally to see the content.
- ***Add some animation to the image and texts of each tab:*** The image of each tab will be lightened when appears, while the texts will appear after the delay of 1.5 seconds.
- ***Create a different button for each tab:*** The first tab has an "About me" button, which shows the creator's primary information, including full name, student id and the application's name. The second tab a "Get Started" button, which will consequently navigate to the Home Screen of the application.

c. User Interface Example

Refer to Appendix B to see the Onboarding screen simulated on iPhone 14 Pro.

3.1.3. Home screen

a. Design Justification

The Home screen is one of the three main components of the application. It serves as the central hub where users can access essential information and navigate to different sections. In this app, the home screen will display a list of top airports according to the region.

b. Implementation Detail

- ***Create a vertical scroll view:*** This design allows users to see other regions which cannot appear initially by sliding upwards/downwards.
- ***Integrate the card view with the horizontal scroll view:*** For each region, there is a horizontal scroll which enables users to see other airports in that region as well. Each airport's preview is designed as a card-view to makes the UI more attractive. The card contains some of the stats of the entity, including its preview image, name, the rating, and the number of reviews.
- ***Navigate to detail view:*** Using NavigationView() component, the card is designed so that when the users tap on it, the Detailed screen of the airport being tapped will be displayed.
- ***A toggle button to switch to dark mode:*** (Refer to section 3.2.5)

c. User Interface Example

Refer to Appendix C to see the home screen simulated on iPhone 14 Pro.

3.1.4. Detailed screen

a. Design Justification

The Detailed View provides users with in-depth information about a specific airport, enhancing their understanding and decision-making. Thus, it also displays a range of to-do activities at that airport.

b. Implementation Detail

- ***Create a vertical scroll view:*** The design allows users to see more content about the airport's information which cannot appear initially by sliding upwards/downwards.
- ***Create a Tab View to display a collection of airport images:*** This design allows users to see other spectacular views of the airport just by sliding horizontally.
- ***Display some primary information of the airport:*** The international name (along with a country symbol) will be shown, along with a real local time (refer to section 3.2.3) and its rating and review. Moreover, to make it more attractive and engaging, the accurate star of rating would be displayed (refer to section 3.2.4)
- ***Create a white-background table to display primary information:*** The table will show some information about the airport's location including IATA code, region, country, and city. Thus, for users who are engaged in aviation, they can click on the button to expand the table for more information such as their rankings, number of terminals, runways. They can click the button again to hide the expansion as well.
- ***Create the "Overview" section:*** The overview section shows a brief introduction about the airport.
- ***Create the "Location" section:*** The location section will display the exact address of the airport. When users click on the address line, it will switch to the full screen of the Map screen, which shows the exact location of the airport on Apple Map. Moreover, there is a small Map preview in the box underneath the address line.
- ***Create the "What's to explore" section and a horizontal scroll bar to display a card that shows the preview of to-visit destinations at that airport:*** This design will allow users to explore what they can do at the airport. By swiping left and right, they can tap on the card, and it will move to the detailed view of that destination.

c. User Interface Example

Refer to Appendix D to see the detailed screen simulated on iPhone 14 Pro.

3.1.5. Search View

a. Design Justification

The Search View displays a list of all airports. For each row, users can tap to see the detailed airport's information. Thus, this view allows users to search for the airport not just only based on its name but also its country, city, or IATA code.

b. Implementation Detail

- ***Create "Search Bar":*** The Search Bar is located at the top of the Search view. In order to enhance the user experience, it was upgraded so that users can search the airports based on different criteria: name, city, country and IATA code.
- ***Display the list of all airports:*** The "List" component from" SwiftUI" framework contain all the rows that symbolize all the airports. Users can view the detailed view of that airport by tapping on the row.
- ***Show "No Airport found" message if the keyword matches no entity:*** If the user enters the keyword that has no match with any airport, an error message will appear to inform the user about the issue.

c. User Interface Example

Refer to Appendix E to see the detailed screen simulated on iPhone 14 Pro.

3.2. Advanced / Extra Features

3.2.1. Tab Bar

a. Design Justification

The Tab Bar is designed to navigate users to other views (Home view and Search view).

b. Implementation Detail

- ***Create "Tab Bar":*** The Tab Bar is located at the bottom of home view and Search view. For each view, there is a symbol along with the text to represent (the "Home" icon for home view and the "magnifying Glass" icon for search view)

3.2.2. Map Screen

a. Design Justification

The Map Screen pinpoints the location of the airport on the Apple Map

b. Implementation Detail

- ***Use Apple Map available on SwiftUI built-in package:*** By specifying the longitude and latitude of the airport, the map will display the exact location of the airport.
- ***Use Pinpoint:*** Pinpoint the exact location of the airport.

3.2.3. Actual local time

a. Design Justification

This extra feature allows the user to know the local time of the airport.

b. Implementation Detail

- ***Use the device's system time:*** The app will synchronize with the actual time of the device to display the actual time and update it every second.
- ***Use Time Identifier:*** For each airport object, there will be a time identifier attribute. This helps the app to display the current local time of the airport.

3.2.4. The accurate star of rating

a. Design Justification

Display the star by filling the color of the stars based on the rating.

b. Implementation Detail

- ***Fill out the star color based on the rating (Maximum star:5)***

3.2.5. Light / Dark mode

a. Design Justification

This extra feature allows the user to switch the app from light to dark mode and vice versa.

b. Implementation Detail

- ***Use the toggle button:*** The toggle button will switch from light to dark and vice versa by using a state variable.
- ***Change the color for each theme in the Assets.***

c. User Interface Example

Refer to Appendix F to see the detailed screen simulated on iPhone 14 Pro.

