FIT5046 Mobile and distributed computing systems S1 2024
Assignment 1: Android App Design Proposal

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Tutors: Pari Delir Haghighi
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1. Introduction

This report focuses on the design proposal of a movie ticket app. The report contains a brief description of the application, the target user group, the planned scope and limitations, proposed screens and functionalities, system architecture, UI mock-ups, and any advanced features we will develop for the application.

1.1 Overview

The application will be developed for the entertainment domain.
The application is designed to provide users of age 16-35 one-stop movie information and ticket purchasing service. The services include viewing current and future showing movie list, seat booking, and viewing bought tickets.
The application aims to improve the users' ticketing experience and lessen the effort required from movie goers to see a movie.

1.2 User Group

The expected user group will be teenagers to young adults (16-35) whose hobbies are watching movies at a cinema, they have moderate to high smartphone skills to enable smooth application navigation with their experience and moderate UI instructions. They live in urban to suburban areas. These users have disposable income to watch movies and will pay service fees in addition to the ticket prices if they deem the app convenient enough.

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1.3 Scope and Limitations

The program development is for a Native Android app, which means it will not be used by Apple iOS users.

The proposed application will contain the following key screens:

1. Authentication and Account
    1.1. Login screen
    1.2. Registration screen
    1.3. Profile screen
2. Home
    2.1. Quick buttons to Movie sessions
3. Contact and About Us
    3.1. Map screen
4. Movie session selection screens, each has Movie Detail page
5. Ticket booking / Seat selection screens

Aside from these key screens, the application will also have:

1. Navigation bottom bar
2. Room database to store user and movie information
3. Use of Lazy Column at Movie Sessions screens
4. Date Picker in sessions and booking screens
5. Expanded dropdown menu
6. Google Calendar Event creation with Retrofit
7. Showing tickets retrieved from the above calendar events

Due to time, technical and compliance constraints, the following functions will be partially or not implemented:

1. User comments and social sharing
2. Search Bar function
3. Interconnection with the cinema membership system
4. Issuance and use coupons
5. Online payment system (Credit card)

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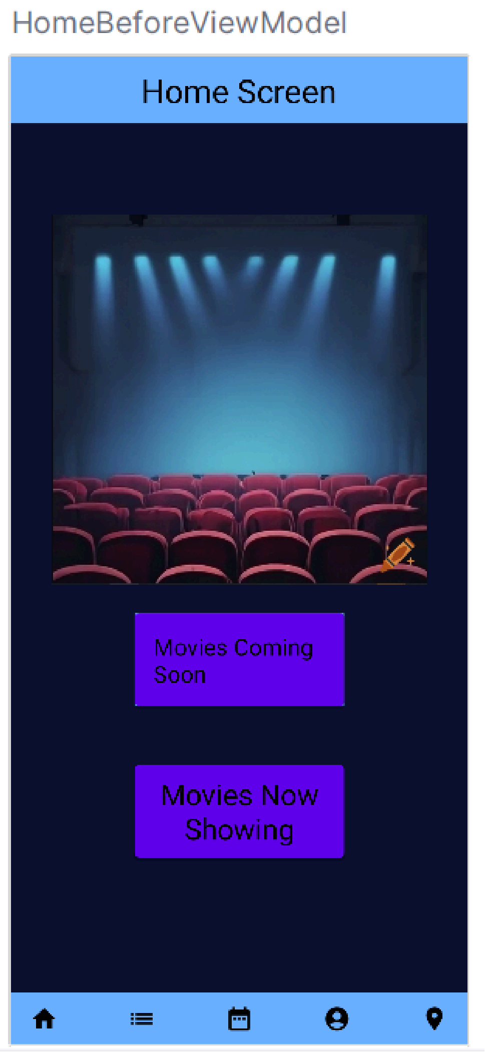
2. Proposed Functionalities and Screens

The registration signup, and booking ticket and seat forms will include expanded dropdown menu and datepicker.
The movie list screens will use LazyColumn or LazyGrid to display items.

Home Screen	
Prototype Screenshot	Features
 HomeBeforeViewModel Home Screen Movies Coming Soon Movies Now Showing	1. Image of cinema 2. Navigation 2.1 Buttons Movies Coming Soon, Movies now showing 2.2 Bottom bar (leads to other screens Movie List, BAccounts, Map)

