VIETNAM GENERAL CONFEDERATION OF LABOR

TON DUC THANG UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY

MIDTERM PROJECT

Mobile Application Development

Student: Lê Ngọc Bình

Phone Wai Yan Moe
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Trần Huy Tiến
student ID: 522K0004

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Class: 22K50201

HO CHI MINH CITY, 2024

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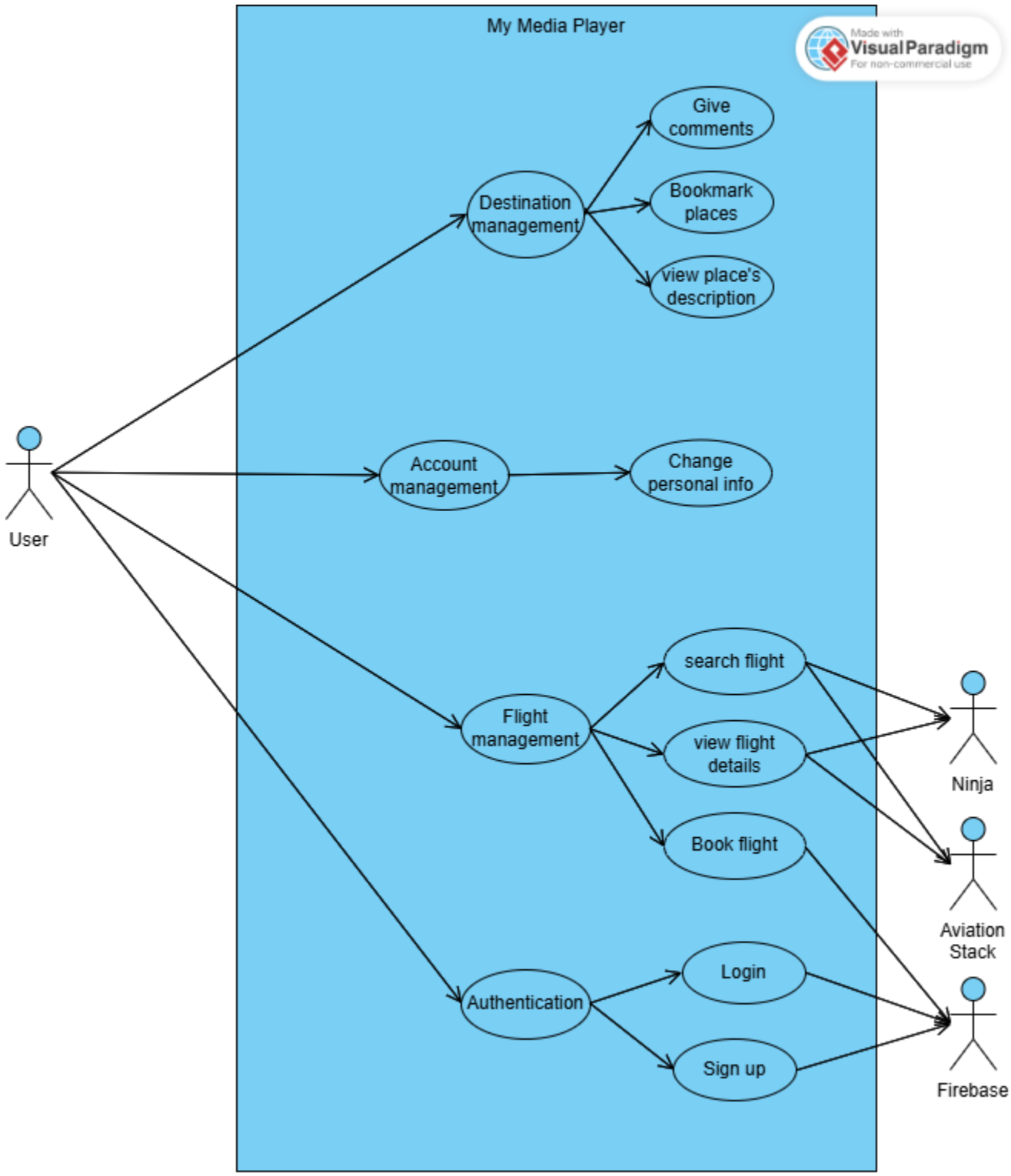
Member name	Role	Contribution

