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CS4381 Project

8/8/2023

Project Report: Travel Compass

Brief Description of the App and Key Requirements

App Description:

App name: Travel Compass

Travel Compass is a modern mobile app designed to make user's travel experience better. It gives you an easy way to explore cities, check the current weather, share your travel stories, and plan your trips effectively. With its user-friendly features and simple interface, Travel Compass is your go-to tool for discovering new places and making the most of your travels, no matter your experience level.

Key Requirements:

City Exploration and Snapshots: Travel Compass enables users to effortlessly explore cities around the world. By inputting their desired destination, users receive snapshots of the city, complete with captivating images and essential details.

Real-Time Weather Updates: The app offers users real-time weather updates for their selected destination. This feature ensures that travelers are well-prepared for any weather conditions during their journey.

Enriched Location Descriptions: Travel Compass leverages the Wikipedia API to provide users with comprehensive and engaging descriptions of various locations. Historical context, cultural highlights, local attractions, and other significant information come together to offer a deeper understanding of each destination.

Travel Community: Users can connect with a community of fellow travelers within the app. This interactive platform allows individuals to share their travel experiences, offer recommendations, and engage in meaningful discussions to inspire and enrich each other's journeys.

Efficient Trip Planning: Travel Compass empowers users to plan their trips efficiently. They can create and manage personalized itineraries.

Technical Components:

To fulfill the above requirements, Travel Compass incorporates the following technical components:

Google Places API: This API is used to streamline city exploration and image display. It enables the app to perform global city searches and retrieve captivating images that provide users with an immediate sense of each destination.

Wikipedia API: Leveraging the Wikipedia API enriches the app's location descriptions, offering users a comprehensive understanding of the historical, cultural, and noteworthy aspects of various locations.

SQLite Database (sqflite package): The sqflite package facilitates optimized data storage and retrieval.

Development Challenges and Interesting Design/Implementation Decisions

Throughout the development of Travel Compass, I encountered significant challenges that shaped our design decisions and implementation strategies.

- Challenge: Real-Time Data Integration

One of the notable challenges I encountered was the integration of real-time data from external APIs. Specifically, working with the Google API and configuring Google Cloud services proved to be a learning curve. To enable essential features, I opted to leverage the Google Places API for our search functionality. I aimed to enhance user convenience by implementing auto-fill suggestions as users searched for cities. This involved meticulous coding to ensure that only relevant city information was retrieved, filtering out extraneous data like stores and unrelated locations.

- Design Decision: Google Places API for City Exploration

I made a strategic decision to focus on the Google Places API to streamline city exploration. By enabling autofill suggestions and retrieving captivating images along with essential city details, users are presented with a visually appealing and informative snapshot of their chosen destination.

To further enrich our location descriptions, I turned to the Wikipedia API. This decision was driven by the API's capability to provide comprehensive information about various locations. However, the data obtained from the Wikipedia API required processing to ensure readability. Utilizing regular expressions, I refined the retrieved text by removing unnecessary elements, making the descriptions more user-friendly and engaging.

- Challenge: Weather Integration and User Preparation

Ensuring that users are well-prepared for their travel experiences necessitated real-time weather updates. For this purpose, I incorporated the OpenWeather API. This decision, while addressing the weather integration challenge, introduced complexities related to API integration, data retrieval, and presentation.

- Design Decision: OpenWeather API for Weather Update

To provide users with accurate and current weather information, I leveraged the OpenWeather API. The real-time weather updates allow travelers to adapt to changing conditions, enhancing their overall travel experience.

- Implementation: Itinerary Creation

My implementation can be observed in the trip_planning_screen.dart file. This file encapsulates the logic and UI components required for user-friendly itinerary creation and management. The _addItinerary and _editItinerary methods facilitate the addition and editing of itinerary items, allowing users to input destination, start and end dates, and activities.

The UserInputScreen widget encapsulates the user input process, including date selection, activity addition, and itinerary generation. The use of AddActivityDialog demonstrates a thoughtful approach to activity inclusion within the itinerary.

Technical Lessons Learned

Our journey through the development of Travel Compass provided invaluable technical insights, including:

API Mastery and Integration: Navigating the intricacies of diverse APIs such as Google Places, Wikipedia, and OpenWeather expanded our proficiency in API integration and data retrieval.

Data Storage Optimization: Integrating SQLite database management taught us efficient data storage and retrieval, emphasizing the importance of seamless user experiences.

UI Enhancement: Our focus on enhancing user interaction and experience underscored the significance of user-centric design and streamlined navigation.

Problem-Solving Resilience: Overcoming challenges in real-time data integration and efficient trip planning cultivated our problem-solving skills.

