Requirements Analysis Document

Group 7:

Andrew Dovale-Puig
Eli James
Jack Fejer
Lucy Childerhose
Lucas Komljenovic
Shyan Vilvarajah
Xinwei Lyu

TA: Elyas Rashno

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Executive Summary

Food enthusiasts, or people looking to eat out often struggle to find trusted or personalized recommendations of where to eat or dishes to try. Snackmap aims to address this by creating a centralized platform where users can share and review restaurants as well as individual dishes at restaurants with their personalized network of friends and family. This platform will allow users to create accounts, post or review specific restaurants or dishes, and interact/view their connections' posts. This app will feature a homepage showing their friends' activity, a profile to manage their posts, and a search bar to find specific reviews. Additional features, such as filtering by location, cuisine type or other preferences, personalized recommendations and geolocation-based restaurant suggestions, will be included if time allows. Ideally, this software would take the form of a mobile app accessible on IOS and Android devices. However, due to the fact that this is a new experience for team members, a PC-GUI will be the baseline for testing. The app's interface will be simple and intuitive, with a maximum response time. Although components of this idea currently exist separately, Snackmap aims to bring the aspects of social media and food together in an easy-to-use environment.

Background/History

In today’s interconnected society, there exist many apps built with the intention of bringing people together through sharing experiences, although, few are focused on the joy of sharing food and cruise recommendations with friends. Many current platforms focus on general food reviews, left by any customer. Here, there exists a gap for a personalized, or community-driven food review-sharing site either for restaurants or at-home recipes. Snackmap is a social food-sharing app created with the goal of a more intimate and interactive experience for sharing reviews with friends, family, enthusiasts, or anyone. Snackmap allows users to build their own food community by adding friends and sharing reviews of their favourite restaurants, dishes, must-tries, hidden gems, etc. Users can follow their friend's cuisine adventures and discover new restaurants or dishes through their network’s trusted recommendations. Have you ever received a restaurant recommendation, arrived at the restaurant and not known what to order? Snackmap will allow for reviews to be left on individual dishes or popular favourites.

This project intends to create a dedicated platform where friends can easily exchange food reviews and uncover new dining experiences for users who are food enthusiasts or someone simply wanting to share a great meal recommendation with a friend. Snackmap seeks to build a personal network of users who can explore and share food together.

Purpose of the System

The main purpose of Snackmap is to provide an easy platform for food lovers to share and review the preparation process and experience of restaurant dishes or home-cooked dishes. Through the platform, users can explore new restaurants, share recipes, and interact with others who love food to expand their food experience.

Scope of the system

The initial scope of Snackmap focuses on users being able to perform basic sign-ups and logins, share pictures and comments, and see what their friends are doing. In the minimum viable product (MVP) phase, Snackmap will implement a user registration system that allows users to create accounts, log in with a username and password, and post comments and share posts. Users can manage their personal information through the profile page, upload pictures, and write reviews related to food. In addition, the platform also offers a "friends home page", which allows users to browse friends' news, likes and comments. The social function of the system includes the attention and interaction between users, as well as the recommendation of content to promote the establishment of relationships between users and the dissemination of information. In the future, we plan to expand Snackmap's capabilities to add discovery pages, personalized recommendations, geolocation services, and more to better serve users' needs.

Objectives and Success Criteria

Snackmap is a social platform focused on sharing food experiences. The goal of the software is not just to provide a simple tool for food sharing, but to create a versatile and

engaging platform from multiple perspectives such as user experience, social interaction and food exploration. The following details Snackmap's goals from different perspectives:

User Experience Perspective

Provide a user-friendly platform so that even first-time users can quickly get started. The app interface should be simple and intuitive, ensuring that users can easily register, log in, create, and manage content. Whether it is creating posts, uploading pictures or interacting with others, all operations should be completed in the shortest possible time to ensure the efficiency of the system. The user's response time during the operation should not exceed 3 seconds to ensure a smooth experience.

Social Interaction Perspective

Snackmap wants to be a social circle created for food lovers, where users can not only share their own food experiences but also communicate and interact with other users. With features like following, liking, and commenting, users can keep in touch with friends, family, and other food lovers as well as get feedback in the community.

Gastronomic Exploration Perspective

Users can browse recommendations from friends through the platform, as well as use the *Explore* page and search function to find popular restaurants or popular recipes nearby. This will help users discover new restaurants, and new cuisines, and try making dishes at home that others share. With the location service, users can also see popular restaurants nearby and even see user reviews of specific restaurants on a map. This will help those who love travel and gastronomic exploration easily find the right place to eat.