3.3. Video Animation

(Refer to the link in Reference section)

3.4. Known Bugs / Problems

- When switching to dark mode, in the Search screen, the arrow for each row in the list has disappeared. This might be due to the inappropriate color background selected for the dark scheme.
- The design of the application would not be maintained if viewing the app in the vertical orientation.
- Lack of information as the strict deadline struggles for importing more data. Thus, the "airports. json" file is not protected so any change in the file will make the application crash immediately.
- The design of the application might not be maintained if the users are using other devices.

4. Conclusion

4.1. Project's evaluation

As a newcomer to iOS development, embarking on the creation of my inaugural application using the SwiftUI framework has been a remarkable journey. While it's understandable that this product may encounter certain issues and intricacies, I believe that these initial steps mark the beginning of an exciting

and transformative venture into the world of app development. With each obstacle encountered, I am presented with a valuable opportunity to learn, adapt, and refine my skills, propelling me further along the path of mastering the IOS application.

4.2. Improvement and future development

While the application has successfully met all the project's specified requirements, there remain certain constraints that warrant additional enhancements. One crucial aspect involves implementing a responsive design to ensure seamless functionality across diverse platforms. Furthermore, there is potential for further development by incorporating additional data pertaining to global airports, given that the current version is constrained to a selection of well-known regions.

In the future, there is a clear intention to expand the application's scope beyond airports alone. Future endeavors will likely encompass various facets of aviation, including airlines and aircraft, thereby offering a more comprehensive and holistic aviation experience.

5. Reference

Reference for image:

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CDG_2:https://img.static-af.com/images/media/0EF67885-C146-4D3B-BCF9E11835EA1919/?w=1440

CDG_3:https://www.miesarch.com/uploads/images/works/1550-9328.jpg

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IST_1:https://airlines.iata.org/sites/default/files/migrated/airlines/airlines/analysis-istanbul-airport-determined-to---web-istanbul-airport.png

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CPH_Lounge:https://cdn.getyourguide.com/img/tour/63087ee3373f6.jpeg/148.jpg

CPH_Restaurant:https://www.passengerterminaltoday.com/wp-content/uploads/2019/07/3.-Copenhagen-food-hall-award_web.jpg

KIX_1:https://media.istockphoto.com/id/150006779/photo/kansai-international-airport.jpg?s=612x612&w=0&k=20&c=4xV0g3SXA0_SXyCJLx1e2xxabyCLG3oDqA9-l0jdQtA=

KIX_2:https://a0.cdn.japantravel.com/photo/poi-141-214154/800!/osaka-kansai-airport-214154.jpg

KIX_3:https://populous.com/wp-content/uploads/2020/03/Kansai-Airport_Departure-Hall_Populous-scaled.jpg

KIX_ObservationHall:https://cdn.osaka-info.jp/page_translation/content/824a8d02-589d-11e8-8161-06326e701dd4.jpeg

KIX_Sojibo:https://osakaairport.com/images/airport-kix/dining/kix_food_main_1.png

DXB_1:https://media.cnn.com/api/v1/images/stellar/prod/210623180928-dubai-airport.jpg?q=w_5255,h_2956,x_0,y_0,c_fill

DXB_2:https://seoimgak.mmtcdn.com/blog/sites/default/files/images/Airport(1).jpg

DXB_3:https://www.istockphoto.com/vi/anh/s%C3%A2n-bay-dubai-gm173835758-9372473?phrase=dubai%2Bairport

DXB_ZenGarden:https://healthatmos.com/wp-content/uploads/2021/12/dubai-airport-5.png

DXB_Lounge:https://content.presspage.com/uploads/2431/1920_Champagne-lounge-243360.jpg?10000

MEL_1:https://australianaviation.com.au/wp-content/uploads/2019/11/Aerial-Photograps-Melbourne-Airport_1170.jpg

MEL_2:https://www.eastcoastcarrentals.com.au/media/2023/03/Melbourne_Airport_Hero_Banner-scaled.webp

MEL_3:https://www.istockphoto.com/vi/anh/s%E1%BA%A3nh-kh%E1%BB%9Fi-h%C3%A0nh-%C4%91%E1%BA%BFn-s%C3%A2n-bay-melbourne-v%C3%A0o-th%C3%A1ng-12-n%C4%83m-2021-gm1360755324-433643311?phrase=melbourne+airport

MEL_Lounge:https://www.qantas.com/content/travelinsider/en/lifestyle/business/qantas-business-lounge-access-domestic-international-review/_jcr_content/parsysTop/hero.img.full.medium.jpg/1571291628293.jpg

MEL_Shopping:https://d24chjhol3kq77.cloudfront.net/trbusiness.com/wp-content/uploads/2019/06/Melbourne-Airport-airside-precinct.jpg

YVR_1:https://www.istockphoto.com/vi/anh/th%C3%A1p-ki%E1%BB%83m-so%C3%A1t-kh%C3%B4ng-l%C6%B0u-t%E1%BA%A1i-s%C3%A2n-bay-vancouver-intl-gm1323782833-409329661?phrase=vancouver+airport

YVR_2:https://www.cancuniairport.com/wp-content/uploads/2020/02/vancouver-international-airport.jpg

YVR_3:https://images.dailyhive.com/20220613184732/vancouver-international-airport-yvr-pier-d-expansion-f.jpg

YVR_ArtInstallation:https://www.theglobeandmail.com/resizer/zqXOuRV9QKnoFFcEk-5LDAf2ne0=/arc-anglerfish-tgam-prod-tgam/public/QXWHA7HARVDKXPSDN2Z7N6CKJE