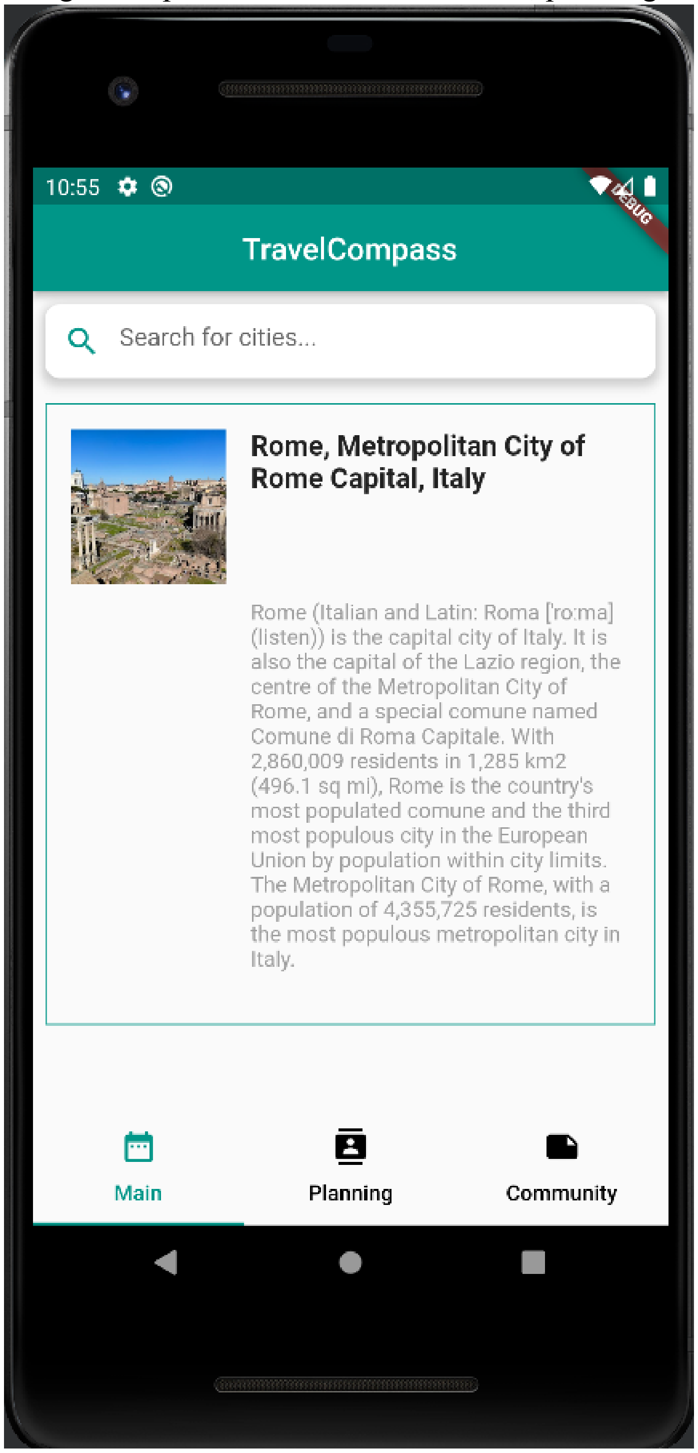
Modular Widget Architecture: The modular widget architecture showcased in the itinerary creation process reinforced the importance of code organization and reusability.

Project Complexity and Technical Components

Travel Compass comprises [26 number of classes] and [1298 lines of code], reflecting the project's complexity in handling real-time data integration, user interaction, and database management.

Appendix

Description of Screenshot 1: The initial screen that greets users upon launching the app features the app's name prominently displayed at the top. Beneath the search bar, users can expect to find the search results presented. At the bottom of the screen, intuitive icons provide users with quick navigation options to access the main tab, planning tab, and community tab of the app.