Information and Privacy Management Perspective

Users can use privacy Settings to decide what content can be seen by whom (e.g. public, friends-only, private). This privacy control helps users tailor the scope of sharing to their needs. The system also allows users to manage their own post content, such as deleting, editing and archiving expired or no longer needed content, to help users effectively manage the information they share.

Database Security Objective

Prevent SQL Injection Attacks

Snackmap's primary goal for database security is to prevent SQL injection attacks by ensuring that an attacker cannot manipulate a database by entering malicious SQL statements to access, modify, or delete data that is not authorized. Specific measures include:

Permission-based Access Control

> Role-based access control policies will be implemented to ensure that each user can access only the data related to their rights. Users can only query and modify information related to their accounts and cannot access sensitive data of other users.

Acronyms and Definitions

Graphical User Interface (GUI): Graphical user interface for visual presentation of interaction with users.

Minimum Viable Product (MVP): A minimum viable product is a basic version of software that contains the necessary features.

Description of the System

The four main components of our system are the Explore Page, Post Management Page, Friends Page, and Profile Page. See the Sketches of the GUI interface section for concept interface arrangements.

Login: After opening the application, the user will be prompted to log in or if they don't have an account, they can sign up. Existing user data is stored in the database and new users will also be added here.

Registration: If the user clicks the signup button, they will be taken to the registration page where they need to enter their name, email and password.

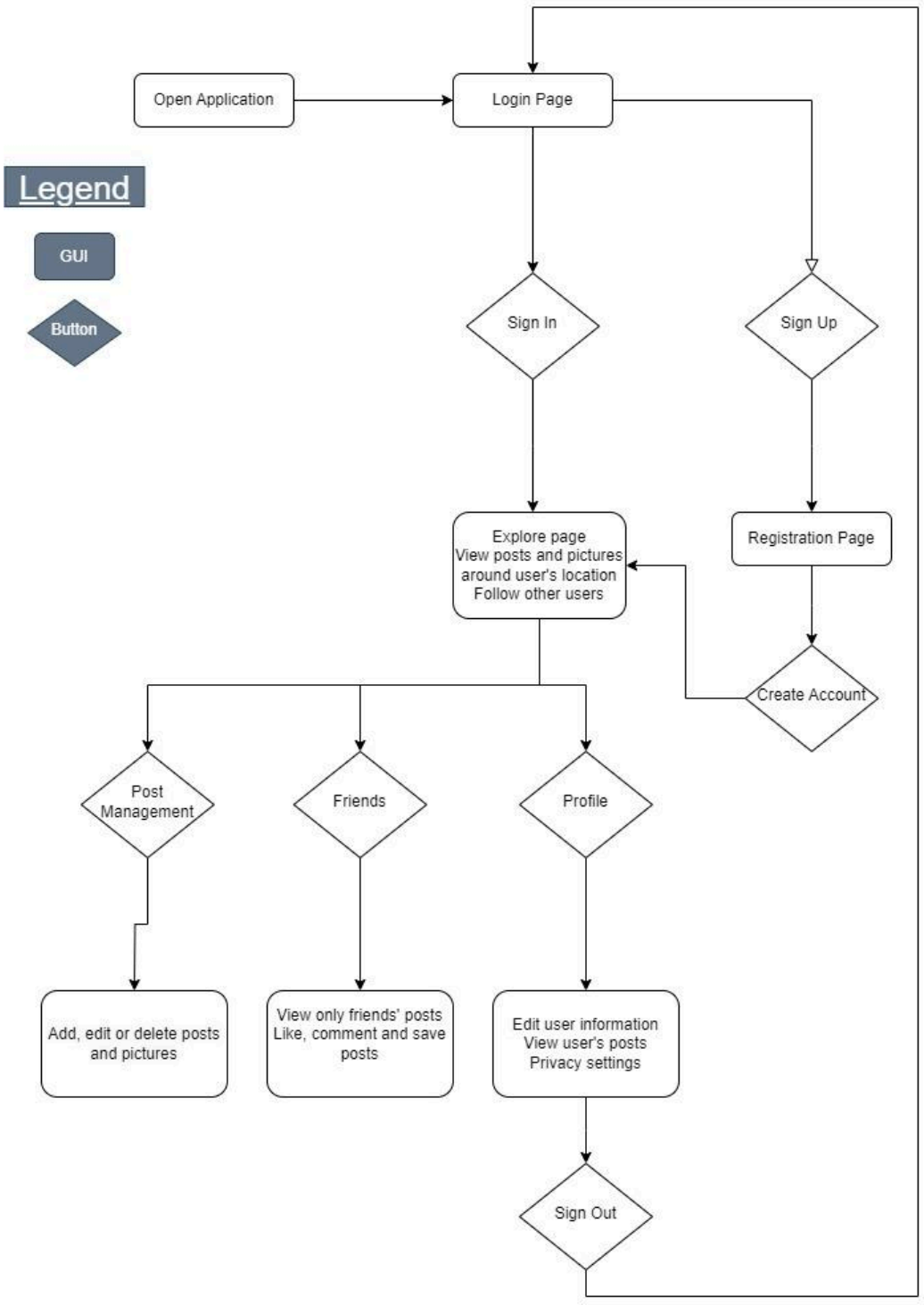
Explore: Upon sign-in or registration, users will be routed to the Explore Page, where they can view, like, and comment on the posts of others.

