Project Initial Design Report

Group C2 Hiking Website HikEasy

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1 INTRODUCTION

1.1 Project Overview

HikEasy is a web application that allows users to explore the hiking trail of Hong Kong. Registered users can give reviews to the hiking trail and share the scenery they saw during hiking through the hiking trail review function. HikEasy users can link their account to their own social media account, so that users can share their hiking journey with their friends. Through browsing HikEasy, people can obtain the specified information of the trail and get to know the general rating of the trail. By using the built-in filtering / searching function, users can find trails that matched with their preferences. Furthermore, HikEasy can provide a platform for users to organize hiking events. HikEasy is not only an informative website, it is also a powerful system that helps Hong Kong people to have better hikes.

1.2 Objective

Hikers in Hong Kong are facing several difficulties when planning a hike. Firstly, with over a hundred hiking trails in Hong Kong, hikers often find it difficult to match themselves with a suitable one. Besides, Hong Kong hikers currently do not have a localized Cantonese website for hiking information such as hiking maps with checkpoints. Last but not least, hikers in Hong Kong can hardly find an application that helps them to seek suitable hiking partners in the market.

HikEasy, our group project, is a platform that aims to address the aforementioned pain points of Hong Kong hikers. The website application's value proposition is "Hiking Well with HikEasy". The goal of the website is to include all the information that will help its users to plan a hike with ease. Hence, the website content will include every major Hong Kong hiking trail with their difficulties rated and the comments posted by users. Besides, it will also filter hiking recommendations for its users. The user can also try to find a hiking partner after they post the detailed information of the hiking plan on our website. Last but not least, this demo website can

be easily translated into Cantonese in order to fulfill HongKongers' needs as the majority of our group are Hong Kong citizens.

1.3 Expected Customers and Market

The targeted market of our website is Hong Kong citizens aged 15 and over who are interested in hiking and can access the internet. In 2015, a number of 13.3 million hikes were taken in Hong Kong, and this number is growing rapidly[1]. Using 2 hikers as a conservative estimation of the number of hikers who need to collect information regarding the hike, the number of targeted customers are at least 26.6 million Hongkongers. Since there does not exist a Cantonese software with similar functions as ours, we can safely assume that the penetration rate of our application is 25%. Hence, the market volume of our application is 6,650,000 and the estimated advertisement revenue is about $2,246,400 Hong Kong Dollar (HKD) annually. Assuming the revenue per user(RPU) is $5 HKD, the approximate total addressable market opportunity is of value 133 billion HKD.

[1] https://www.scmp.com/news/hong-kong/health-environment/article/2123492/why-so-many-people-get-trouble-when-hiking-hong

1.4 System Features

1.4.1 Log In System

The Hiking Trail offers users a register and log-in button as a part of the log-in modal built using firebase. Here new users can register and create their account with us while existing users can use username and password to log-in. In addition to this, buttons to connect with Facebook and Login using Google are also provided which makes signing in easy and fast with just a click. Once the user has registered with us, a lot of additional features in addition to browsing different hiking trails open up. The unique features list includes the Rating and Review section. The logged in users have the flexibility to post reviews of trails in a blog format- with text, photos and videos for the audience and can also share the live progress of their hiking activity by connecting and publishing on the Facebook wall. In order to handle the suggestions for the other users of the application, the ratings feature is also provided which lets users give star ratings on a scale of 1-5 for difficulty and scenery of the hike. (1-Lowest and 5-Highest)

1.4.2 Hiking Planner

To provide convenience to our users, HikEasy provides a Hiking Trail Planner GUI for event organizers to plan their hiking trails, and for regular users to add newly-discovered hiking trails into the database for all users to search and filter. Through the GUI, editors may provide the path of the hiking trail (in the form of several waypoints) and some attributes of the hiking trail (such as the name, the expected duration, etc.) to draft and describe their desired hiking trail. After the changes are confirmed, the database is updated with the aforementioned data. With the list of all known hiking trails available in the database, whether they are well-accepted trails as general knowledge or customized trails for individual events, event planners may initiate a hiking event by specifying the trail in our database, and other users may then express their interest to join, as further specified in the following section(s).

1.4.3 Hiking Trail Recommandation

HikEasy includes a searching system for users to look for trails that they may be interested in. The system will retrieve related trails from the database according to keywords input by the users, and display as a list on the website. The filtered list can also be sorted by various criteria such as date created, likes, difficulty, etc, so that they can find what they want effectively.

1.4.4 Hiking Event And Partner

HikEasy also provides a platform for users to organize hiking events. Users first set the hiking trail through the map GUI, providing the details of the hiking event to start a hiking event. Once the event is created on the event branches, all existing users can join the events. The organiser can add tags to categorize the events to particular types. After joining the events, the users can access the information of other participants. Participants can comment for the events.

2 BACKGROUND

Hong Kong is a home to more than 130 heritage and country parks trails. The heritage trails provide a spectacular dip in the history of Hong Kong by offering adventure travelers exposure to fascinating relics such as the ruins of battlegrounds of WW2, historical monuments and other ancient buildings and features.

In general, the country parks are best suited for family outings and showcases the fantastic scenery of hills, islands, water and clouds. Hong Kong has been the destination of adventure loving people and travellers for more than 100 years now. Ever since Hong Kong opened gates for tourists and international students, the number of people's developing interest in hiking and exploration has boosted up. Hiking has become a common hobby for students. Hong Kong people in general walk approximately 6000 steps a day which makes it the most active country in the world.