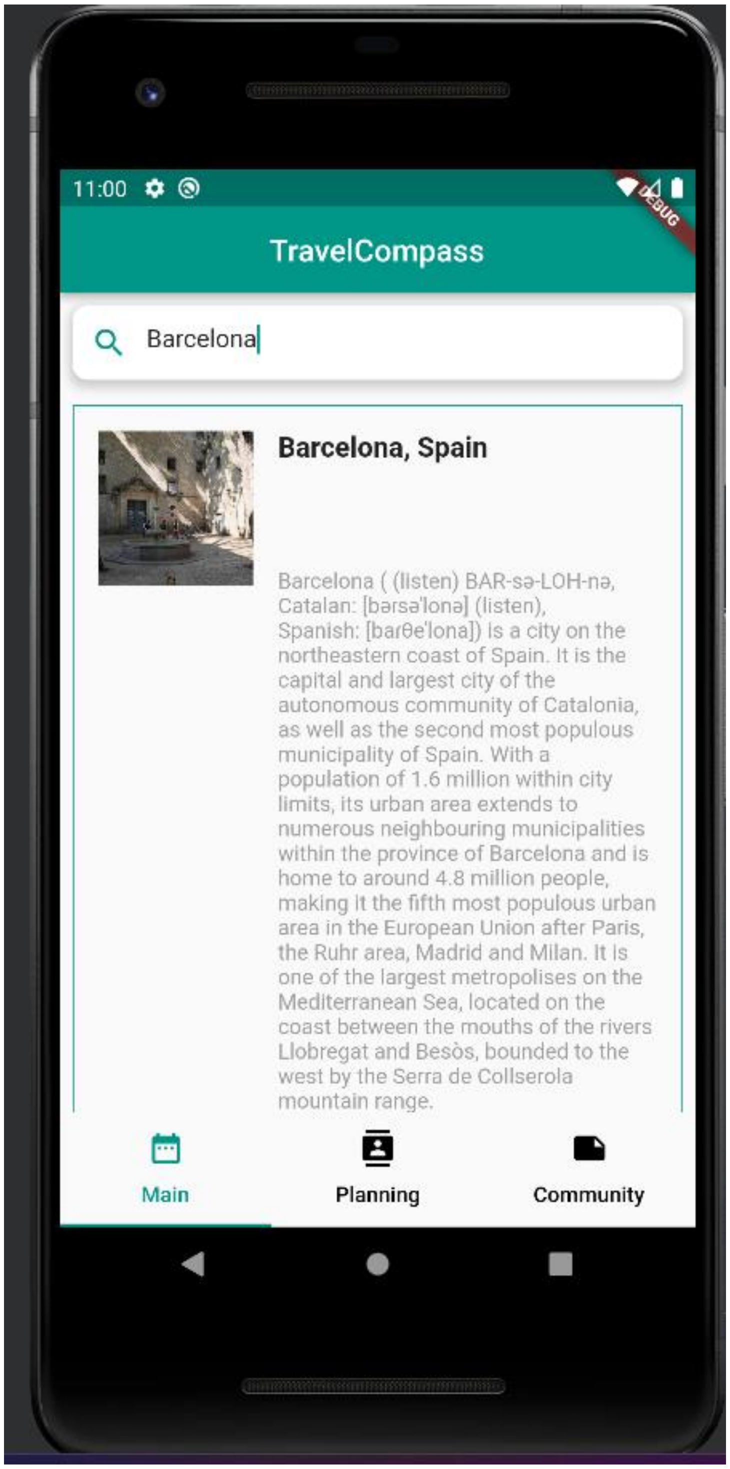


Rome, Metropolitan City of Rome Capital, Italy

Rome (Italian and Latin: Roma [ˈroːma] (listen)) is the capital city of Italy. It is also the capital of the Lazio region, the centre of the Metropolitan City of Rome, and a special comune named Comune di Roma Capitale. With 2,860,009 residents in 1,285 km2 (496.1 sq mi), Rome is the country's most populated comune and the third most populous city in the European Union by population within city limits. The Metropolitan City of Rome, with a population of 4,355,725 residents, is the most populous metropolitan city in Italy.

Figure 1: ScreenShot1

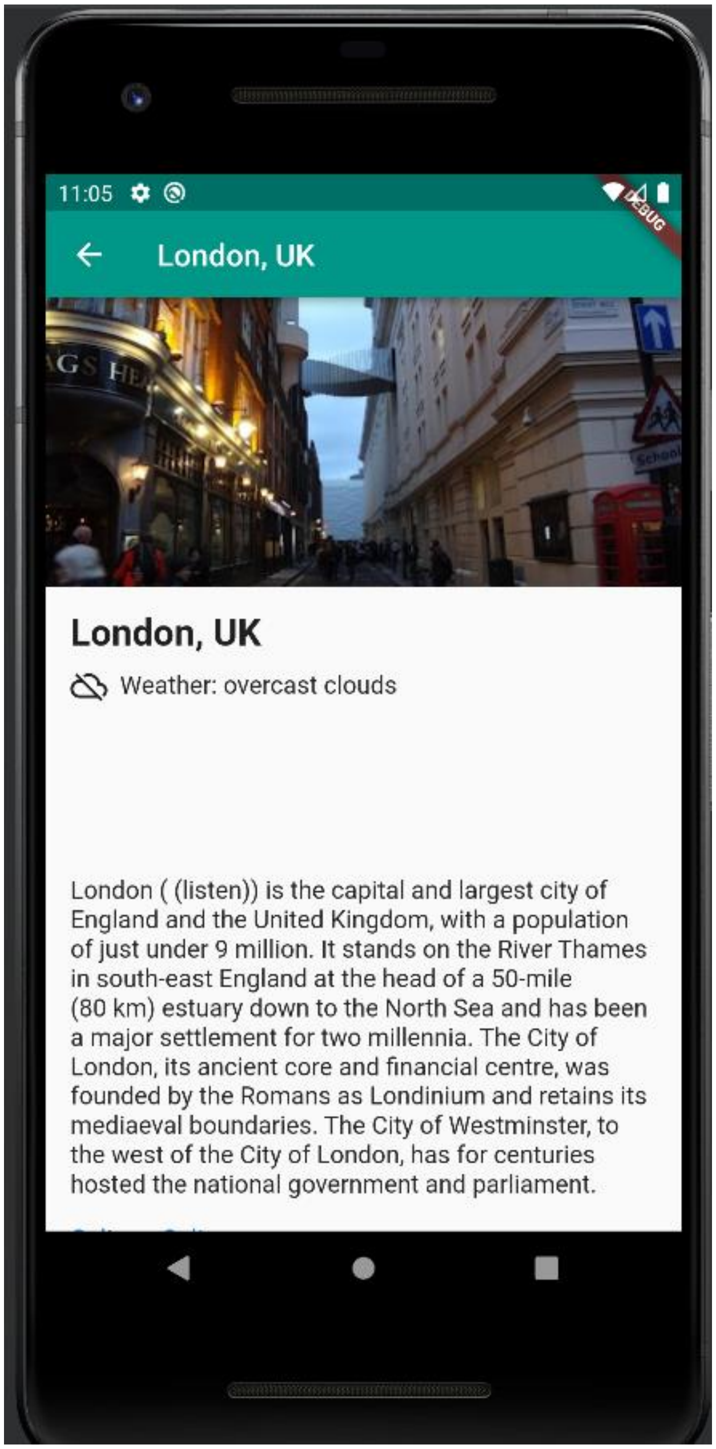
Description of Screenshot 2: As users initiate a city search, a location box comes into view, presenting a captivating picture of the selected destination. This box also encompasses a detailed description and key information about the location, enhancing the user's understanding of the searched city.



Barcelona ((listen) BAR-sə-LOH-nə, Catalan: [bərsəˈlonə] (listen), Spanish: [baɾθeˈlona]) is a city on the northeastern coast of Spain. It is the capital and largest city of the autonomous community of Catalonia, as well as the second most populous municipality of Spain. With a population of 1.6 million within city limits, its urban area extends to numerous neighbouring municipalities within the province of Barcelona and is home to around 4.8 million people, making it the fifth most populous urban area in the European Union after Paris, the Ruhr area, Madrid and Milan. It is one of the largest metropolises on the Mediterranean Sea, located on the coast between the mouths of the rivers Llobregat and Besòs, bounded to the west by the Serra de Collserola mountain range.

Figure 2: Screenshot 2

Description of Screenshot 3 & 4: Upon clicking the location box, users are seamlessly directed to a distinct screen. Here, they are greeted with an engaging picture, a comprehensive description, and up-to-date weather information about the chosen location. Furthermore, this screen also offers supplementary details that further enrich the user's understanding of the destination.