Post: Users can manage their account posts and pictures, adding new ones, or editing/deleting old ones.

Friends: Users can view their list of friends and are shown posts only made by their friends that they can interact with by liking and commenting.

Profile: Users can view the posts and pictures they have published, edit their account information, and adjust privacy settings. This page also contains a sign-out button, which will route the user back to the login page.

Each of the Explore, Post, Friends, and Profile pages will have a navigation bar at the bottom containing four buttons that allow users to switch between these pages. The below flowchart shows the Snackmap system and how components relate and interact.



Non Functional Requirements

As a user, I want the system to load my friends' posts and reviews on the homepage within 3 seconds of logging in, ensuring that the platform remains responsive and efficient.

As a user, I want to see my post immediately after submitting it, with no more than a 3-second delay, ensuring that actions on the platform reflect in real time.

As a user, I want my personal data and posts to be encrypted and protected from unauthorized access, ensuring the privacy of my account and food recommendations.

As a user, I want the system to automatically log me out after 15 minutes of inactivity, ensuring my account is secure even if I forget to log out.

As a user, I want the app interface to be simple and intuitive, ensuring that both first-time users and regular users can navigate the system easily without needing technical expertise.

As a user, I want the system to provide clear error messages when something goes wrong, so I can understand and resolve the issue without frustration.

As a user, I want the platform to be compatible with major web browsers as well as both mobile and desktop devices, ensuring I can access Snackmap from anywhere without compatibility issues.

As a user, I want the system to be operational 99.9% of the time, ensuring that I can post and view my friends' recommendations without interruptions due to system downtime.

As the platform grows, I want the system to handle an increasing number of posts, searches, and users without performance degradation, ensuring that Snackmap performs well even as its user base expands.

As a user, I want updates to the system to be rolled out smoothly with minimal downtime, ensuring I can continue using the platform without significant interruptions during updates or maintenance.

Assumptions and Constraints

The scope of the project is limited by constraints of two types; external, and internal. External constraints are unavoidable restraints imposed by the project requirements, course timeline, and team knowledge. The team imposes internal constraints to facilitate the software design process. External constraints are discussed first, then internal.

Ideally, Snackmap would be hosted on a server, and accessible on any mobile device. This is not feasible with the lack of time, budget and knowledge available to the team. Thus, the scope is restricted to creating a locally hosted application that can run on a PC. The deliverable must also be finalized before November 28th, in time for the final presentation. To be able to adhere to this constraint, the functional requirements have been reduced to simply implementing basic course concepts. When working in a large team, scheduling issues are a common problem. The team has imposed a practice of hosting meetings in person and virtually to accommodate members' busy engineering schedules.

By understanding these constraints, the team can ensure efforts are streamlined and applicable to the adjusted scope. This will result in a final deliverable that demonstrates course understanding but is not immediately ready as a final product for distribution. Several assumptions are thus made on what would be the next steps of developing the product. It is assumed that the GUI would need to be adjusted to conform to accessibility laws and

industry standards. The implementation would need to be optimized to minimize computing power; as the amount of simultaneous users increases, an inefficient algorithm could easily become costly. Privacy and data integrity would need to be implemented to adhere to internet privacy laws. Lastly, the functional requirements would need to be expanded to include a map and interaction between users.

With this considered, the team is able to begin building an application that adheres to these constraints. To make this process efficient, the team is divided into sub-teams as discussed below.