YVR_Aquarium:https://live.staticflickr.com/65535/51749823627_9624781630_b.jpg

Link to demonstration on Youtube: https://youtu.be/cUFvCzVL7IY

Note: All information on the application is generated by ChatGPT and use the images in the above links. The ranking of the airports is based on the the 2023 Skytrax Ranking

6. Appendix

6.1. Appendix A

The user interface of the Welcome screen of ‘VietAir” application

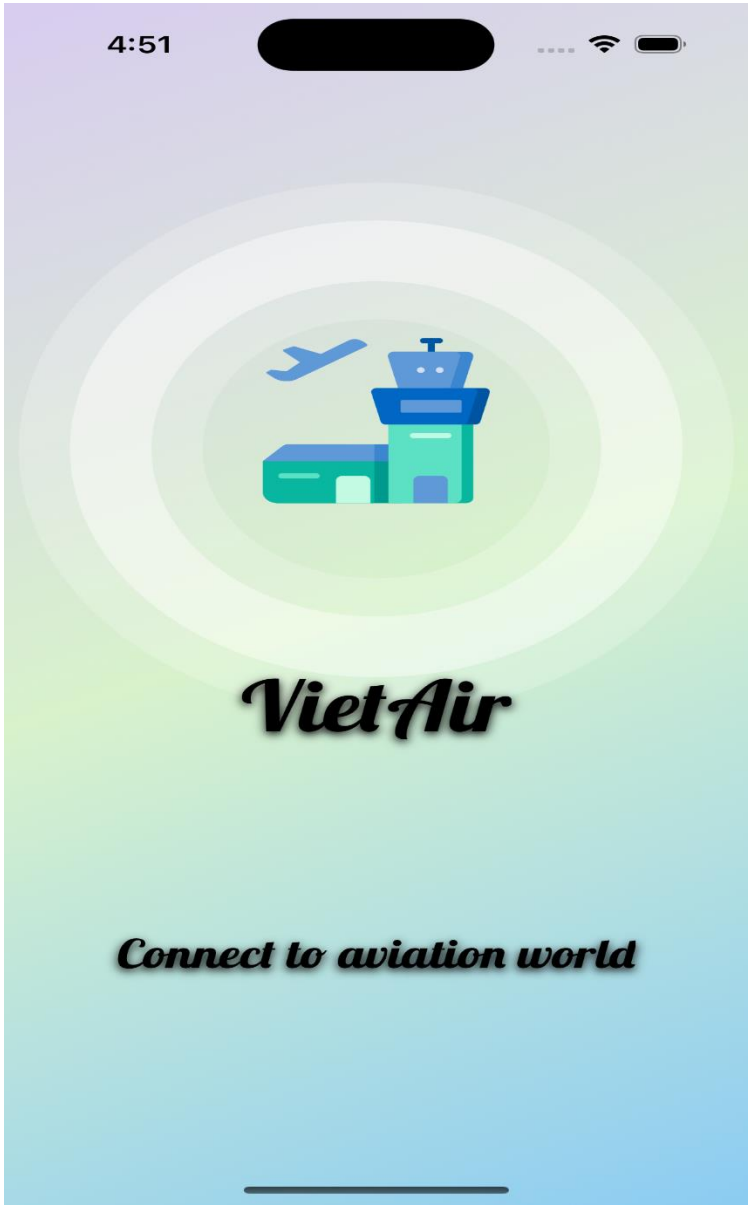