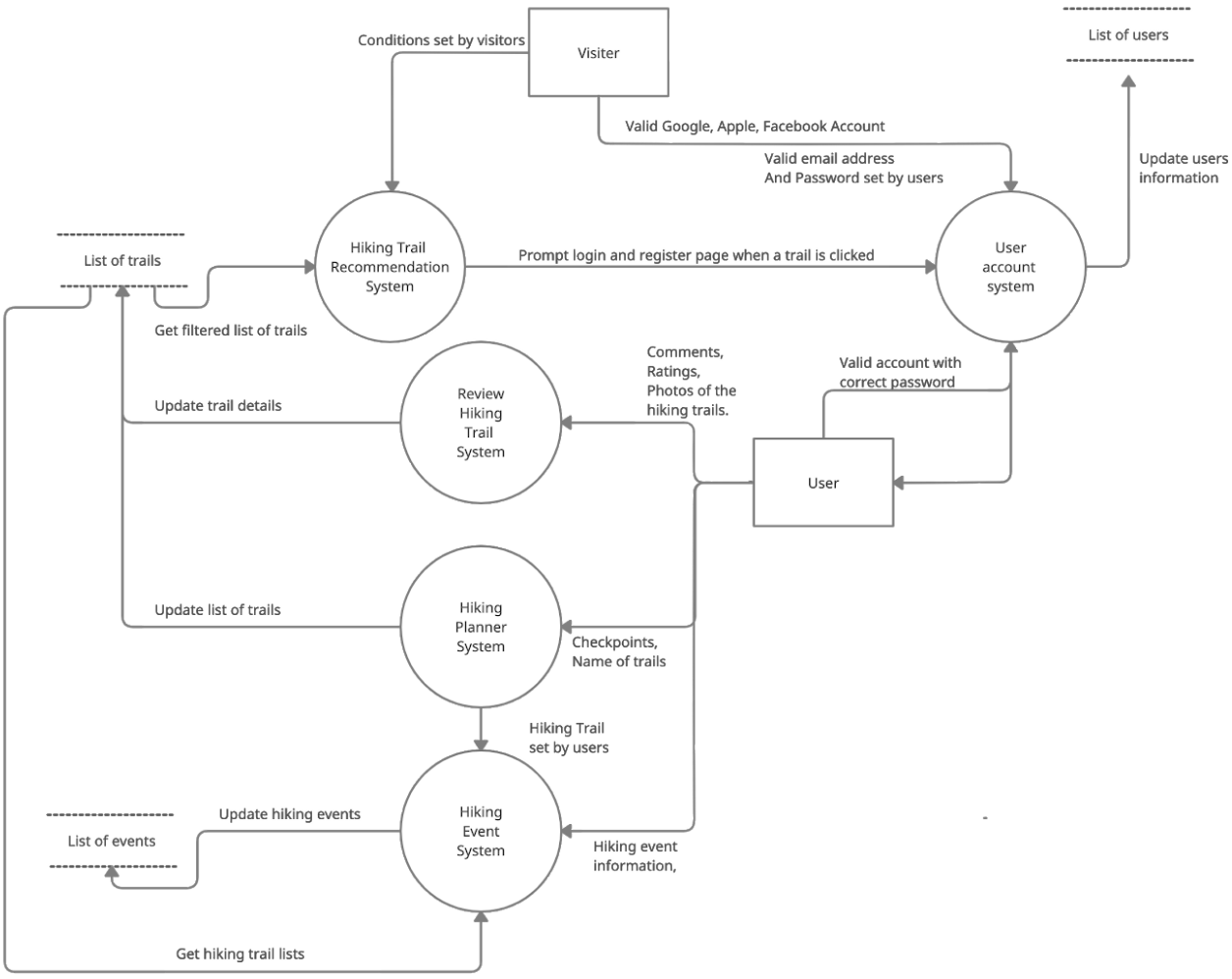
Due to the high activity status of Hong Kong, the population tends to see it as a socialisation event to stay fit and avoid living indoors due to the tiny housing spaces. Moreover, in the current situation of the global pandemic which forced people to stay indoors, people became lethargic and did not indulge into physical activities. However, the government has been lenient towards the opening of various hiking trails. Still, many citizens do not research about the hiking trail before proceeding to the hike. This tends to upset people as it may not fit into their expectations, ie: difficulty levels, views and more. The existing and present situation of hiking trails rely on word of mouth from other hikers and less online resources. Therefore, our app aims to solve the potential customer pains and provide a one end solution to all.

Our app provides the flexibility to users to login and authenticate using firebase for Google, Facebook and Email login. Once logged in, the users can explore different hiking trails across Hong Kong and attain details such as pictures, reviews of other customers and any pre-planning needed if necessary before the hike. Moreover, the travel plan regarding the logistics (eg: bus numbers, routes etc.,) are provided within the app itself. This makes the users well prepared and familiar with the hiking trail.