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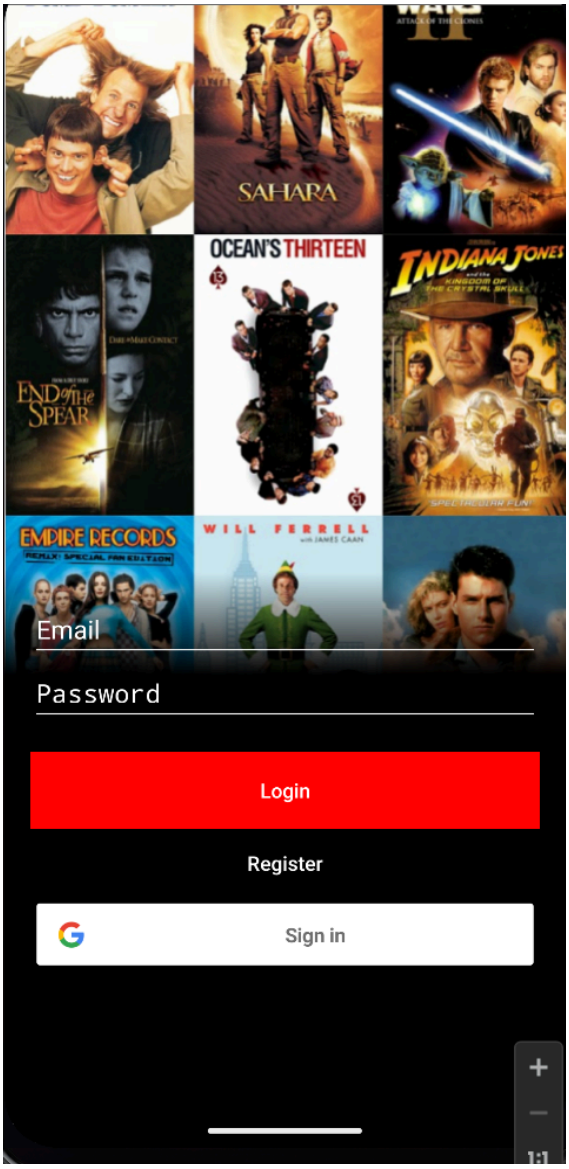
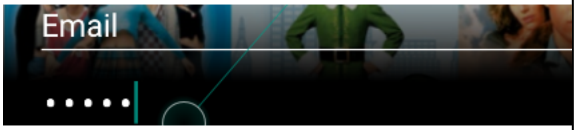
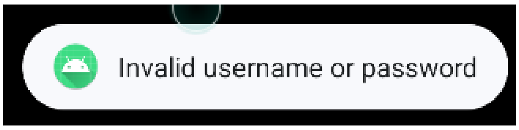
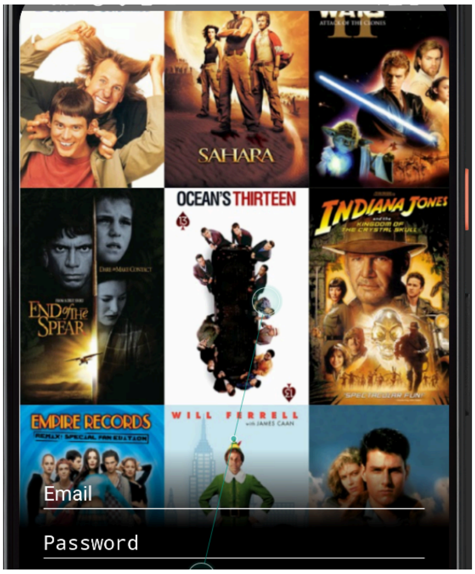
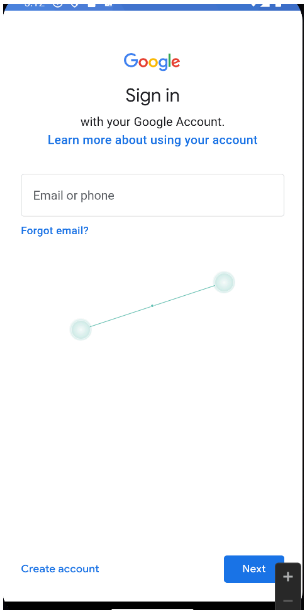
Login Screen	
Prototype Screenshot	Android key features
1.Guides Users to the login interface 2.Login Button Error Handling: 3.Login Screen background fills Max Size 4.Login Screen Set gradient color 5.Google Authentication  SAHARA OCEAN'S THIRTEEN INDIANA JONES END OF THE SPEAR EMPIRE RECORDS WILL FERRELL Email Password Login Register Sign in	1. Email/Username Password Field: Provide input fields for users to enter their email and password. Use appropriate input  hidden password 2. Toast Bar: Display clear error messages if the user enters incorrect credentials.Implement button states based on input Invalid username or password 3.FillMaxSize: The Login screen background FillmaxSize  SAHARA OCEAN'S THIRTEEN INDIANA JONES END OF THE SPEAR EMPIRE RECORDS WILL FERRELL Email Password 4background = GradientDrawable set gradient color

	5. Click Google connection Authentication  Google Sign in with your Google Account. Learn more about using your account Email or phone Forgot email? Create account Next 1.