Figure 1: The Welcome View screen shot on iPhone 14 Pro simulator

6.2. Appendix B

The user interface of the Onboarding screen of ‘VietAir” application

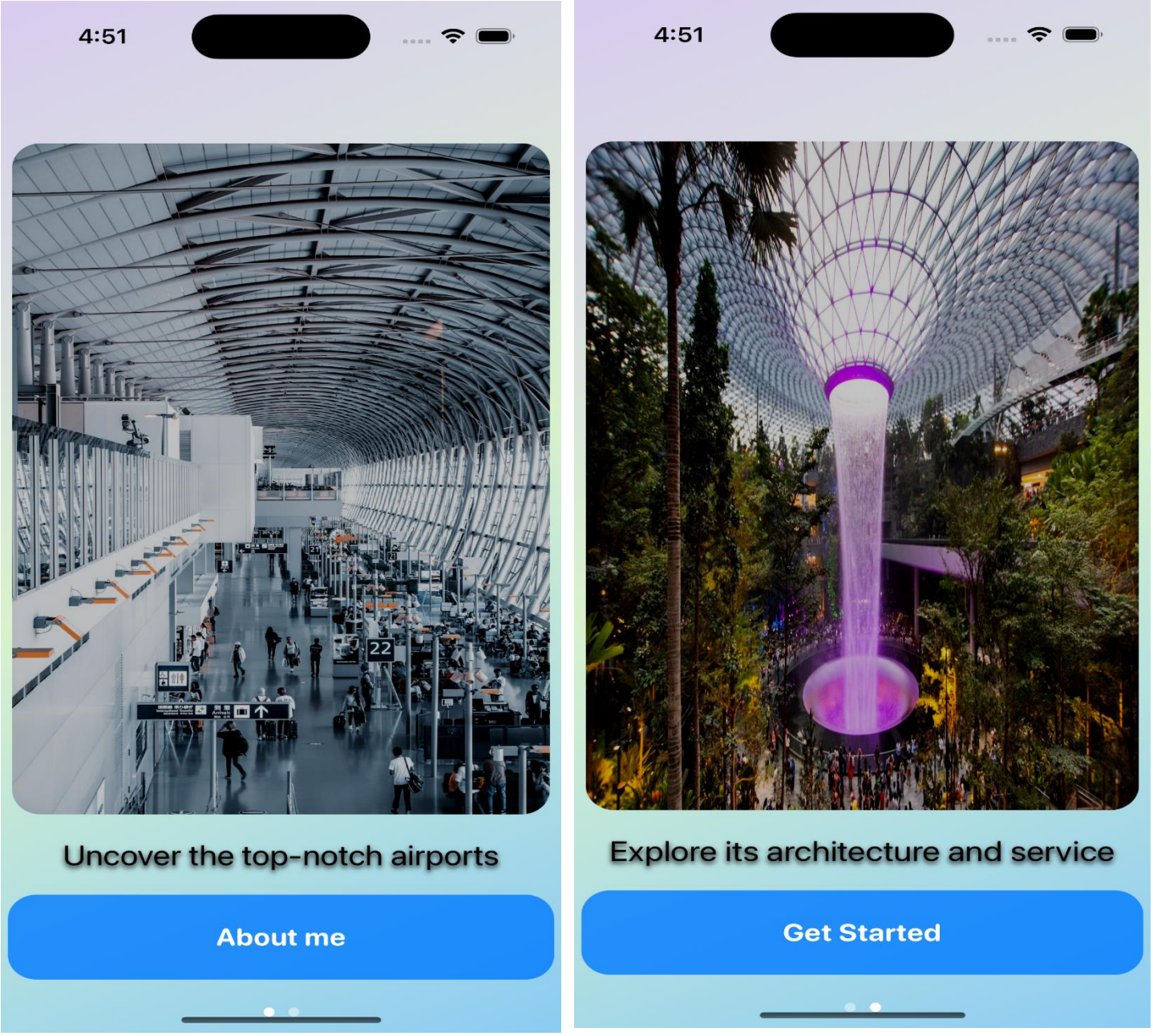


Figure 2.1 and 2.2: The Onboarding screen shot on iPhone 14 Pro simulator

6.3. Appendix C

The user interface of the Home screen of ‘VietAir” application

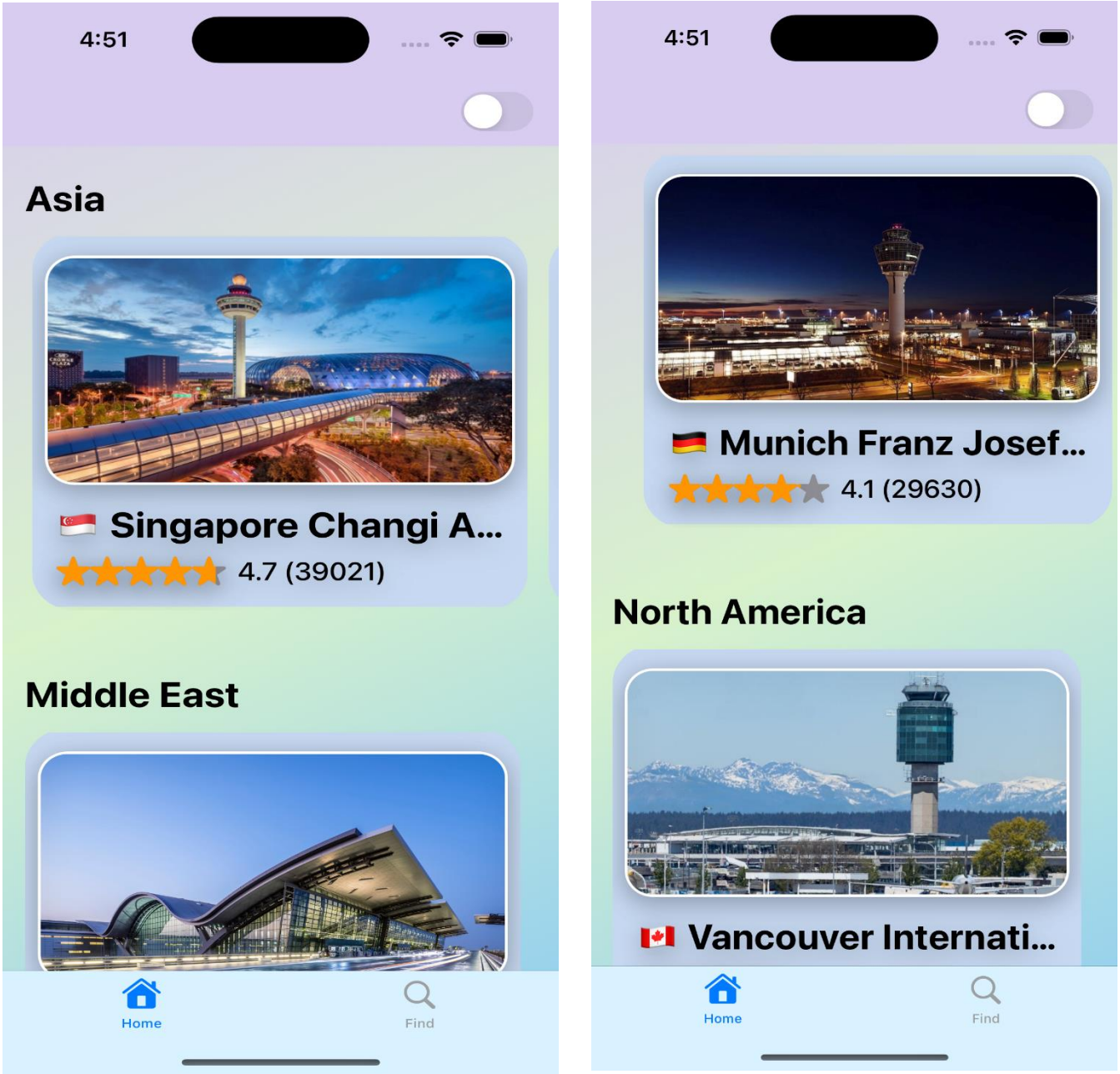
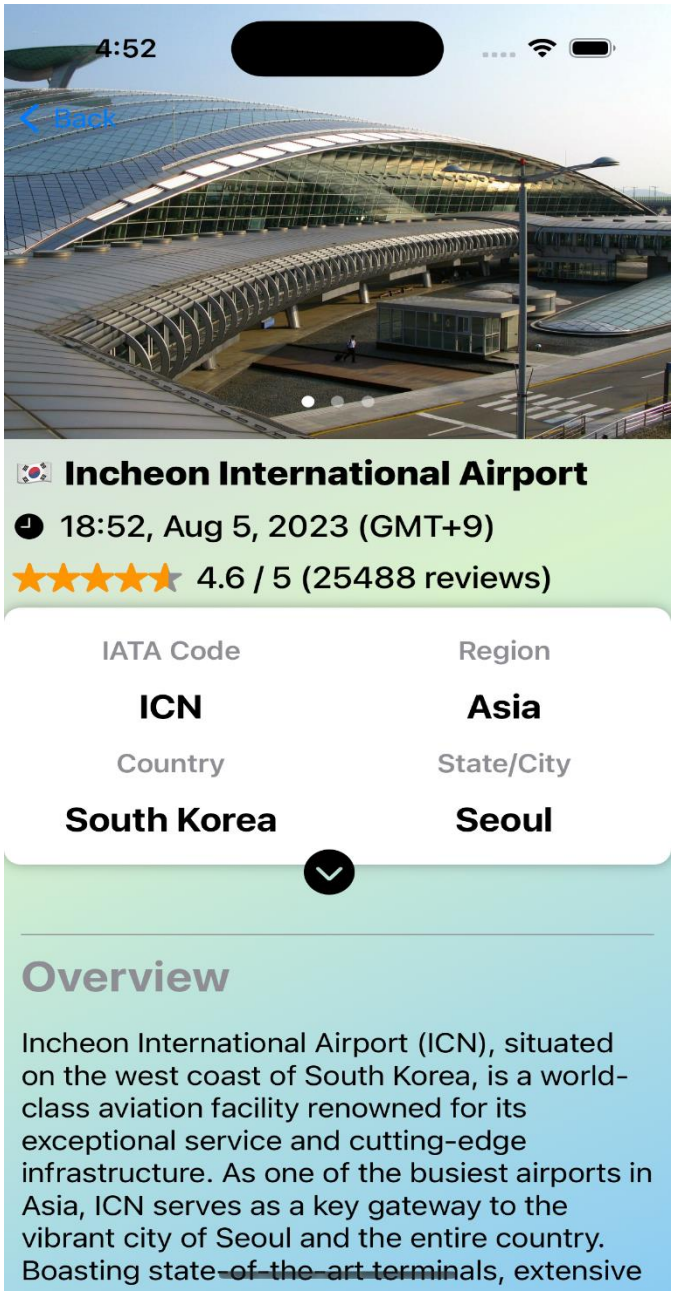