3 SPECIFICATION

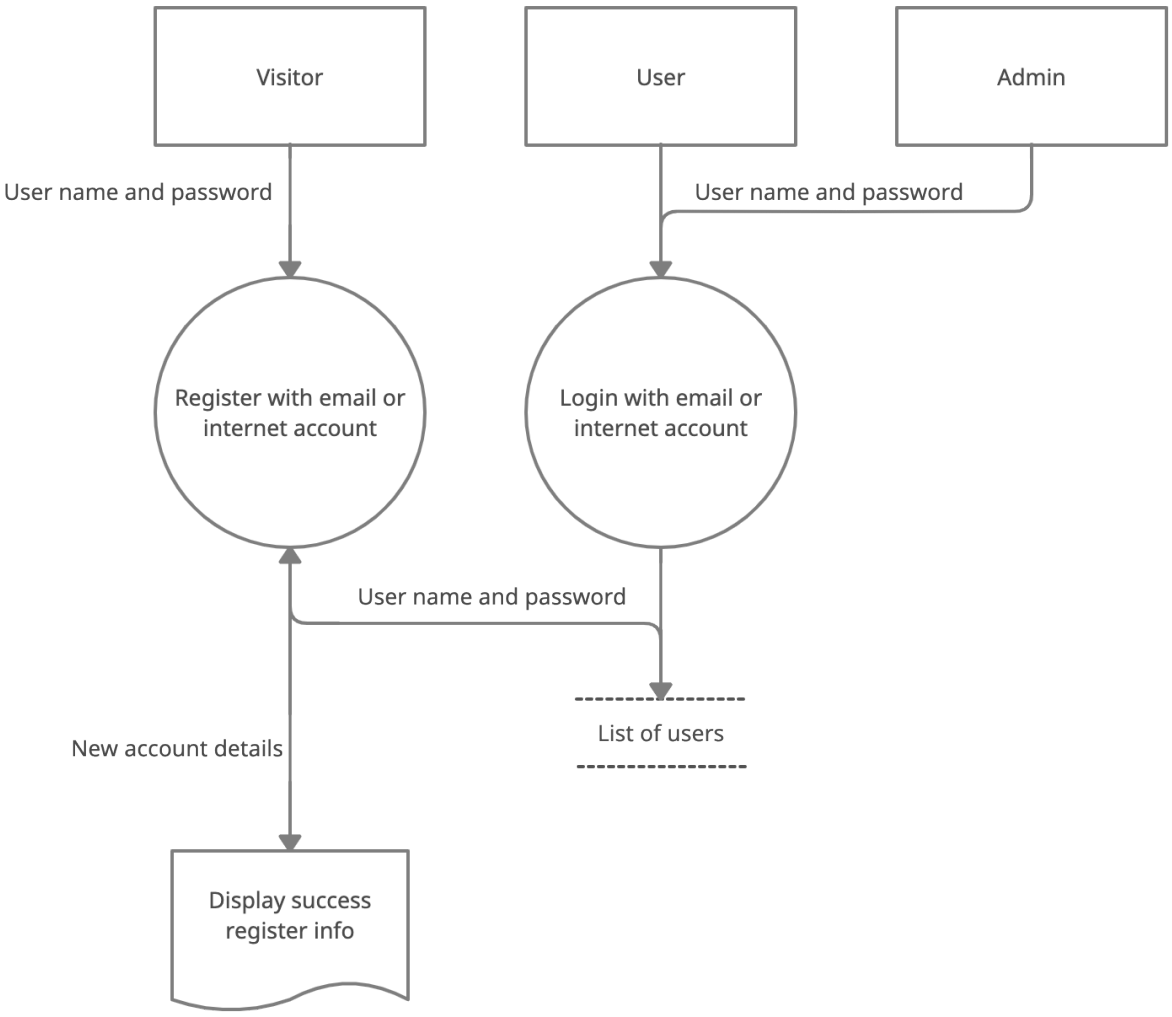
3.1 Overview

The hiking website consists of five main systems, namely user account system, hiking planner system, hiking review system, hiking recommendation system and hiking event system. Below is a data flow diagram of the whole website as an overview. We will give detailed specifications for each system in the following sections.



3.2 Authentication

The authentication system is responsible for the login system and the registration system. It will register new accounts and login existing users by verifying account details and passwords with the database. Successful registration information will also be shown to let users confirm their registration.