Roles of the Team Members

Elijah James, Xinwei Lyu and Shyan Vilvarajah are responsible for writing the backend of Snackmap, researching and implementing the database and the functions used to fetch data from it or update the data it holds.

Lucas Komlenjovic, Lucy Childerhose and Jack Fejer are responsible for implementing the graphic design using QT Design software and researching how information is passed from the interface to the back end.

Andrea Dovale-Puig is the team's project manager, while Elijah James is the software architect.

Set of Features and Functional Requirements

The minimum viable product (MVP) will include the features as follows.

User Registration & Logic Overview

> The product must be able to allow users to create a username and password to login to Snackmap. These credentials can then be used to log in, write personal posts, and see the posts of others.

Personal Homepage

> Within the personal homepage, the user can edit personal information such as their public profile picture, nickname, and bio. There will also be a "create a review" option, where a user can create a new review that consists of a picture, description, location, type of review (restaurant, homemade dish, etc.), and overall rating (stars). The personal homepage will also store all past posts from the user.

Friends Homepage

> On the "friends" homepage, a user can find the posts of their friends. Additionally, there will be options to like and comment on these posts.

Social Features

Users can follow other users and see what their friends or connections are up to. The scope can be increased to support the function of private messages with friends.

Management & Privacy

Users can manage the privacy settings for their posts, by choosing Public, Friends Only, or Private mode.

The following features are catagorized as “Nice to Have”, these features will be included in the design if time and resources allow. Ideally, having a greater project time frame, all of the below features would be included in Snackmap.

Explore

This page is dedicated to pushing restaurants, recipes, and user content based on user interests or recommendation algorithms. It will provide popular hashtags, recommended restaurants and other sections to provide users with cuisine inspiration.

Personalized Recommendations

Users will be able to recommend relevant content to users based on their likes, views, interactions, and geographical proximity.

Notification System

Notifications are sent to the owner as another user comments, likes, or private messages.

Search & Tags

Tags will allow for the categorizing of content. Users can search for food, restaurants, or users by keywords or tags. These tags can include location, cruise type, price, etc.

Geolocation Features

Users can see user recommendations for nearby restaurants based on location. Ideally, this would be able to be viewed on a map.

Authentication Registration

Allow users to connect emails or third-party accounts (e.g., Google, Facebook) to Snackmap accounts. This will provide users with password retrieval if needed.

Non-Functional Requirements

Performance requirements

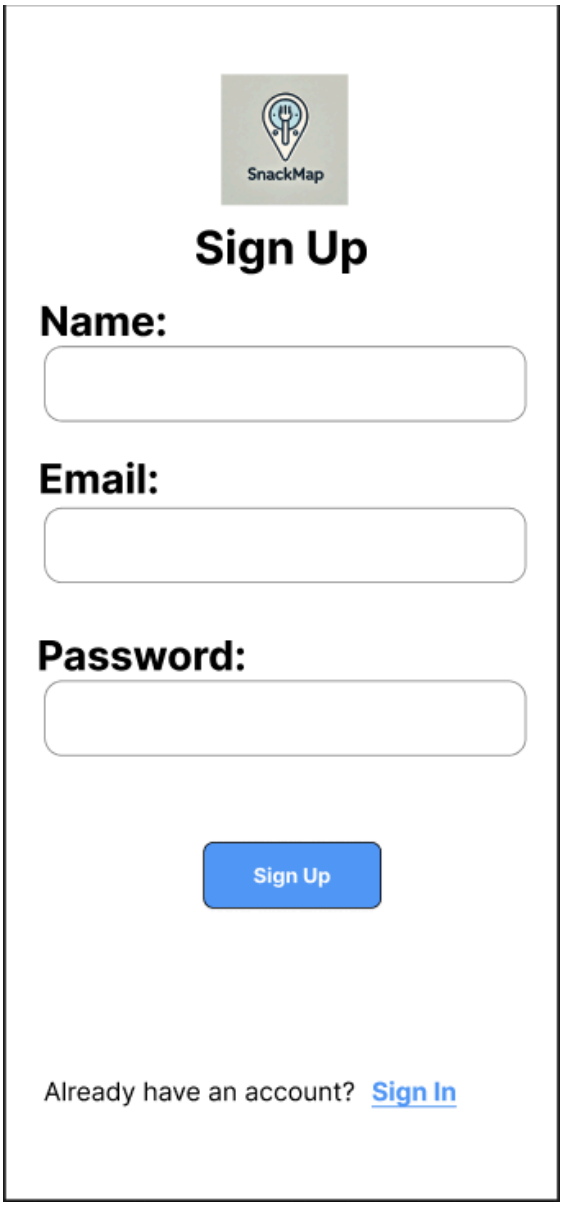
> The system must return the corresponding results within 3 seconds of user input, including interactive behaviours such as page loading, content search, likes and comments.