Figure 3.1 and 3.2: The Home screen shot on iPhone 14 Pro simulator

6.4. Appendix D

The user interface of the Detailed screen of ‘VietAir” application



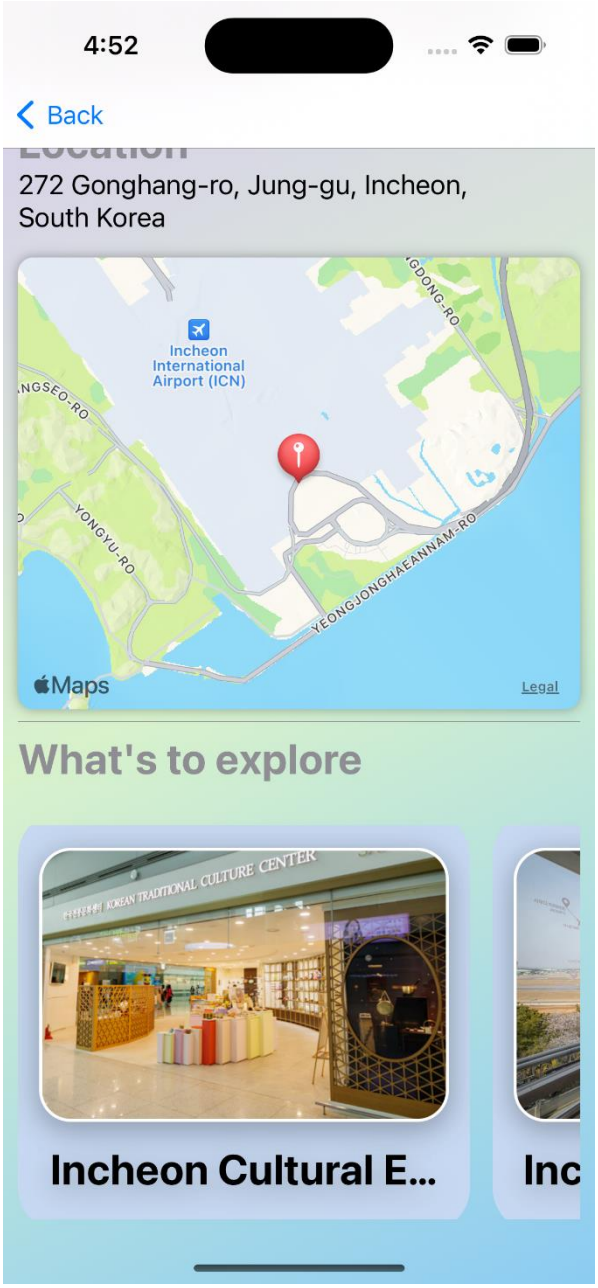


Figure 4.1 and 4.2: The detailed screen shot on iPhone 14 Pro simulator (main view)