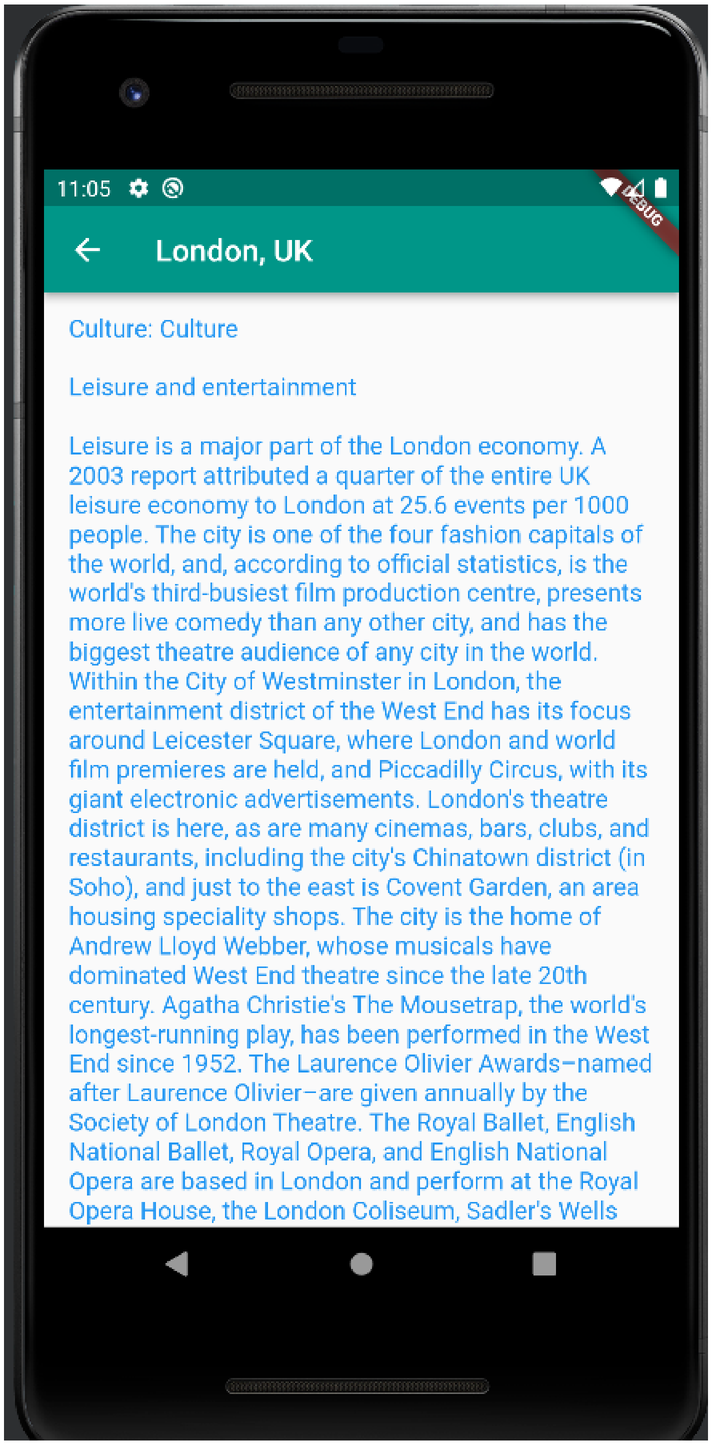


London, UK

Weather: overcast clouds

London ((listen)) is the capital and largest city of England and the United Kingdom, with a population of just under 9 million. It stands on the River Thames in south-east England at the head of a 50-mile (80 km) estuary down to the North Sea and has been a major settlement for two millennia. The City of London, its ancient core and financial centre, was founded by the Romans as Londinium and retains its mediaeval boundaries. The City of Westminster, to the west of the City of London, has for centuries hosted the national government and parliament.

Figure 3: Screenshot 3



London, UK

Culture: Culture

Leisure and entertainment

Leisure is a major part of the London economy. A 2003 report attributed a quarter of the entire UK leisure economy to London at 25.6 events per 1000 people. The city is one of the four fashion capitals of the world, and, according to official statistics, is the world's third-busiest film production centre, presents more live comedy than any other city, and has the biggest theatre audience of any city in the world. Within the City of Westminster in London, the entertainment district of the West End has its focus around Leicester Square, where London and world film premieres are held, and Piccadilly Circus, with its giant electronic advertisements. London's theatre district is here, as are many cinemas, bars, clubs, and restaurants, including the city's Chinatown district (in Soho), and just to the east is Covent Garden, an area housing speciality shops. The city is the home of Andrew Lloyd Webber, whose musicals have dominated West End theatre since the late 20th century. Agatha Christie's The Mousetrap, the world's longest-running play, has been performed in the West End since 1952. The Laurence Olivier Awards–named after Laurence Olivier–are given annually by the Society of London Theatre. The Royal Ballet, English National Ballet, Royal Opera, and English National Opera are based in London and perform at the Royal Opera House, the London Coliseum, Sadler's Wells

Figure 4: Screenshot 4

Description of Screenshot 5: Upon accessing the planning app, users gain the ability to craft their personalized itineraries. Should an itinerary already exist, it is showcased as a distinct box on the screen, complete with its title, start and end dates. To generate a new itinerary, users simply tap the button located at the bottom right corner. Furthermore, existing itineraries can be effortlessly edited or removed by employing the swipe left gesture for a seamless user experience.