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Register Screen

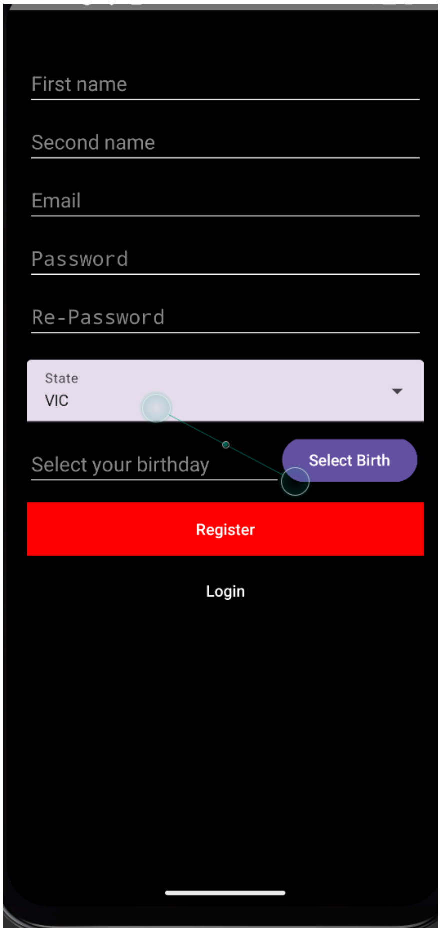
Prototype Screenshot

1.Selected Birth

2 Detail return Birth

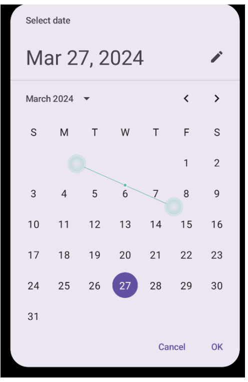
3 Register Screen selected your birth

4 Register Screen Column



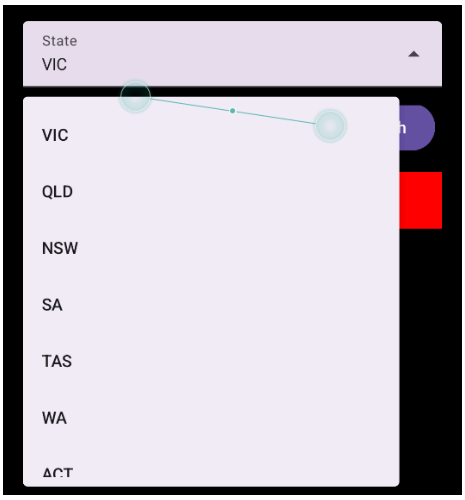
Android key features

1.Date picker choice and set

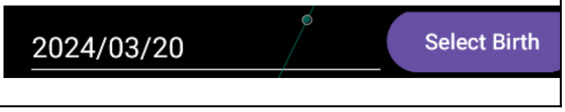


2. Put a date return data

3. Lazy column to state choice



4. encapsulation use a Column Linear



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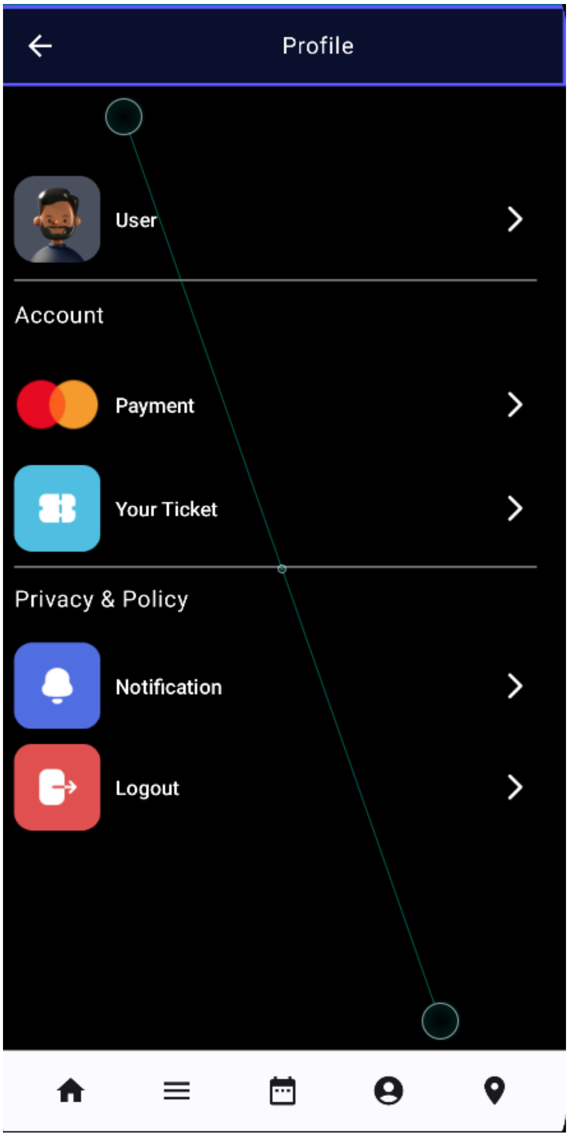
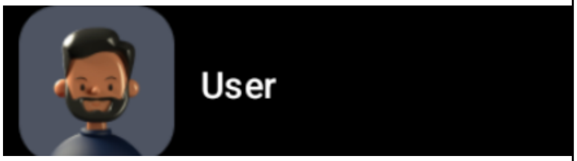
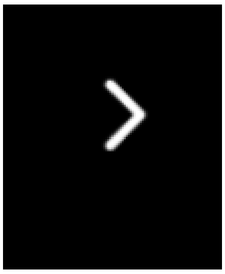
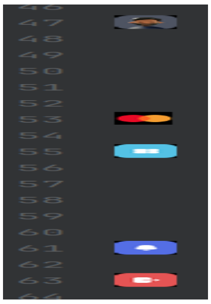
Profile Screen	
Prototype Screenshot	Android key features
1. Click button will return Login Screen 2. Personal state 3 .ForwardButton 4. Picture input  Profile User Account Payment Your Ticket Privacy & Policy Notification Logout	Feature1:NavController will return Logout Feature2:NavController will jump to personal detail */ composable Route can set name in next time  Feature3:NavigationIcon  Feature4:R.Drawable. Input Drawable input picture then Column and word dp in one line 