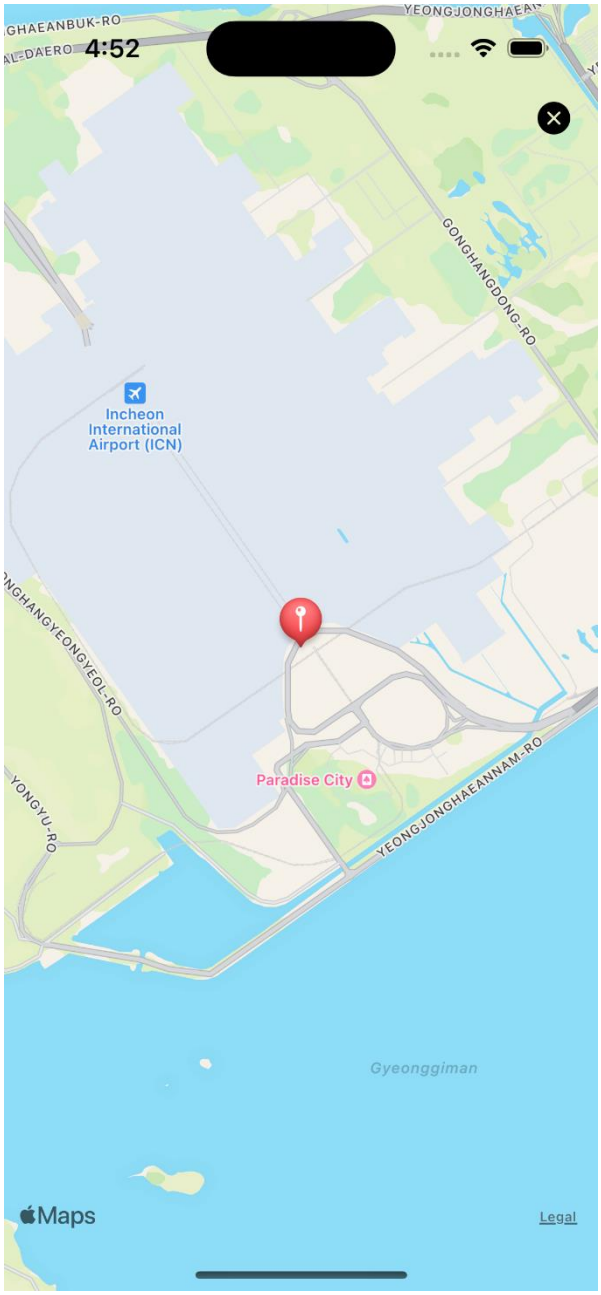


Figure 4.3 and 4.4: The detailed screen shot on iPhone 14 Pro simulator (Map and Destination view)