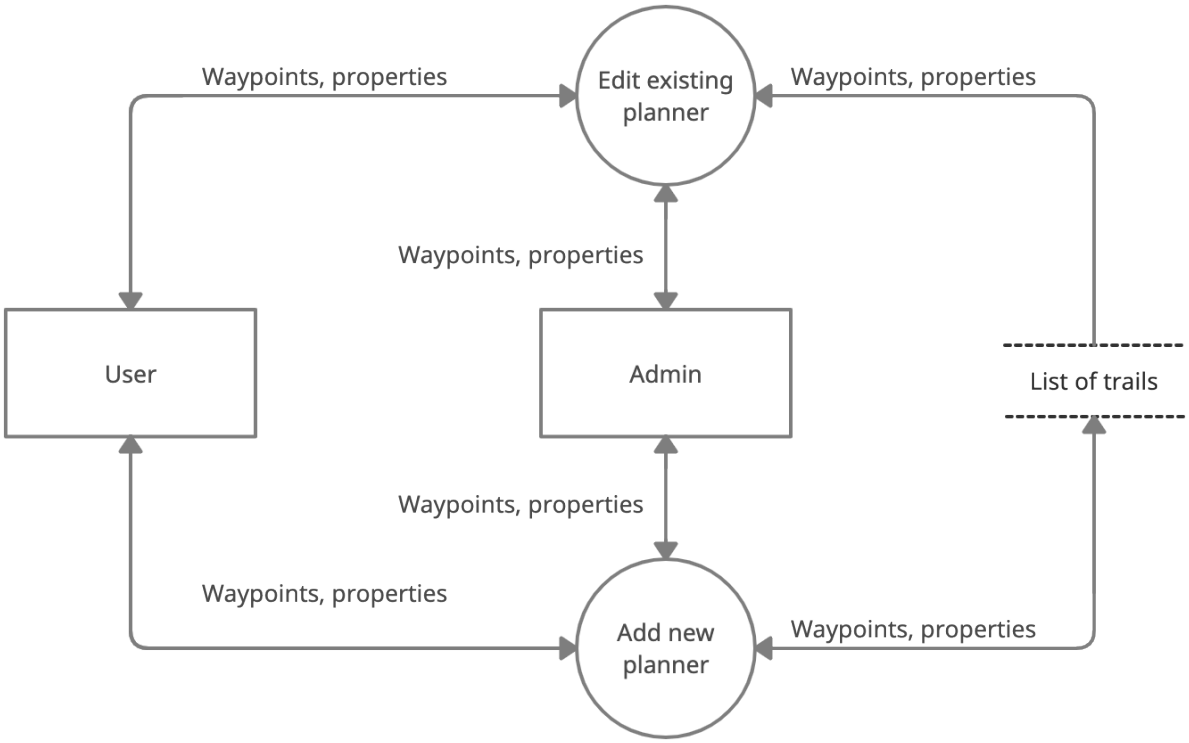


3.3 Hiking Planner

The Hiking Trail Planner includes two similar functions:

- Let admins add “verified” hiking trails into the database; these are hiking trails that are mainstream and well-known.`
- Let regular users add customized hiking trails into the database; these are hiking trails proposed by users that may differ from “verified” hiking trails, subject to the user’s preference.

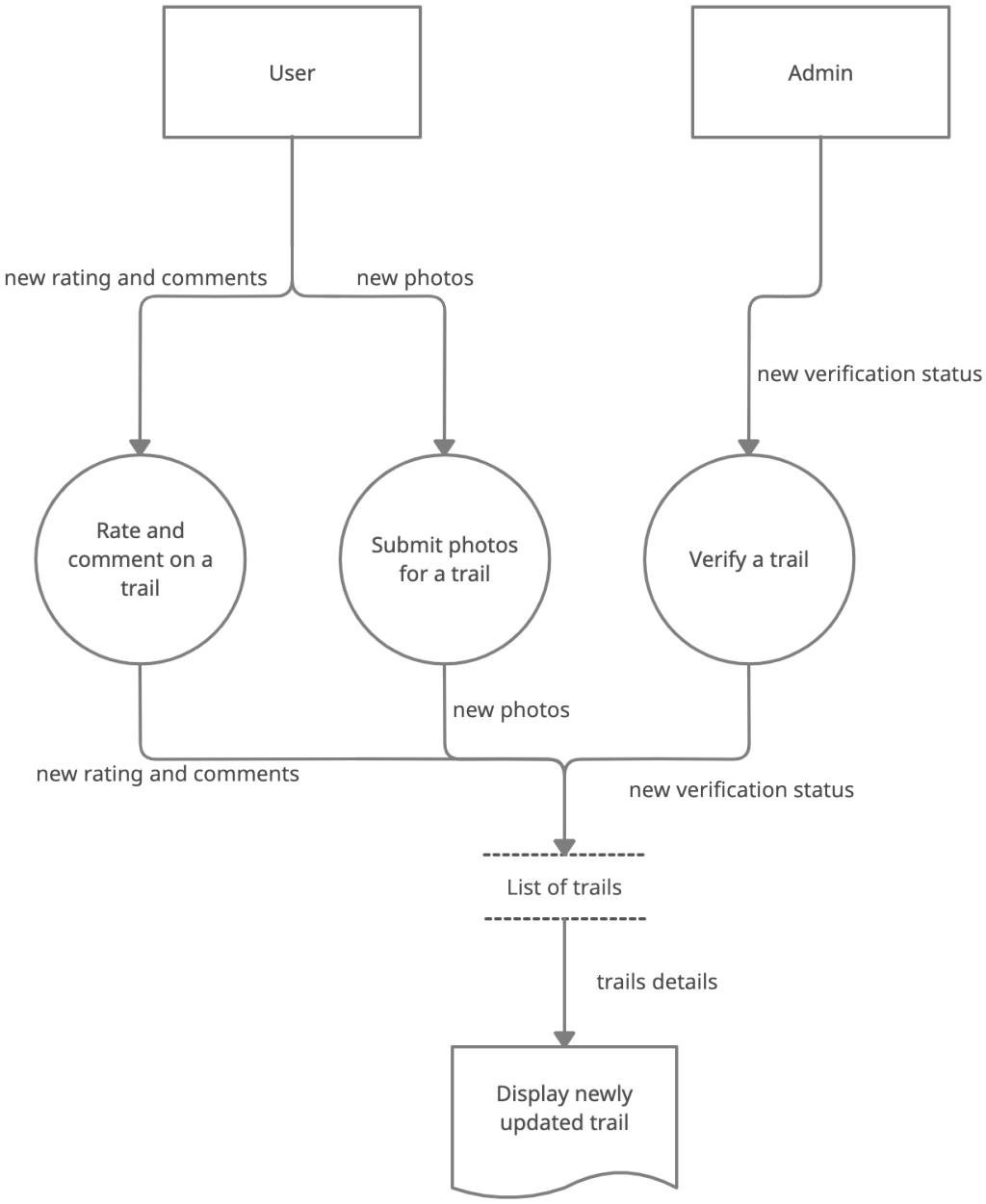
Users may then indicate their interest in certain hiking trails and form hiking groups in our platform among themselves.