Project Description

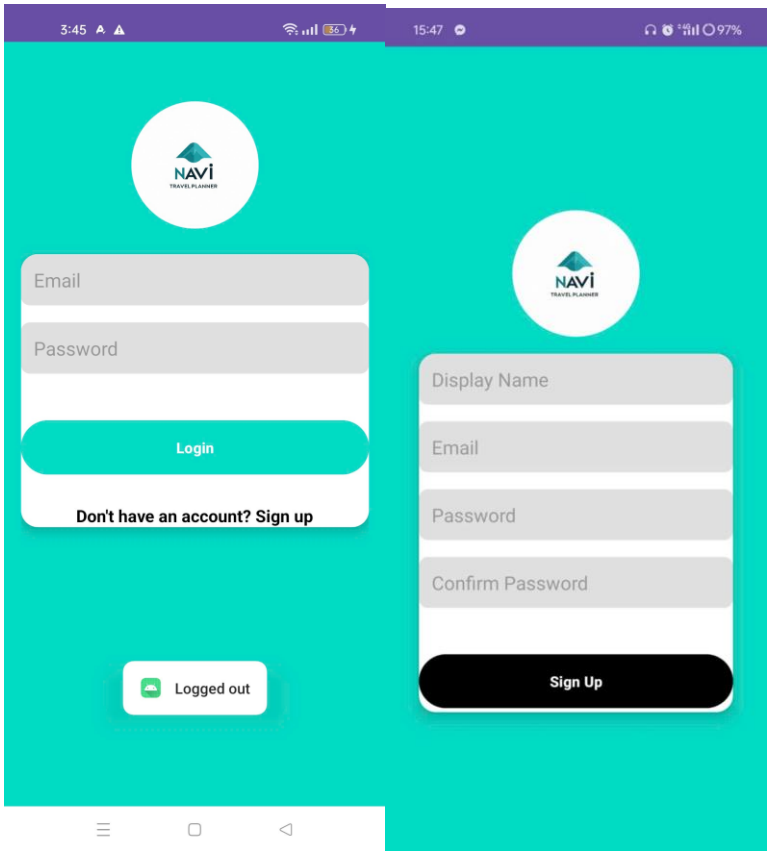
The project is a travel application that allows users to search for flights, view destination details, and manage their favorite places. The application utilizes Firebase for user authentication and data storage, and it integrates with external APIs to fetch flight information.