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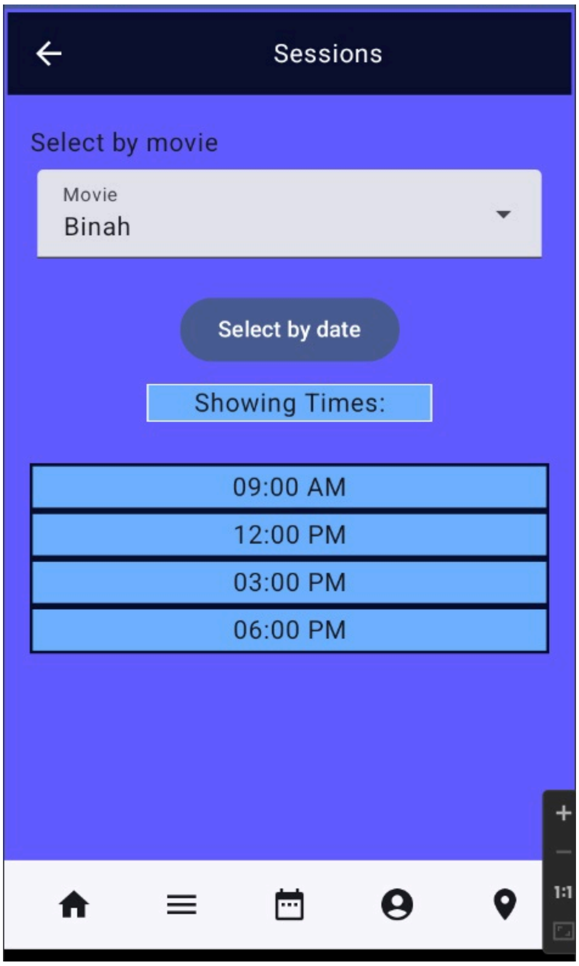
Sessions Screen	
Prototype Screenshot	Features
 Sessions Select by movie Movie Binah Select by date Showing Times: 09:00 AM 12:00 PM 03:00 PM 06:00 PM 1:1	2. Navigation 2.1. Back arrow on the top 2.2. Bottom Navigation Bar 3. Movie selection 3.1. Drop down menu 4. Select by date 4.1. Date Picker 5. Showing Times: 5.1. List 5.2. Updates according to the movie and date choices

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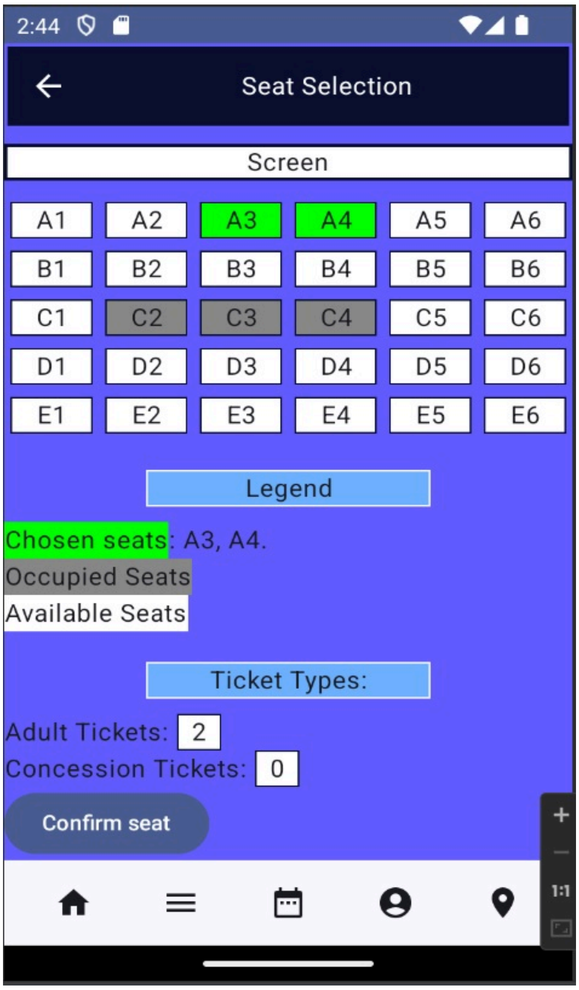
Seat Selection Screen	
Prototype Screenshot	Features
 2:44 Seat Selection Screen A1 A2 A3 A4 A5 A6 B1 B2 B3 B4 B5 B6 C1 C2 C3 C4 C5 C6 D1 D2 D3 D4 D5 D6 E1 E2 E3 E4 E5 E6 Legend Chosen seats: A3, A4. Occupied Seats Available Seats Ticket Types: Adult Tickets: 2 Concession Tickets: 0 Confirm seat	1. Navigation 1.1. Back arrow on the top 1.2. Bottom Navigation Bar 2. Seat selection 2.1. Lazy Grid, can change dimension by inputting different parameter 3. Legend 3.1. Chosen seats are updated live on user interaction 3.2. Available/Occupied seats are retrieved from the Room database upon reaching this screen 4. Ticket types: 4.1. Text input 4.2. Validation: number of chosen seats match the number of tickets 5. Confirm seat button 5.1. Leads user to payment (will not implemented) 5.2. Purchase success will show ticket details and button to add event to Google Calendar