A GUI will be made for both the admins and the regular users to add hiking trails with ease. It allows the user to specify the waypoints of the hiking trails and some basic attributes of the trail, e.g. the name of the trail.

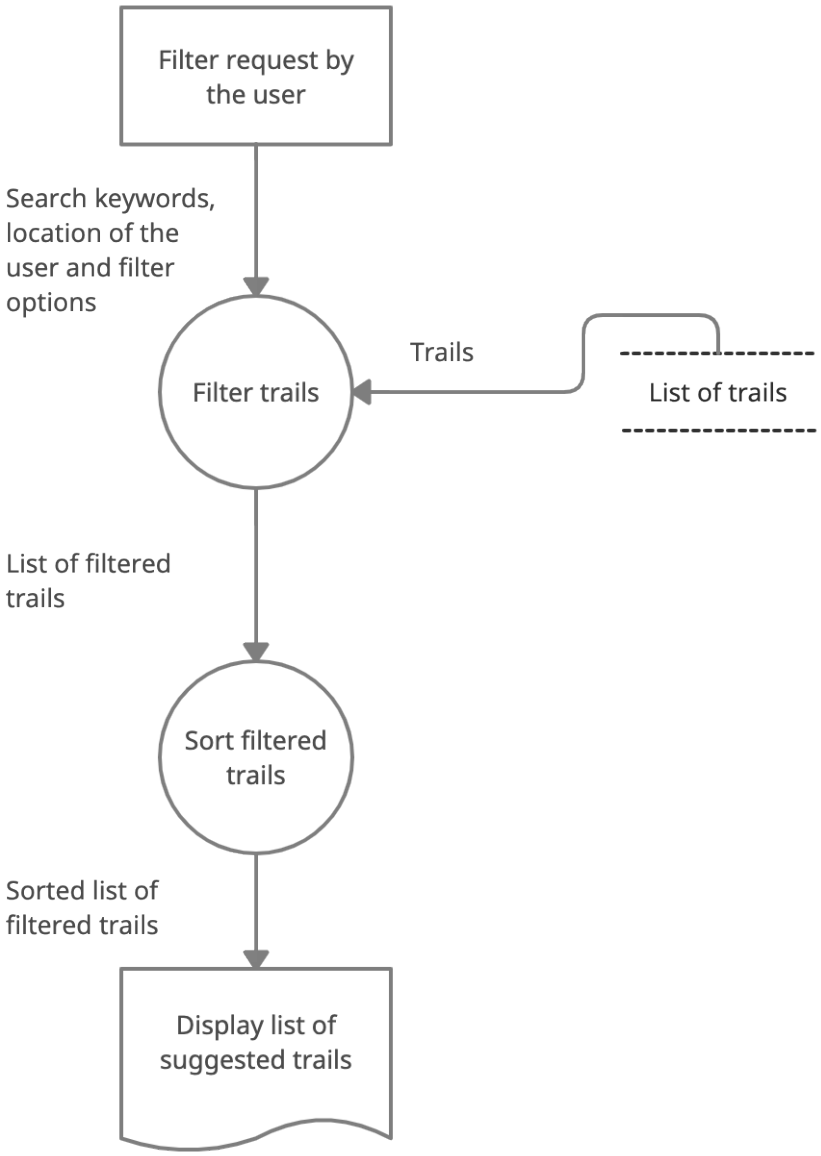
3.4 Trail Review System

The trail review system is an interactive function for logged in users to rate and comment on trails on the website. Users can share their thoughts on the trails by submitting ratings and leaving comments, or contribute to the community by uploading scenery pictures of the trails. While admins can mark trails with high standards as verified for suggestion to general users.