Use-Case Diagram

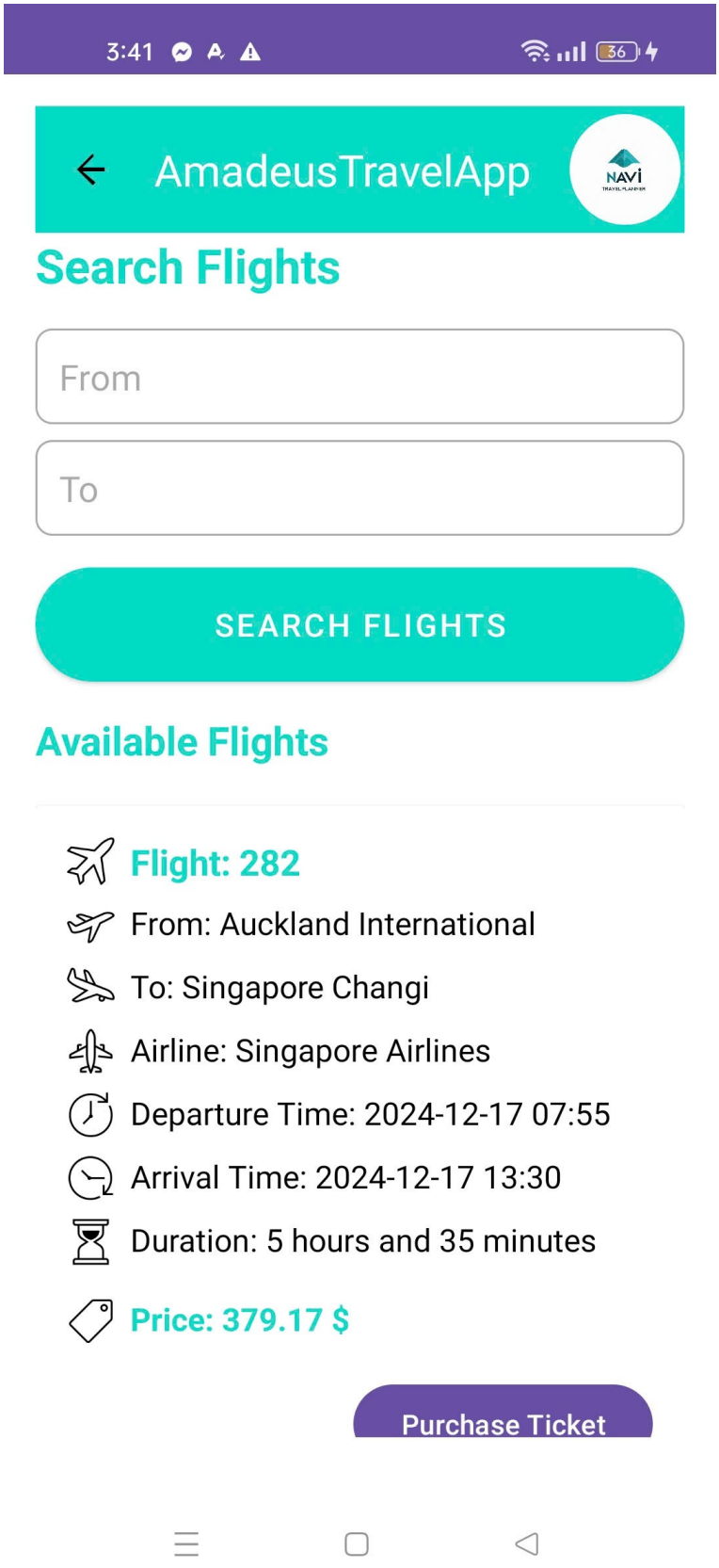


Major Functionalities

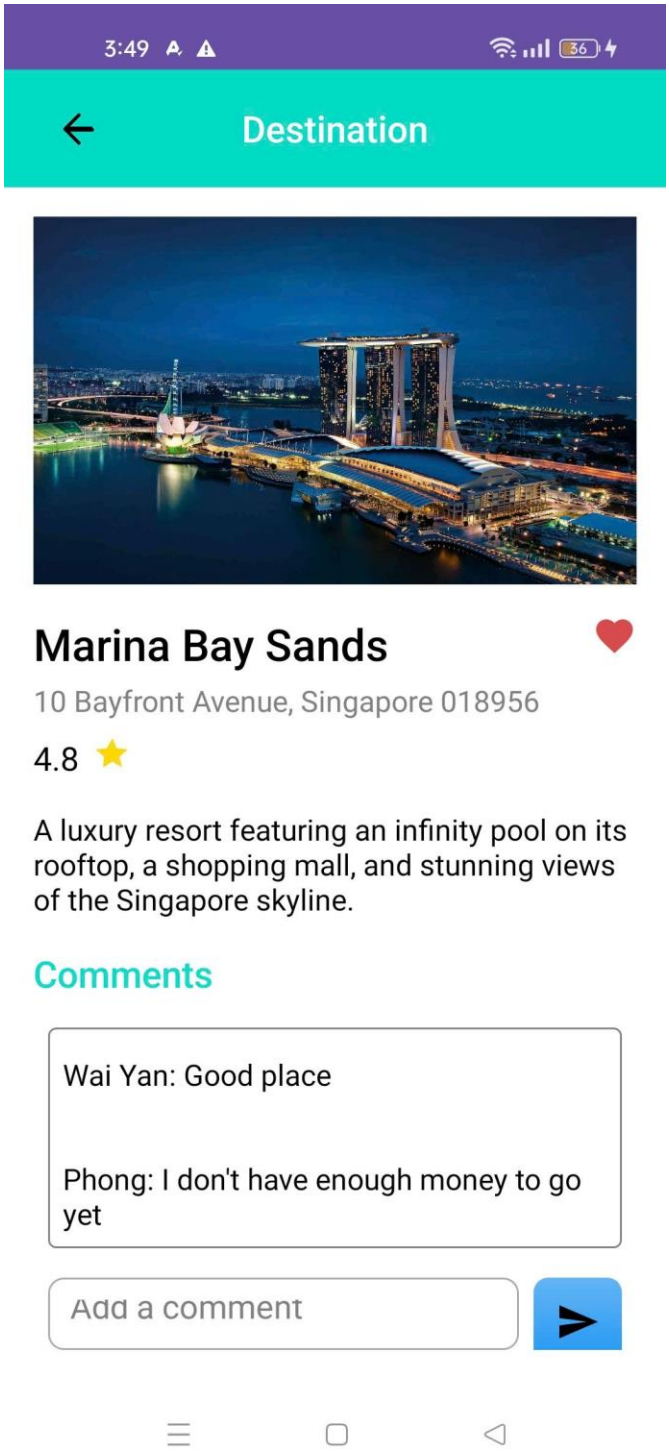
1. User Authentication: Users can sign up and log in using their email and password.