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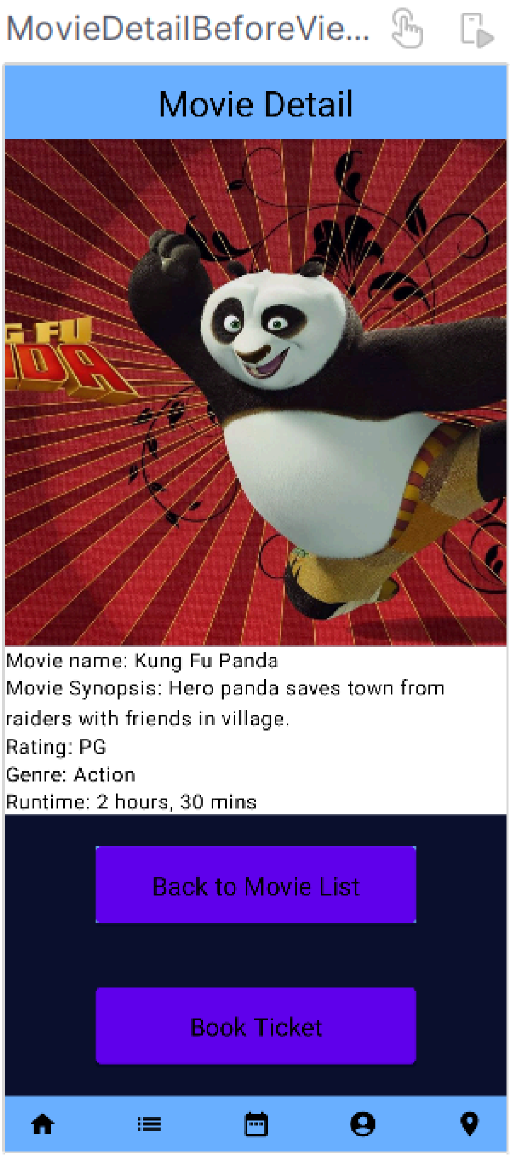
Movie Details Screen

Prototype Screenshot	Features
 MovieDetailBeforeVie... Movie Detail Back to Movie List Book Ticket Movie name: Kung Fu Panda Movie Synopsis: Hero panda saves town from raiders with friends in village. Rating: PG Genre: Action Runtime: 2 hours, 30 mins	1. Navigation 2.1 Buttons for ‘Back to Movie List’ and ‘Book Ticket’ actions 2. Movie Details: Calls and displays the item from Movie class: Large display image, movie name, synopsis, rating, genre, and runtime.

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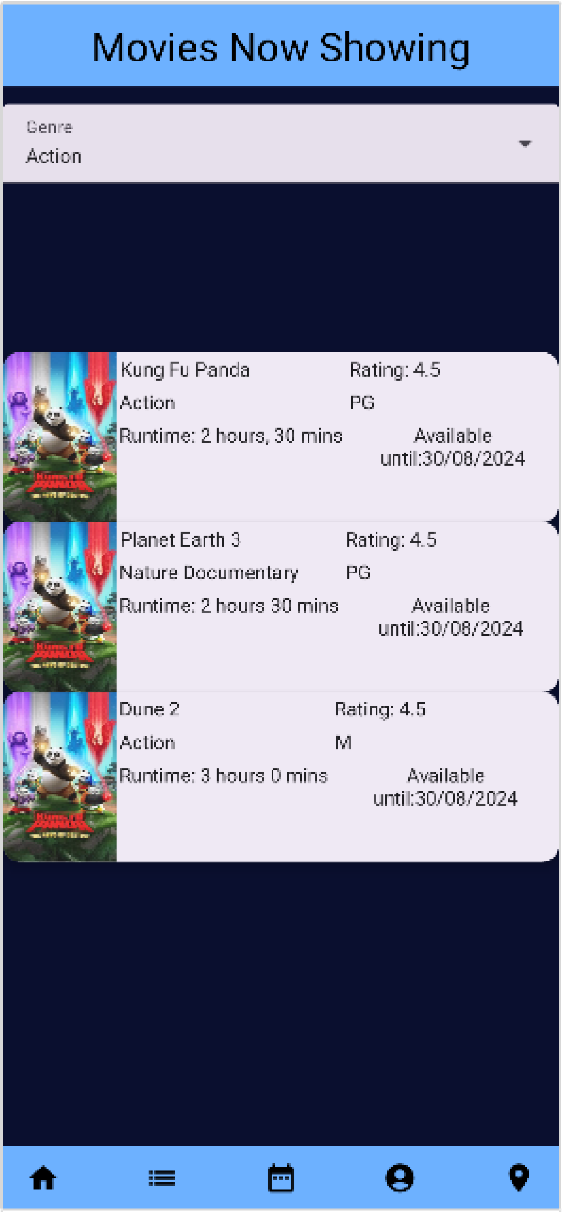
Movies Now Showing Screen

Prototype Screenshot	Features
 Movies Now Showing Genre Action Kung Fu Panda Rating: 4.5 Action PG Runtime: 2 hours, 30 mins Available until:30/08/2024 Planet Earth 3 Rating: 4.5 Nature Documentary PG Runtime: 2 hours 30 mins Available until:30/08/2024 Dune 2 Rating: 4.5 Action M Runtime: 3 hours 0 mins Available until:30/08/2024	‘Movies Now Showing’ has the same appearance as ‘Movies Coming Soon’. Automatically displays different movies based on cinema’s showing start and end dates. 1. Genre sort list. By default it is ‘Any’. 2. Movie Items from LazyColumn list: Displays the movie object from Movie class: Small Image, Name, user rating, age rating, genre, runtime