Security requirements:

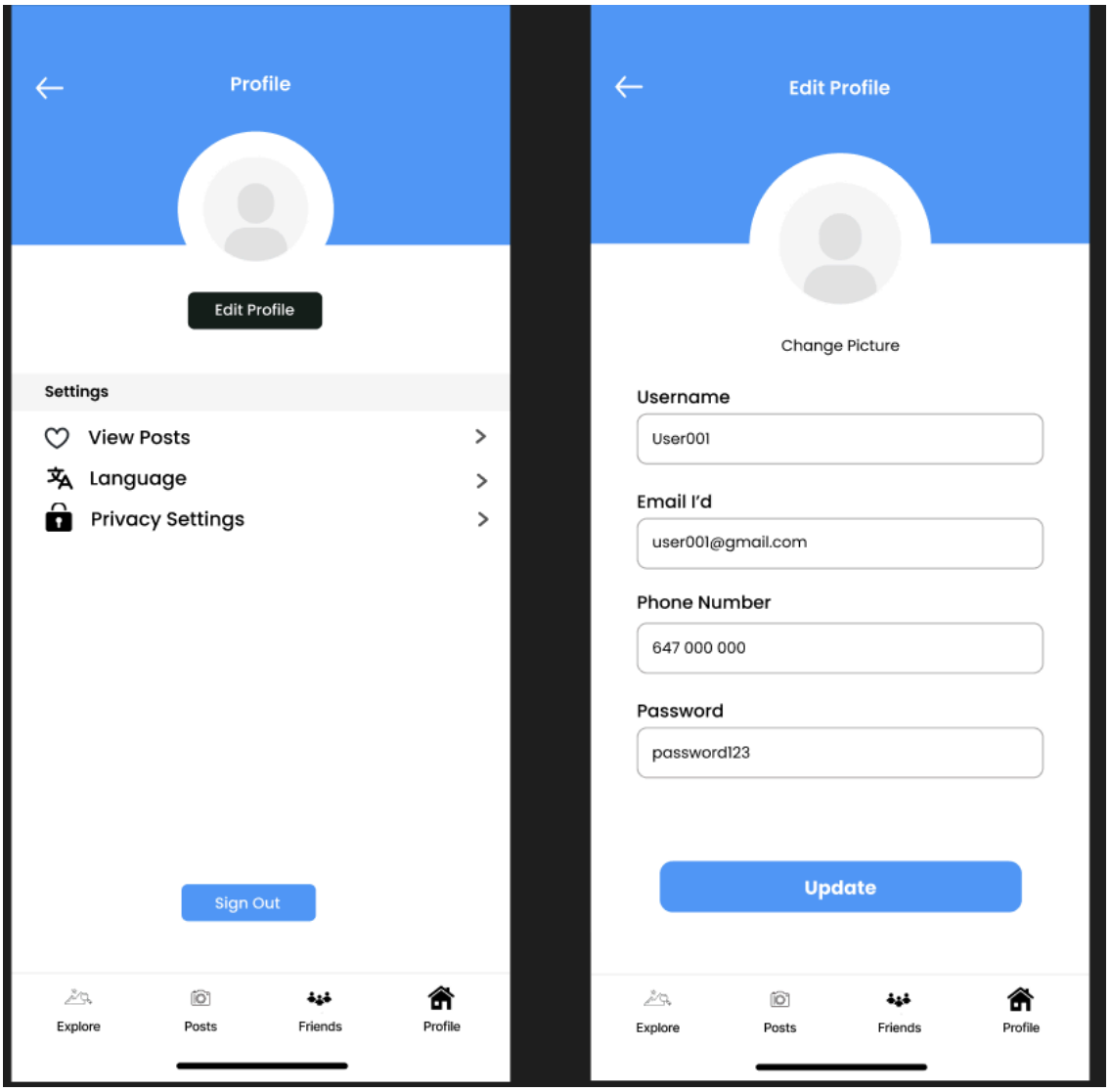
> The system should protect the security of user data and prevent the disclosure of user privacy information.