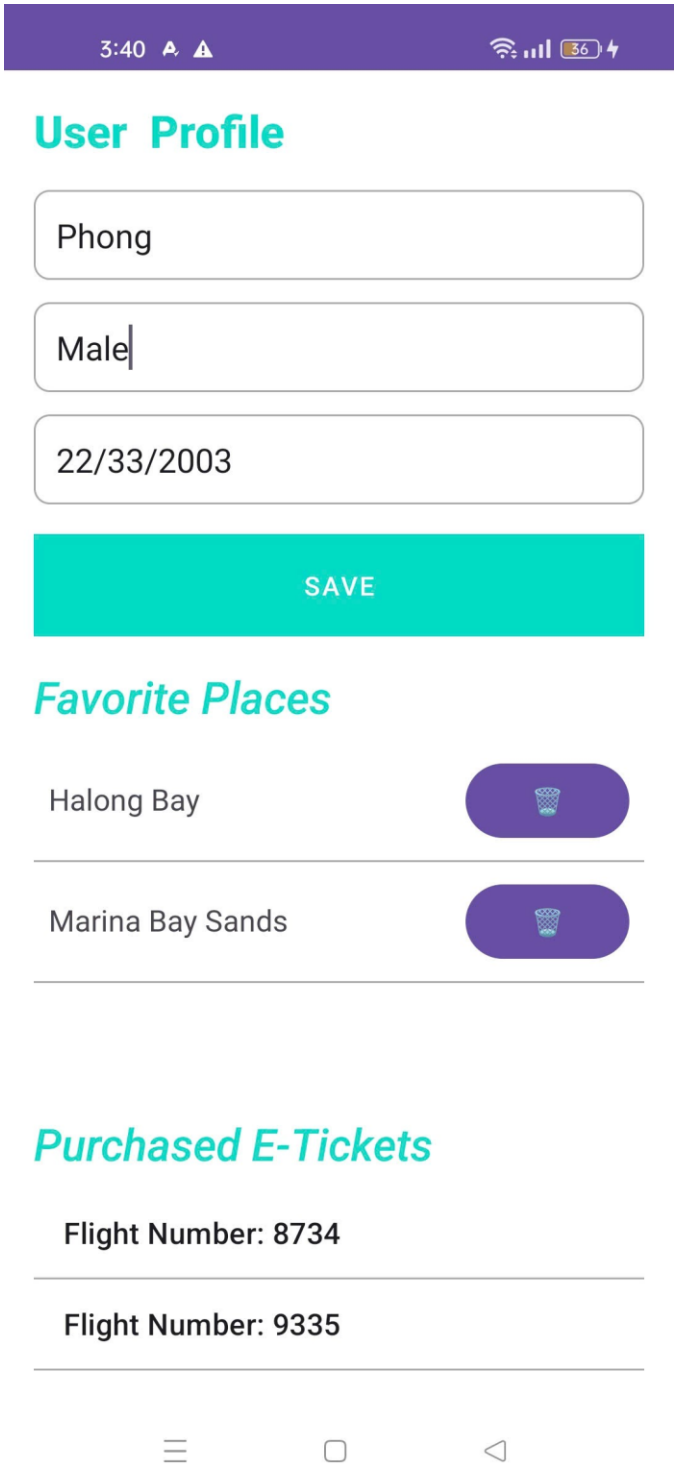
2. Flight Search: Users can search for flights between two locations using an external API.



3. Destination Details: Users can view detailed information about destinations, including comments and ratings.



4. User Profile Management: Users can update their profile information, including display name and personal details and also some personal details like favorite places or bought ticket by that user.


3:40
User Profile
Phong
Male
22/33/2003
SAVE
Favorite Places
Halong Bay
Marina Bay Sands
Purchased E-Tickets
Flight Number: 8734
Flight Number: 9335

Advantages and Disadvantages

Advantages

- User -Friendly Interface: The application has a clean and intuitive UI, making it easy for users to navigate.
- Real-Time Data: The use of Firebase allows for real-time updates and data synchronization.
- Integration with External APIs: The application fetches live flight data, providing users with up-to-date information.