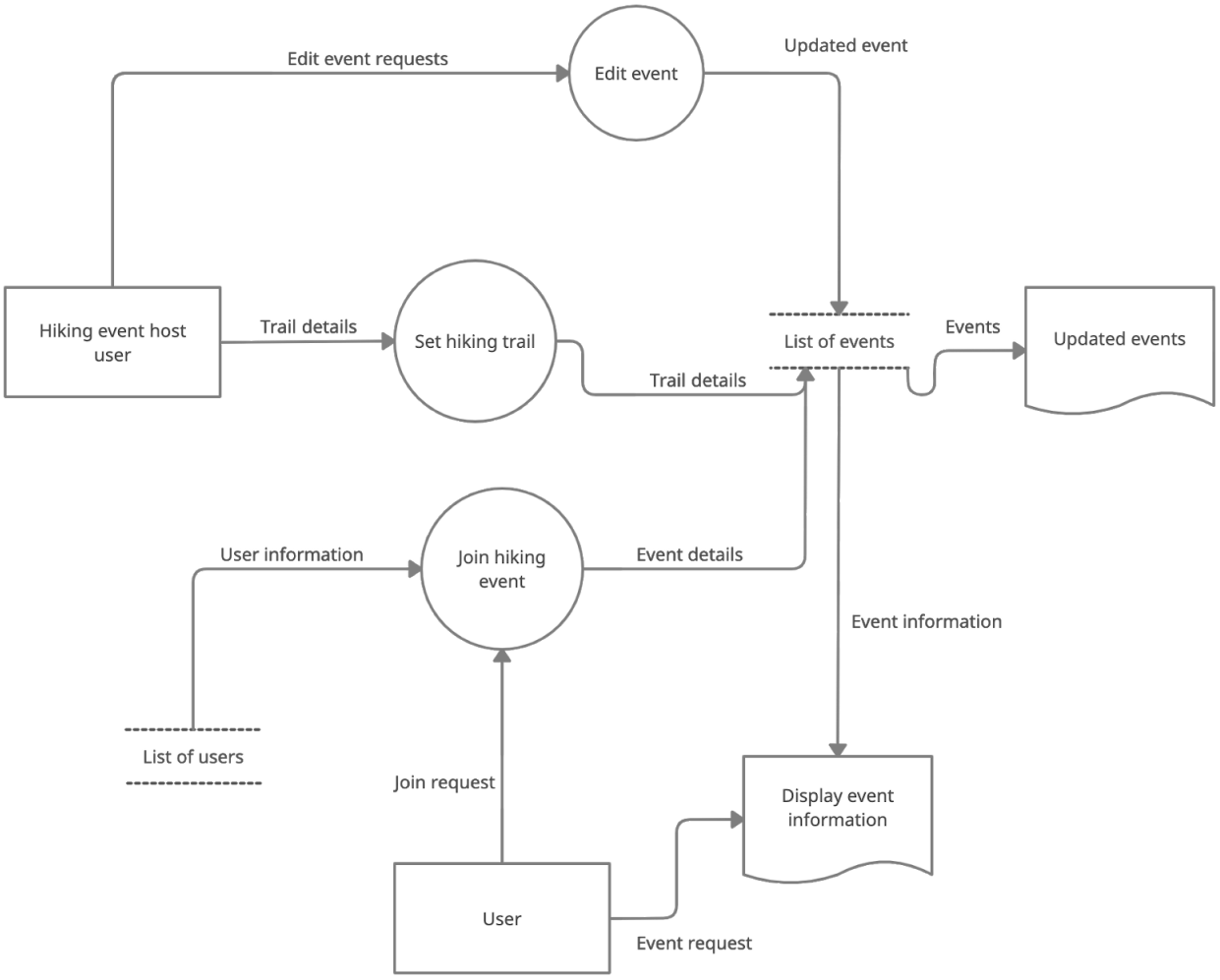
3.5 Maps Recommandation

The map recommandation system is a search function provided for both visitors and logged in users to find their interested trails. The system will return a list of trails with respect to the filter options and keywords specified by the user. After that, the filtered list can be sorted according to user preference for display.



3.6 Hiking Event And Partner

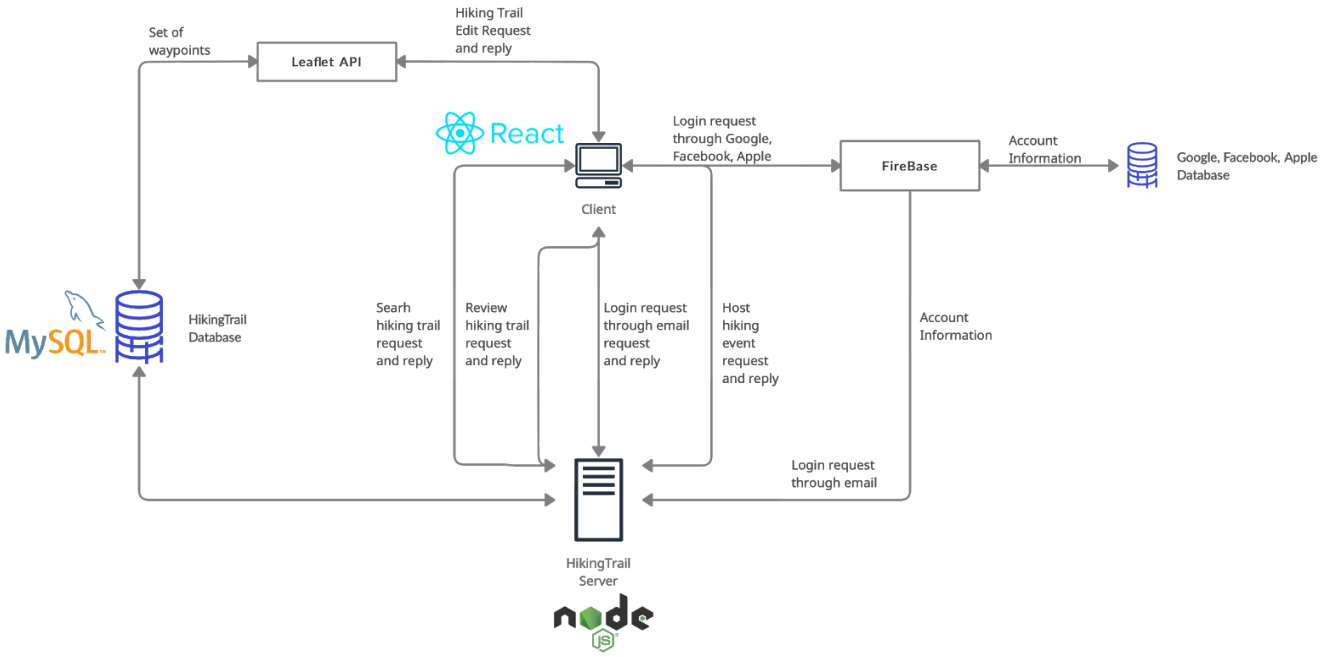
In this function, users can create hiking events by setting the hiking trail and providing details of the event. After creating the events, the list of events will be updated. The event organisers can edit the event. The event organisers and regular users can view the hiking events in the event branches. Regular users can join the hiking events, and his profile will be added to the events, the participants of the events can view other participants' profiles.