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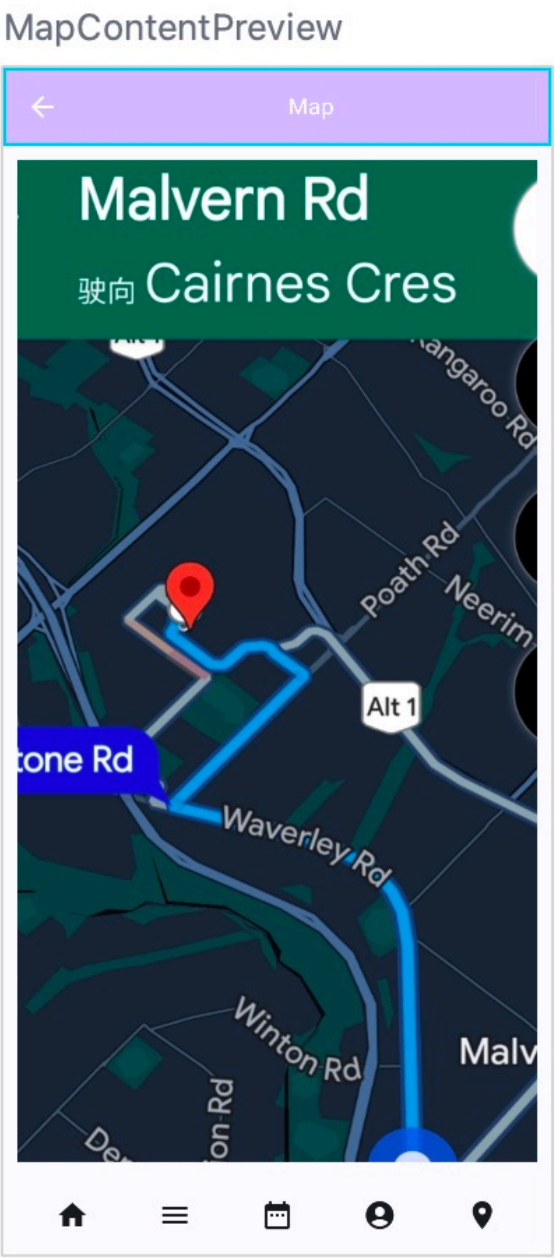
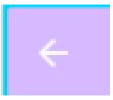
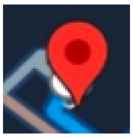
Map Screen	
Prototype Screenshot	features
 MapContentPreview Map Malvern Rd 驶向 Cairnes Cres Kangaroo Rd Poath Rd Neerim Alt 1 tone Rd Waverley Rd Winton Rd Malv	1. Back button  Click the back button back the home page or go to other page 2. Marker  Click the marker to to navigate

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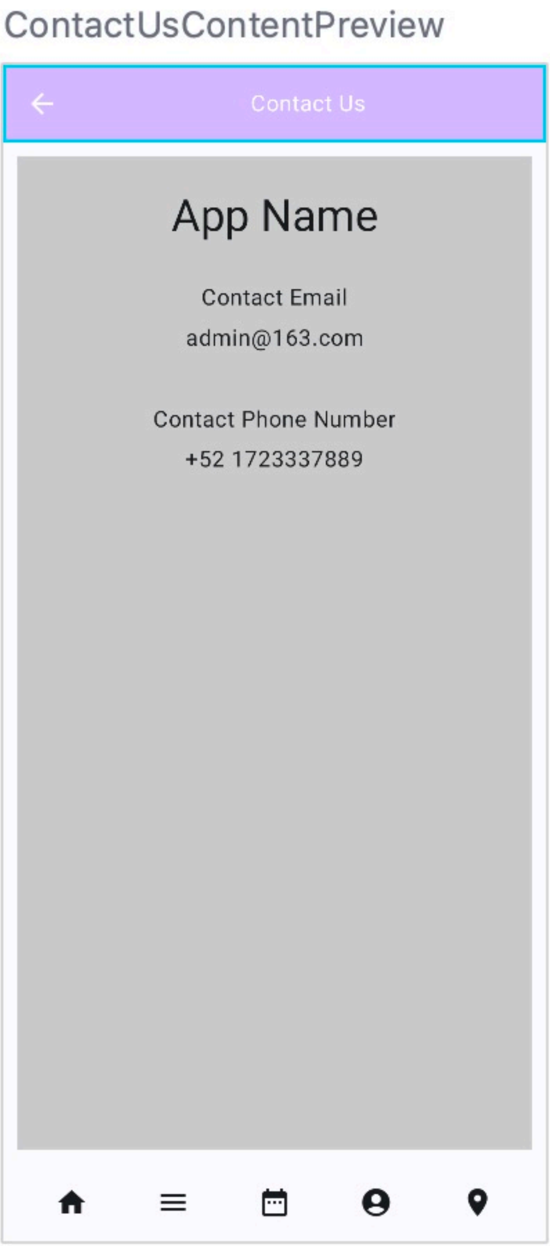
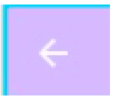
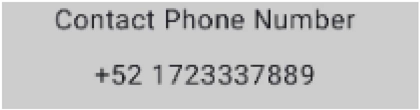
Contact Screen

Prototype Screenshot	Features
 ContactUsContentPreview Contact Us App Name Contact Email admin@163.com Contact Phone Number +52 1723337889	1. back button  Click the back button back the home page or go to other page 2. Automatically jump to page admin@163.com Click the email address automatically jump to the mailbox page 3.  Contact Phone Number +52 1723337889 Click the phone number automatically jump to the phone page