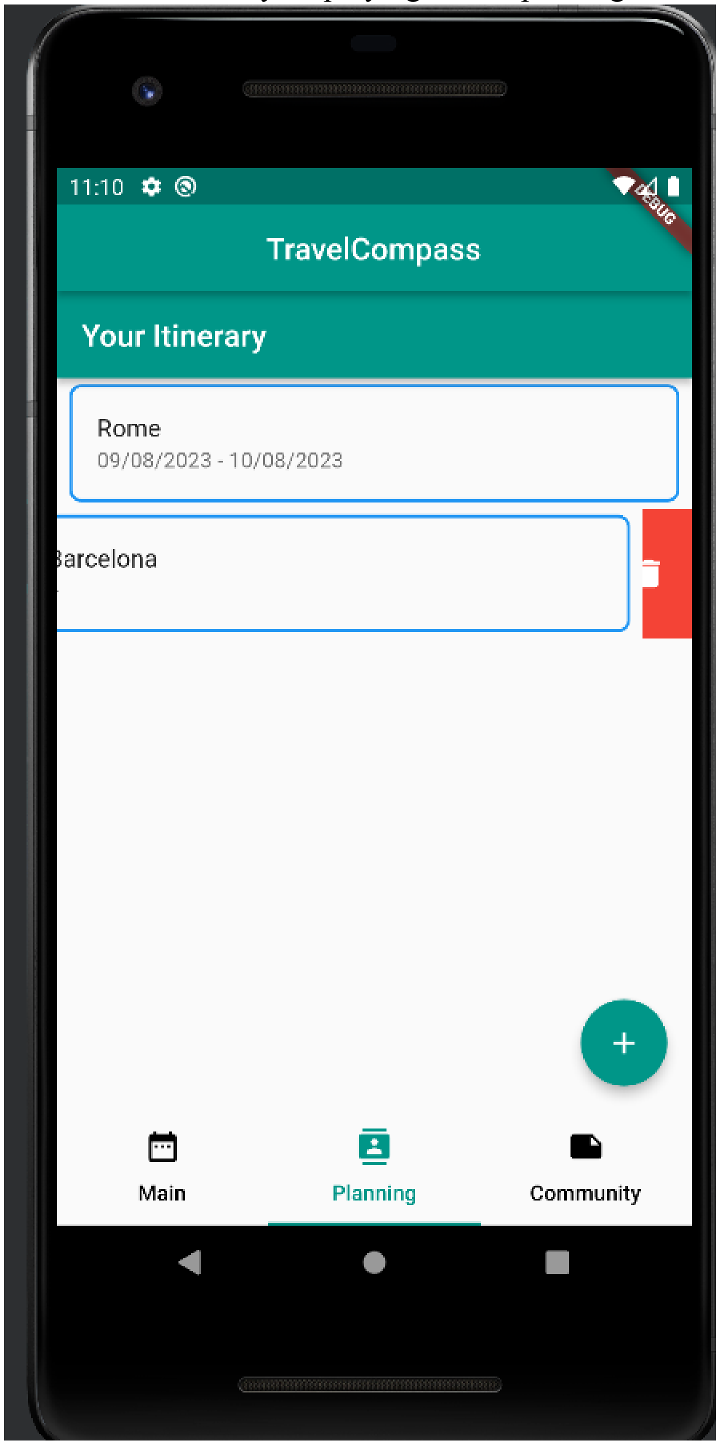
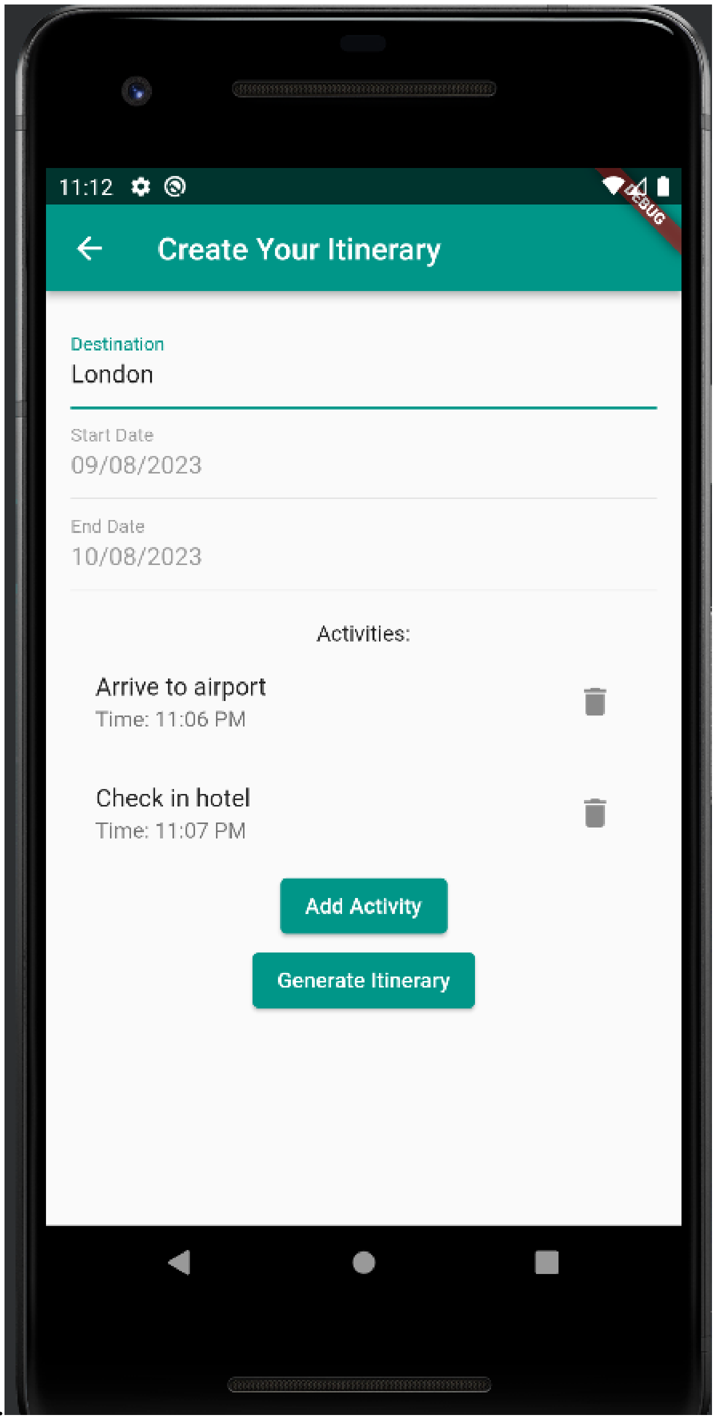