4 SYSTEM ARCHITECTURE

4.1 Architecture Diagram

The architecture of the system consists of three major parts, the client, the server and the central database. The client will send out requests to other system components, while the server will be responsible for listening to requests and replies. All the map functions will be handled by the main server, with an exception in authentication, which is verified by a FireBase API. The data for the whole system, including the map data created from the client through a Leaflet API, will be stored in the database as a secondary storage.



4.2 System Components

4.2.1 Authentication

The authentication system provides a variety of login options including email, Google, Facebook and Apple login. While visitors can only search for trails on the website, logged in users can enjoy functions such as hiking planner, review and event maker.

4.2.2 Hiking Trail Planner

The Hiking Trail Planner is a GUI-powered interface for users and administrators to add and edit their trails. It provides a map for the user to plot waypoints of their hiking trail, and a table for the user to provide further information of the hiking trail.

4.2.3 Trail Review

It is an interactive system for logged in users to submit reviews on the hiking trails. It allows users to rate, comment, add tags or even upload photos for different trails, as well as admins to verify trails with good quality.

4.2.4 Hiking Trail Recommandation

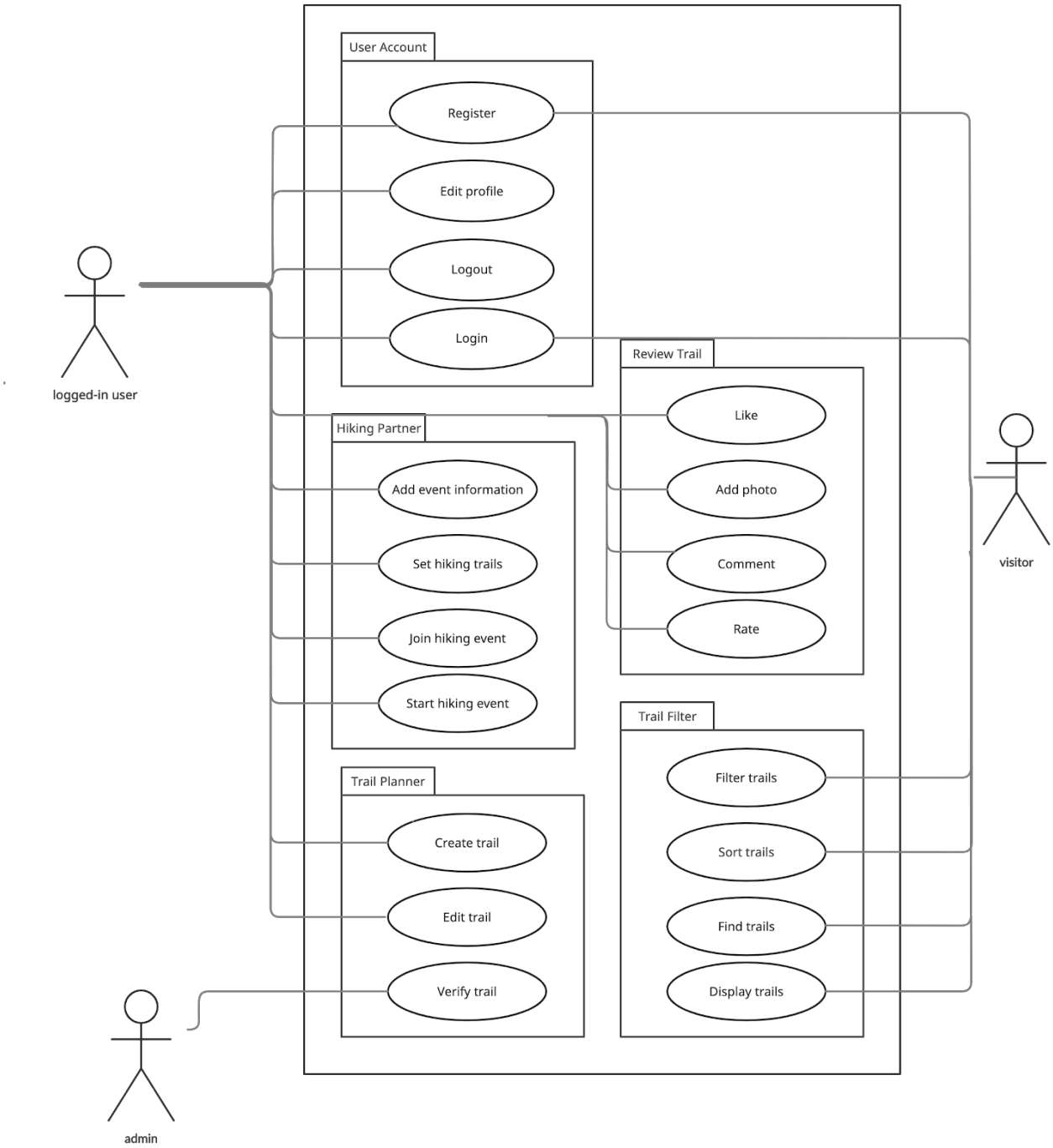
It is a search system for users to retrieve and display trails in the database. It provides a simple filtering system with respect to keywords, locations and tags, as well as a sorting option to list trails according to ratings, difficulty and date of creation.