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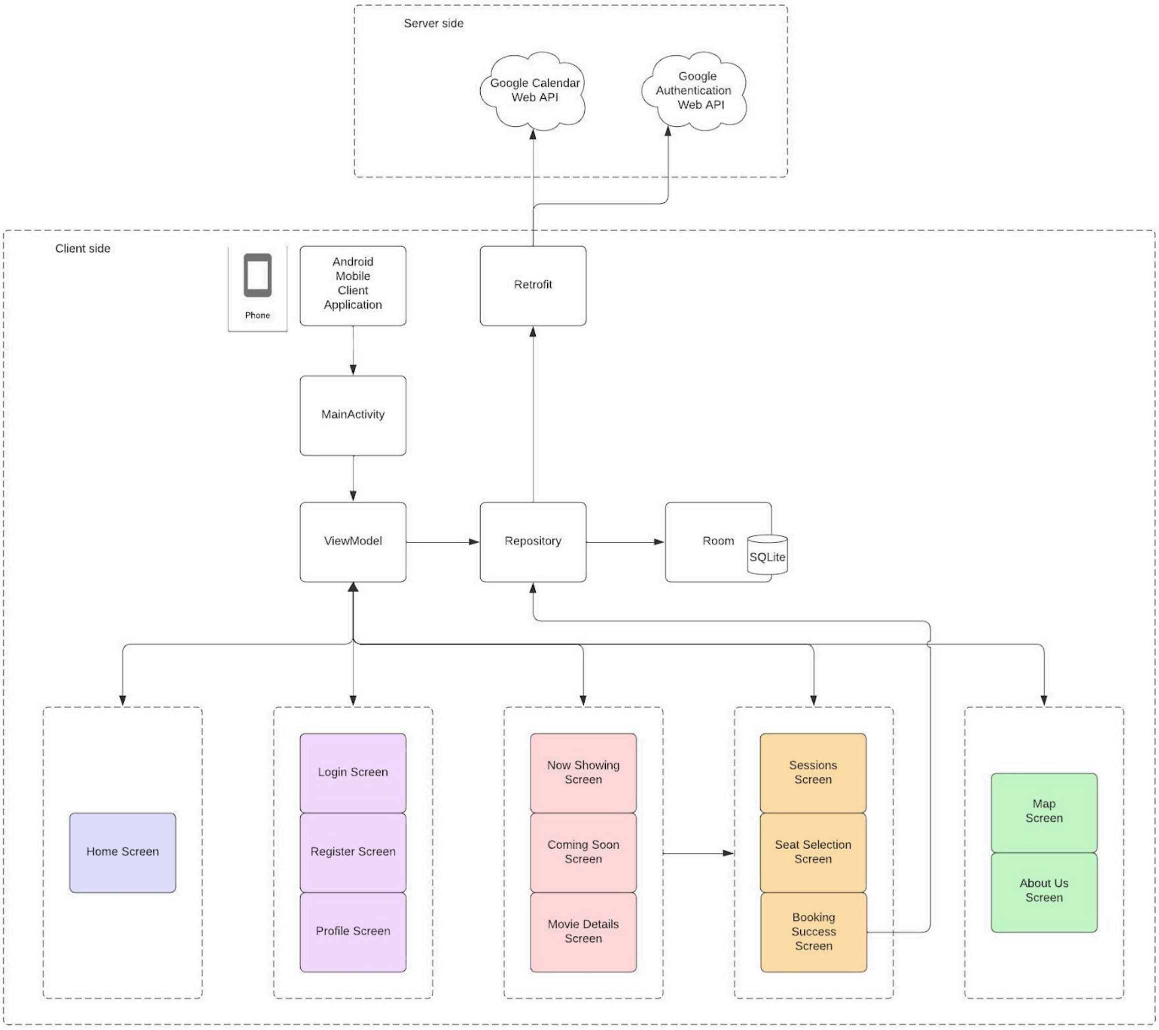
3. System Architecture

This application adopts the Android native development model, the front end uses the Kotlin language and Jetpack Compose framework, and the back end uses Room real-time database, MapBox and Retrofit to access public web APIs. It also integrates third-party services such as Google Authentication and Google Calendar.