Figure 5: Screenshot 5

Description of Screenshot 6: Upon selecting the "Create" button within the planning screen, users are presented with a comprehensive interface. Here, they can input the destination title for their itinerary and conveniently select desired start and end dates for their travel plan. Moreover, users have the option to create a list of activities they wish to engage in during their trip. This can be achieved by utilizing the "Create Activities" feature, and activities can also be easily removed as needed.



Destination
London

Start Date
09/08/2023

End Date
10/08/2023

Activities:

Arrive to airport
Time: 11:06 PM

Check in hotel
Time: 11:07 PM

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Figure 6: Screenshot6

Description of Screenshot 7: Description of Screenshot 7: Upon clicking the "Create Activity" button, a user-friendly pop-up window emerges, prompting users to provide a title for the activity and specify the corresponding time.

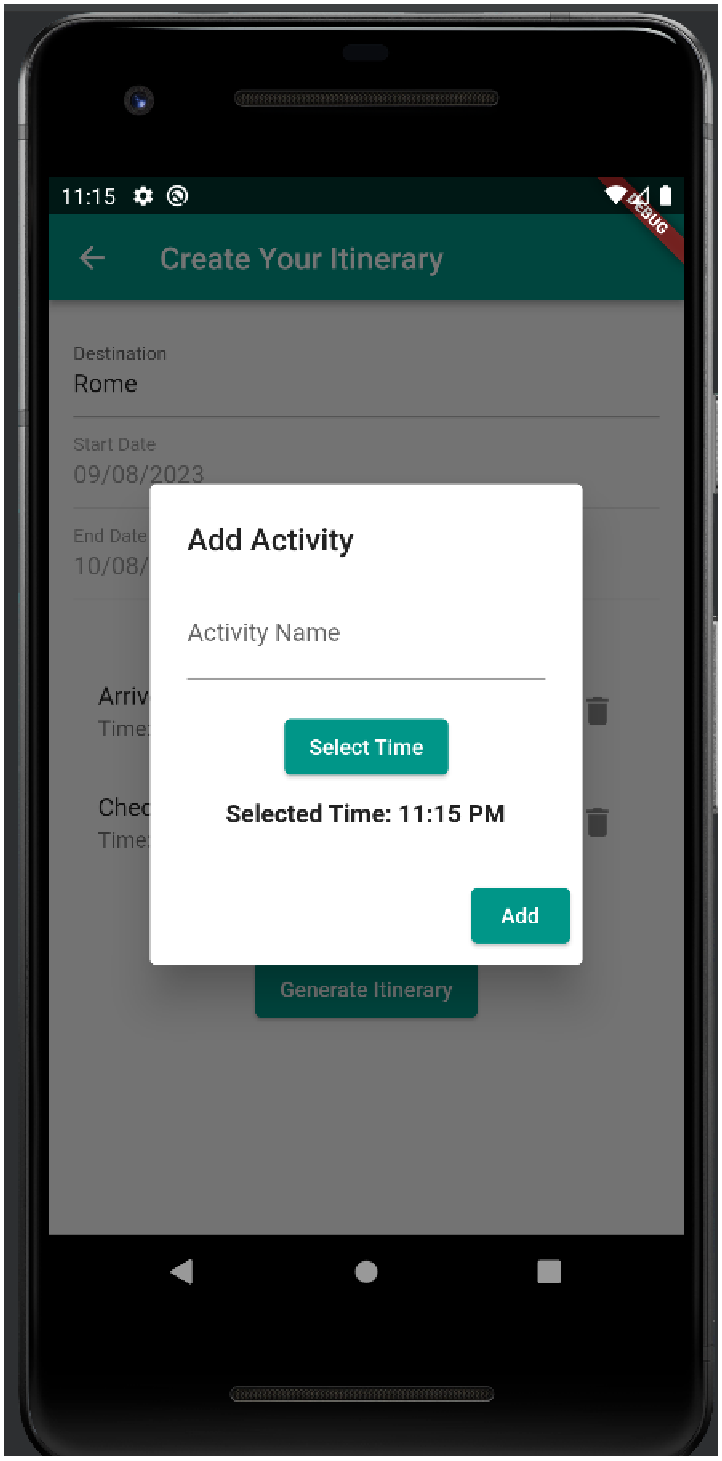
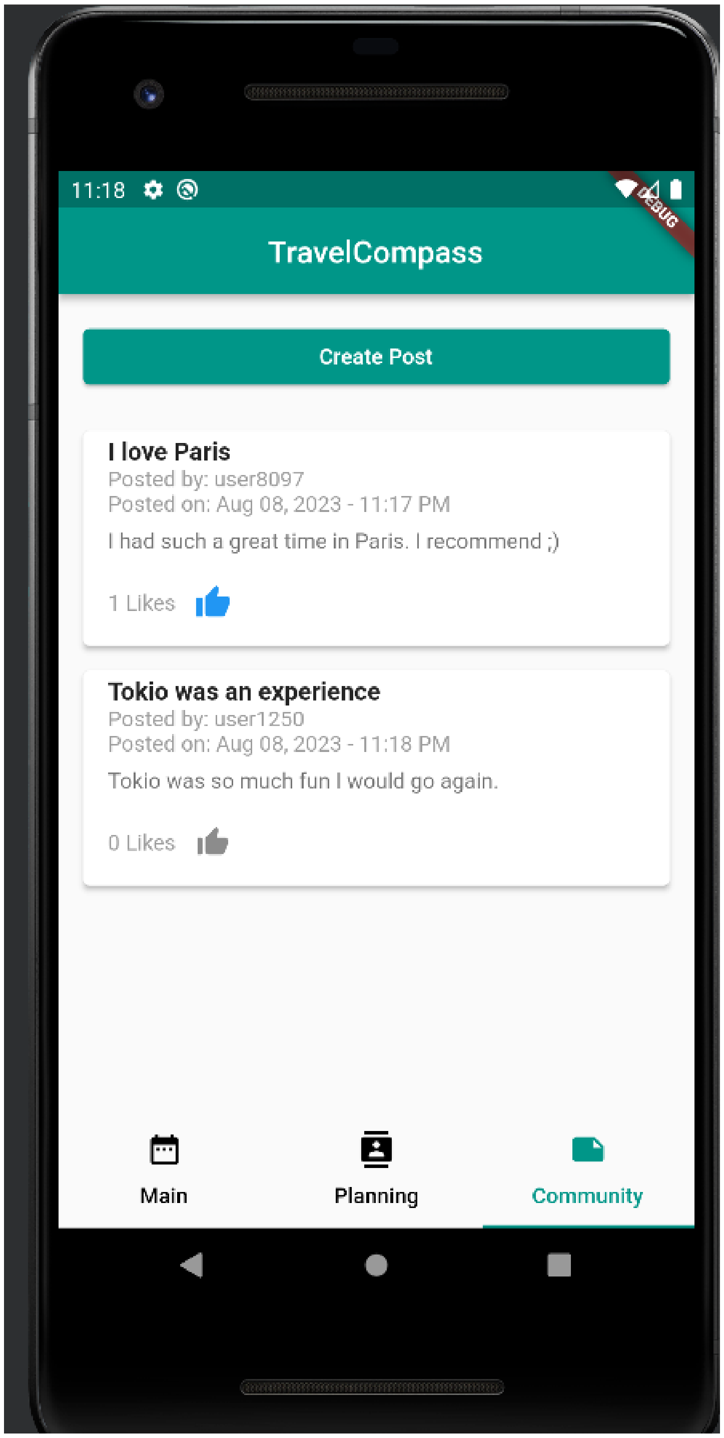