Disadvantages

- Dependency on Internet: The application requires a stable internet connection to function properly.
- Limited Offline Functionality: Some features may not be accessible without an internet connection.

Techniques Applied

1. Basic GUI Components (0.25)

- Activities:
  - LoginActivity: Utilizes EditText for email and password input, Button for login, and TextView for navigation to the sign-up screen.
  - SignUpActivity: Similar to LoginActivity, it uses EditText for user input and Button for sign-up.
  - DestinationDetailActivity: Uses TextView for displaying destination details and ImageView for showing images.
- Description: The application uses standard UI components that are arranged logically and are adaptable to different screen sizes and orientations.

2. Multi-Activities (0.25)

- Activities:
  - LoginActivity, SignUpActivity, MainActivity, FlightSearchActivity, DestinationDetailActivity, User ProfileActivity.
- Description: Each activity serves a specific purpose, such as user authentication, flight searching, and displaying destination details. Data is transferred between activities using Intent extras.

3. Advanced GUI (0.25)

- Components:
  - RecyclerView: Used in FlightSearchActivity, DestinationDetailActivity, User ProfileActivity, and various adapters (e.g., CommentsAdapter, FlightAdapter, PopularDestinationsAdapter, RecommendedDestinationsAdapter).

    - Dialogs: Used in FlightAdapter for payment confirmation.
- Description: The application employs advanced UI components like RecyclerView for efficient data display and user interaction, ensuring a well-designed and user-friendly interface.

4. Fragment (0.25)

- Fragments:
    - MapFragment: Displays the user's location on a map.
    - DestinationFragment: Displays popular and recommended destinations.
    - SearchFragment: Handles flight search input.
- Description: Fragments are used to encapsulate related UI components and functionalities, allowing for better organization and reusability within the application.

5. Multi-threading (0.25)

- Classes:
    - Volley: Used for network requests in FlightSearchActivity to fetch flight data asynchronously.
- Description: The application uses asynchronous network calls to prevent UI blocking, ensuring a smooth user experience.

6. Storage (0.25)

- Storage:
    - Firebase Realtime Database: Used to store user data, comments, and flight tickets.
    - Shared Preferences: Used to store user preferences and display names.
- Description: The application effectively utilizes Firebase for backend storage and Shared Preferences for local data storage, ensuring data persistence.

7. Broadcasts (0.25)

- Classes:
    - AlarmReceiver: Receives broadcast intents for flight reminders.
- Description: The application uses broadcasts to handle alarms and notifications, ensuring timely reminders for users without overusing the broadcast system.

8. Services (0.25)

- Classes:
    - AlarmReceiver: Acts as a service to handle alarm notifications.
- Description: The application uses services to manage background tasks, such as sending notifications for flight reminders.

9. Notifications (0.25)

- Classes:

    - AlarmReceiver: Sends notifications to users about their flight reminders.
- Description: The application implements notification channels and displays notifications to users, ensuring they are informed about important events.

10. Alarms (0.25)

- Classes:
    - AlarmReceiver: Manages alarms for flight reminders.
- Description: The application schedules alarms to notify users about their upcoming flights, enhancing user engagement.

11. Handling Internet Data (0.25)

- Classes:
    - Volley: Used in FlightSearchActivity to handle network requests and fetch flight data.
- Description: The application effectively handles internet data by making API calls and processing the responses to update the UI without freezing.

12. Location Services (0.25)

- Classes:
    - MapFragment: Utilizes Google Maps API to display the user's current location.
- Description: The application integrates location services to enhance user experience by providing real-time location tracking.

13. Novelty (3.0 points)

- Techniques:
    - Firebase: Used for user authentication and data storage.
    - Volley: For network requests.
    - Google Maps API: For displaying user location.

Conclusion

The travel application effectively combines various functionalities to enhance the user experience in travel planning. Thanks to the integration of Firebase for secure user authentication, Volley for efficient data handling, and Google Maps API for location services, users can seamlessly search for flights, manage their profiles, and explore destinations.

However, the reliance on internet connectivity poses challenges, limiting offline usability and complicating API management. Despite these drawbacks, the

application demonstrates a solid understanding of modern mobile development techniques, providing a valuable tool for travelers.