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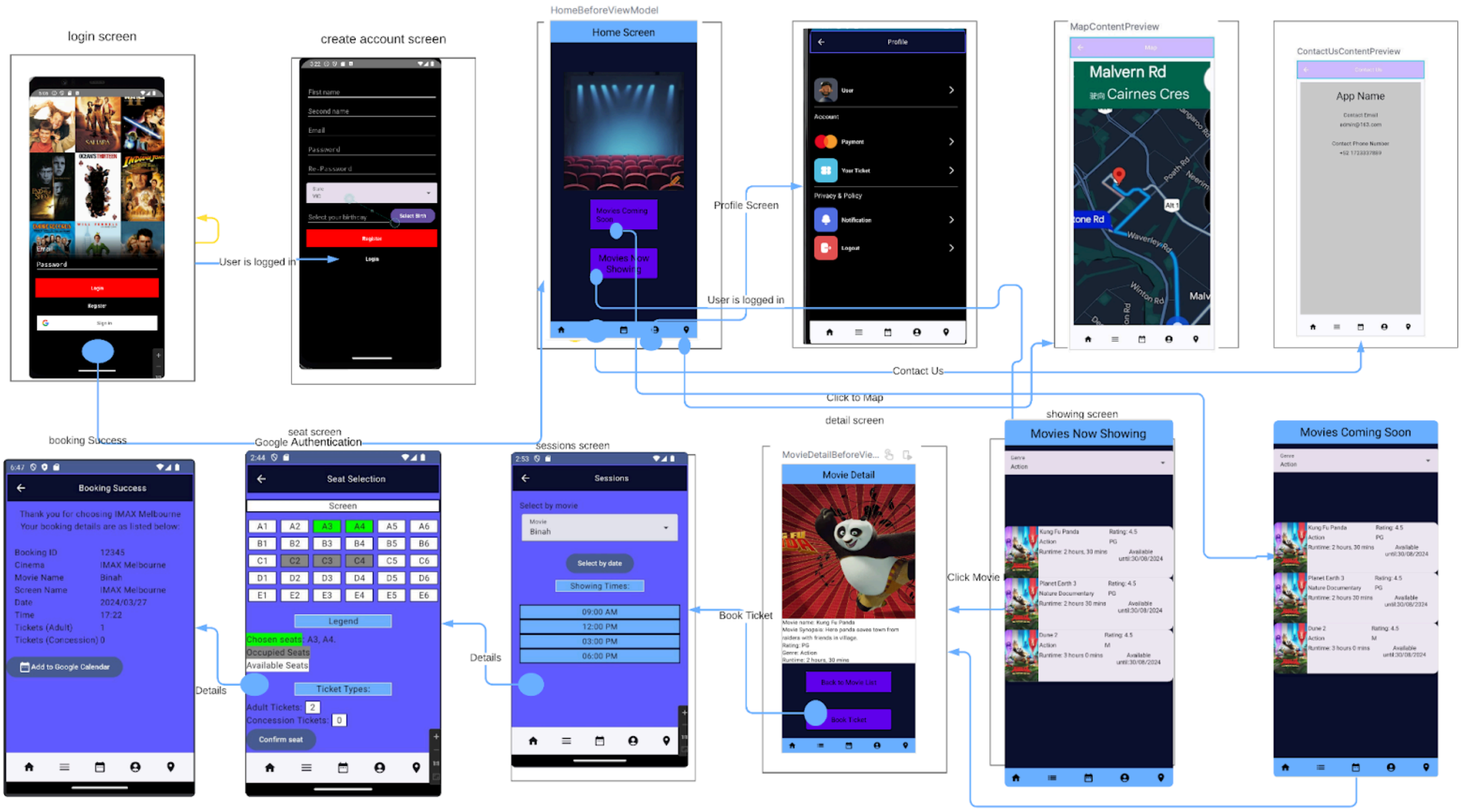
4. The UI Design and Android Prototype



Thank you for choosing IMAX Melbourne
Your booking details are as listed below:

Booking ID	12345
Cinema	IMAX Melbourne
Movie Name	Binah
Screen Name	IMAX Melbourne
Date	2024/03/27
Time	17:22
Tickets (Adult)	1
Tickets (Concession)	0

Chosen seats: A3, A4.
Occupied Seats
Available Seats

Adult Tickets: 2
Concession Tickets: 0

Select by movie
Movie
Binah

09:00 AM
12:00 PM
03:00 PM
06:00 PM

Movie name: Kung Fu Panda
Movie Synopsis: Hero panda saves town from raiders with friends in village.
Rating: PG
Genre: Action
Runtime: 2 hours, 30 mins

Kung Fu Panda Action Runtime: 2 hours, 30 mins	Rating: 4.5 PG	Available until:30/08/2024
Planet Earth 3 Nature Documentary Runtime: 2 hours 30 mins	Rating: 4.5 PG	Available until:30/08/2024
Dune 2 Action Runtime: 3 hours 0 mins	Rating: 4.5 M	Available until:30/08/2024

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5. Advanced Features

Google Calendar

Github has code from Google Developers that can be used to help understand their Calendar API (Google, n.d.). It also has code from other Android app developers that use this calendar feature (Oianmol, n.d.). The official website’s overview provides information on the API request syntax and event handlers. The quickstart guide written in Java code on how to link with Google authentication, and import Gradle dependencies will be applicable as it is similar to Kotlin (Google, n.d.).

Google Authentication

Integrate the Google Sign-In SDK, and after obtaining the user's authorization, use the GoogleSignInAccount object to obtain their ID, nickname, avatar and other information, and store it in the application's local database. Login status is maintained for 30 days by default. For the entire login process, please refer to Google’s official documentation (Android Developers, n.d.).

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References

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Google. (n.d.). google-api-java-client-services/clients/google-api-services-calendar/v3/2.0.0 at main · googleapis/google-api-java-client-services. GitHub. Retrieved March 27, 2024, from https://github.com/googleapis/google-api-java-client-services/tree/main/clients/google-api-services-calendar/v3/2.0.0

Installation | Maps SDK | Android Docs. (n.d.). Mapbox. Retrieved March 27, 2024, from https://docs.mapbox.com/android/maps/guides/install/

mapbox-maps-android/extension-compose at main · mapbox/mapbox-maps-android. (n.d.). GitHub. Retrieved March 27, 2024, from https://github.com/mapbox/mapbox-maps-android/tree/main/extension-compose

Oianmol. (n.d.). GitHub - oianmol/GoogleCalendarAndroidClone: A google calendar clone in jetpack compose. GitHub. https://github.com/oianmol/GoogleCalendarAndroidClone

Zoom. (n.d.). Zoom Video recording of our meeting. Retrieved March 27, 2024, from https://us06web.zoom.us/j/3558229999?pwd=NzB0VnZXN2s2MldqNWpBVXU0ZXpXQT09

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