Figure 7: Screenshot 7

Description of Screenshot 8: In the "Community" tab, users can view posts from fellow users, each displaying a title, description, posting time, and the author's username. A prominent "Like" button showcases the post's popularity. At the top, a "Create Post" button enables users to share their own content with the community.



I love Paris
Posted by: user8097
Posted on: Aug 08, 2023 - 11:17 PM
I had such a great time in Paris. I recommend ;)
1 Likes

Tokio was an experience
Posted by: user1250
Posted on: Aug 08, 2023 - 11:18 PM
Tokio was so much fun I would go again.
0 Likes

Figure 8: Screenshot 8

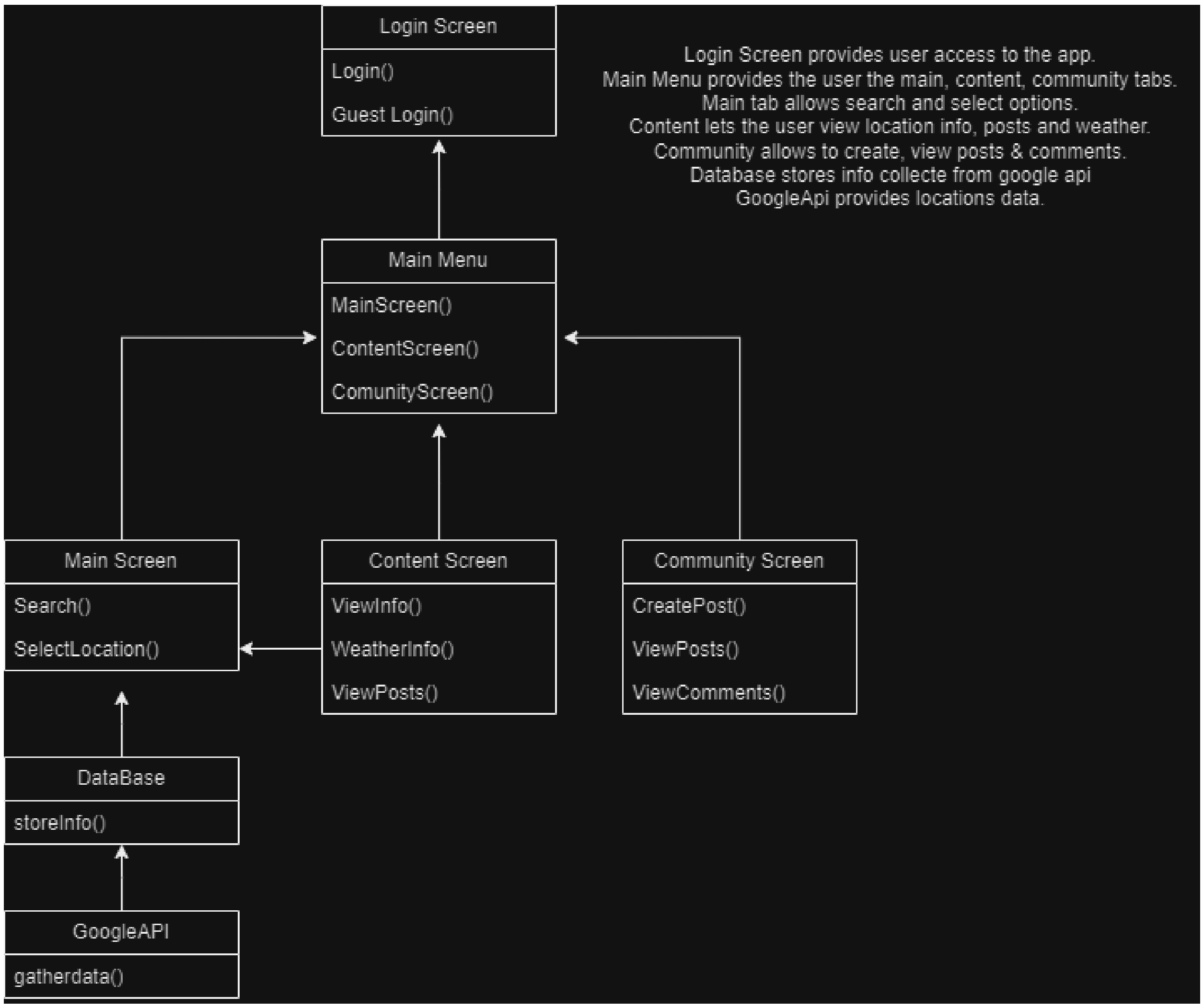
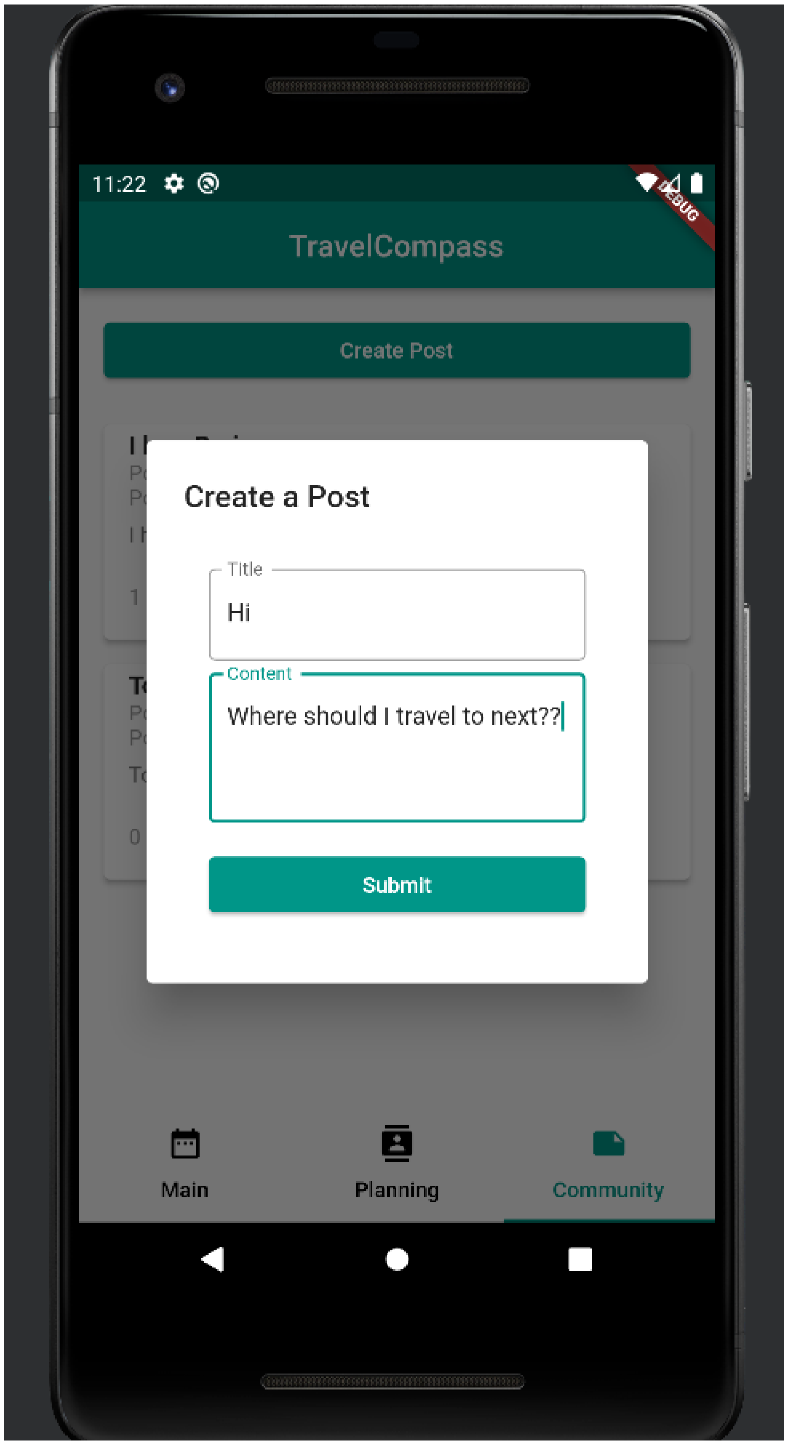

Login Screen
Login()
Guest Login()
Login Screen provides user access to the app.
Main Menu provides the user the main, content, community tabs.
Main tab allows search and select options.
Content lets the user view location info, posts and weather.
Community allows to create, view posts & comments.
Database stores info collecte from google api
GoogleApi provides locations data.
Main Menu
MainScreen()
ContentScreen()
ComunityScreen()
Main Screen
Search()
SelectLocation()
Content Screen
ViewInfo()
WeatherInfo()
ViewPosts()
Community Screen
CreatePost()
ViewPosts()
ViewComments()
DataBase
storeInfo()
GoogleAPI
gatherdata()

Figure 9: Class diagram

Description of Screenshot 9: Upon clicking the "Create Post" button, a pop-up window emerges, enabling users to input a title and content for their post. Positioned at the bottom, a "Submit" button finalizes the post, allowing users to seamlessly share their content with the community.



Hi

Where should I travel to next??

Figure 10: Screenshot 9