Sketches of the GUI interface

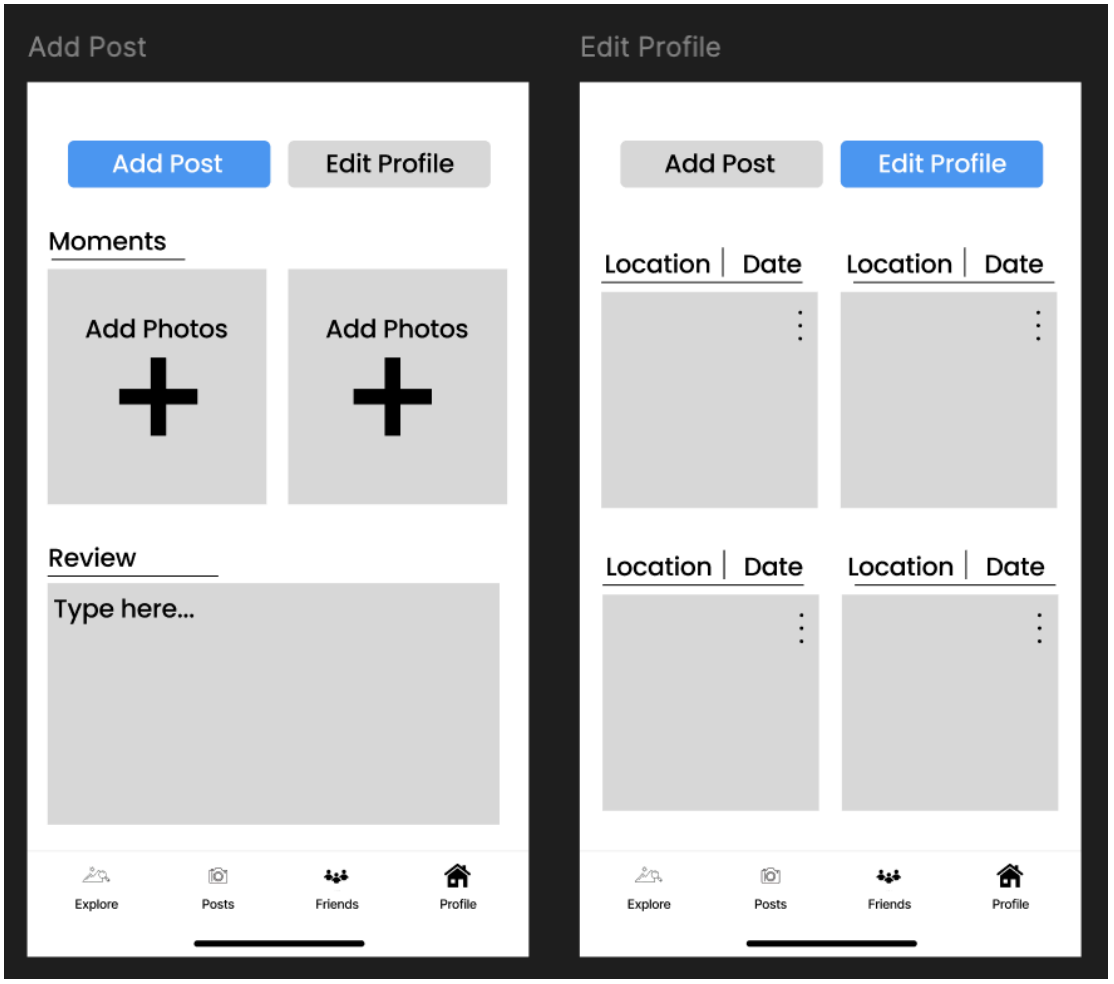
Sign Up Page:



Profile Page:



Post Page:



Assumptions and Constraints
The development cycle of the project is limited, only basic functions will be developed in the initial stage, and complex functions such as content recommendation will be implemented in subsequent development iterations.

Roles of the team members
The below roles describe a certain specialization within the team. Although, each team member is responsible for researching, programming, being actively involved in the group, and writing reports.

Team Lead:	Andrea Dovale-Puig
Software Architect:	Elijah James
Researcher/Programmer:	Xinwei Lyu
Researcher/Programmer:	Jack Fejer

Researcher/Programmer:	Lucas Komljenovic
Researcher/Programmer:	Lucy Childerhose
Graphic Designer:	Shyan Vilvarajah