6.5. Appendix E

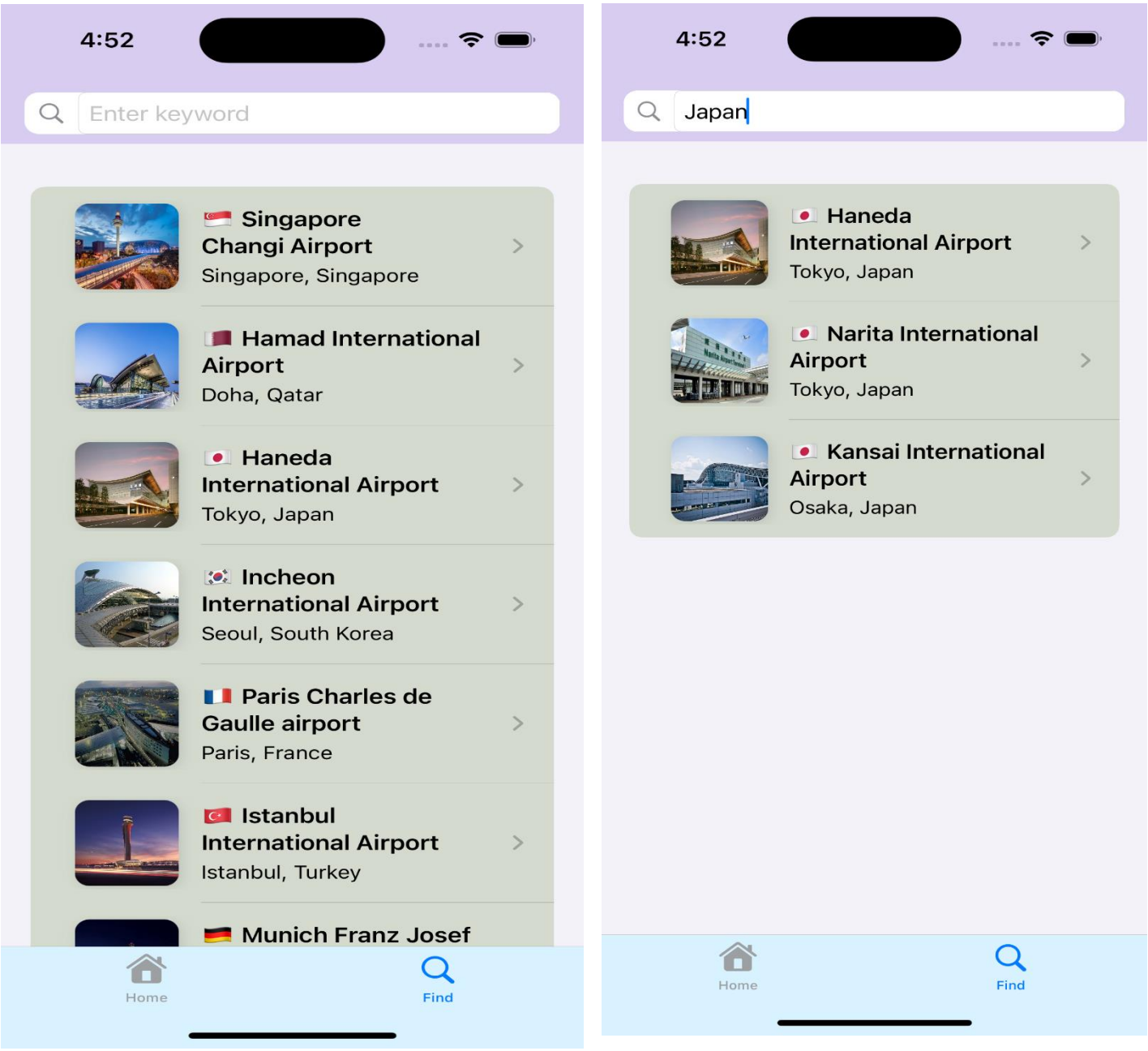


Figure 5.1 and 5.2: The search screen shot on iPhone 14 Pro simulator

6.6. Appendix F

The dark mode of ‘VietAir” application

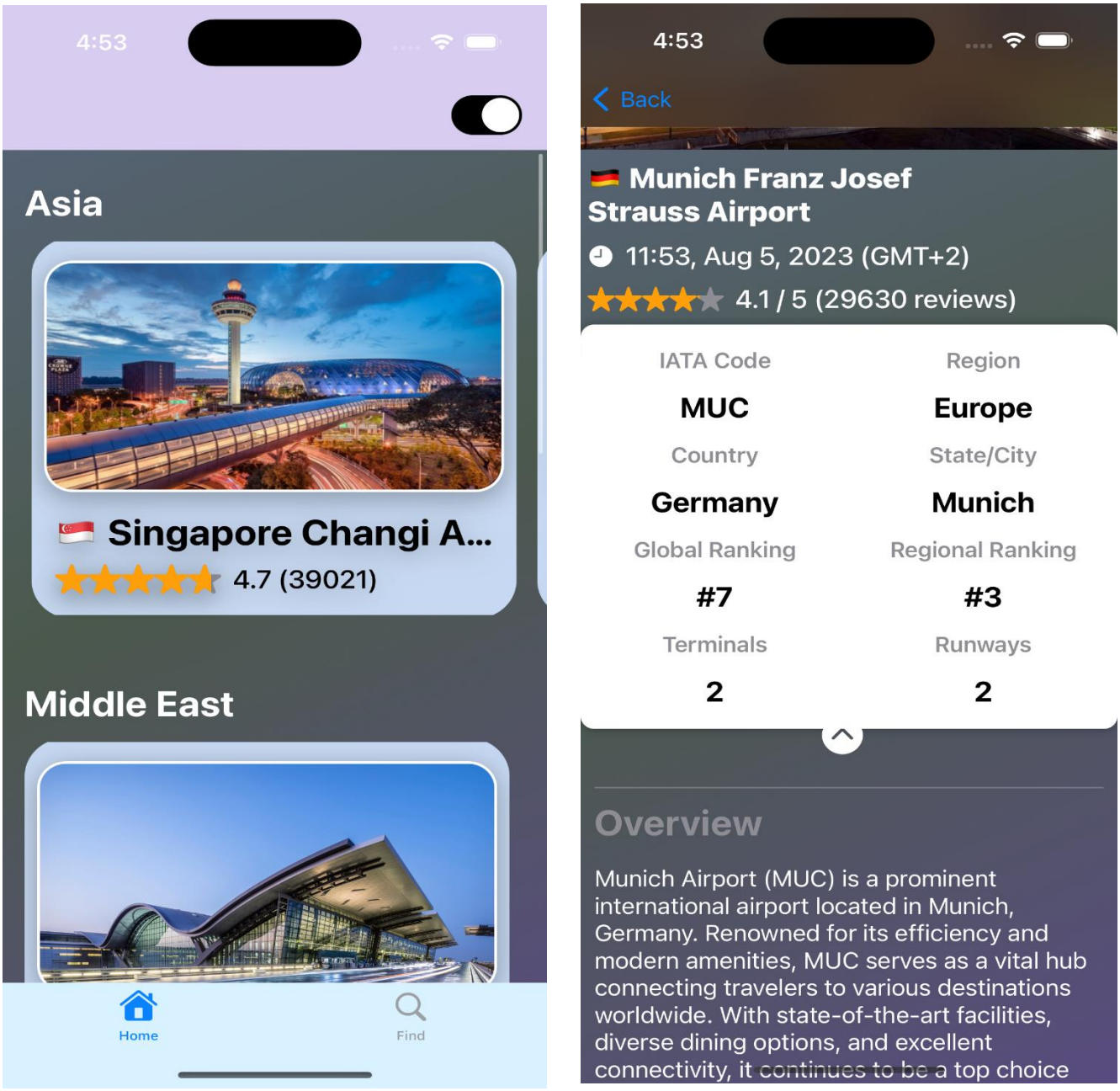
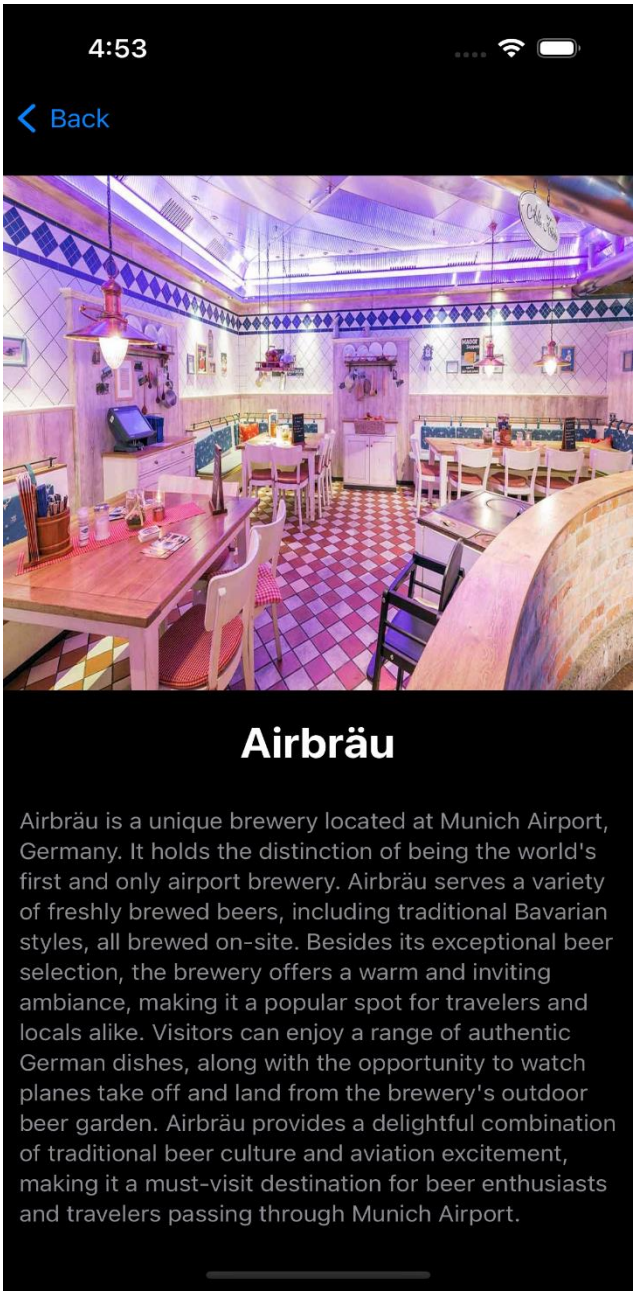


Figure 6.1 and 6.2: The dark mode screen shot on iPhone 14 Pro simulator (p1)



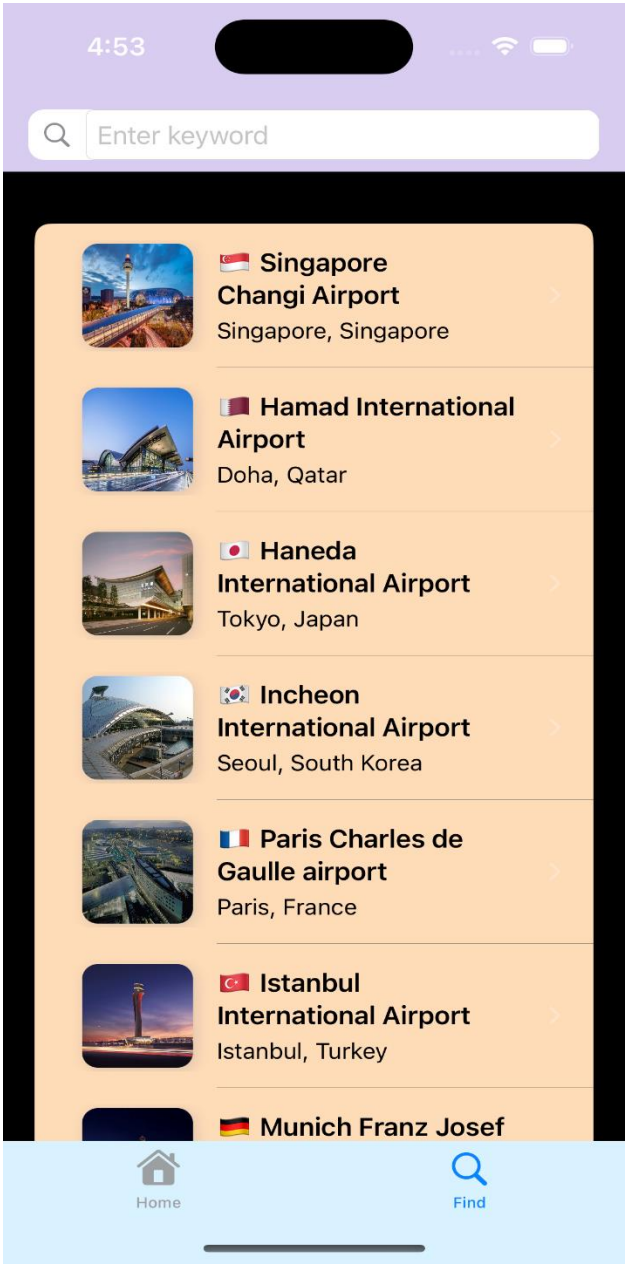


Figure 6.3 and 6.4: The dark mode screen shot on iPhone 14 Pro simulator (p2)