4.2.5 Hiking Event

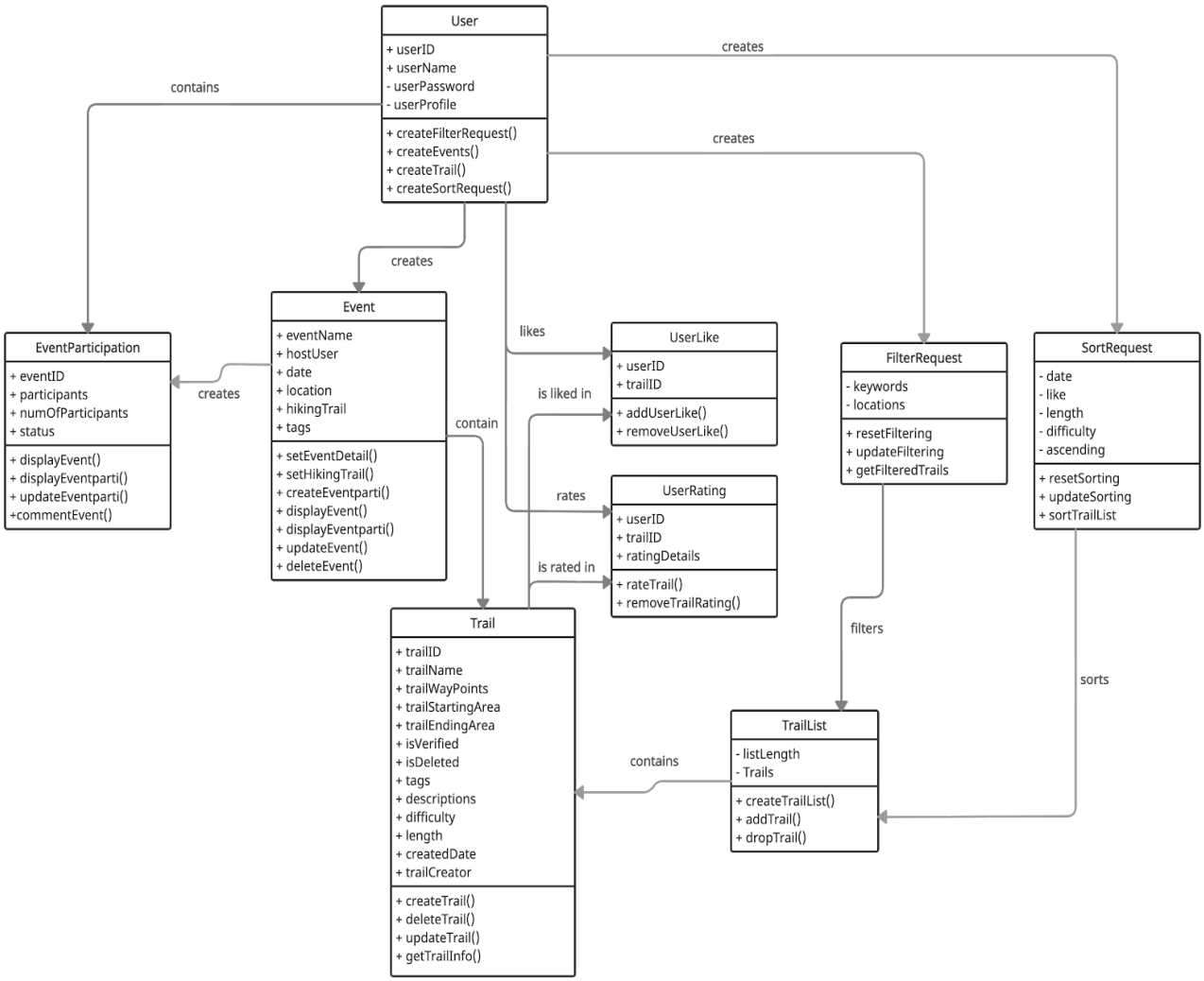
It is a function for users to organise and join hiking events. Users first enter the details of the event and set the hiking trail, then our website will create the event on the hiking event branches, users may add tags to the event, then our website will make use of the tag to categorize the events. Events and EventParticipation will be created once the hiking event is created. Other users can join and view the events, when users join the events, he will become a member of the EventParticipation, and the Events will be updated.

4.3 Description of Major System Components by UML

4.3.1 Use Case Diagram

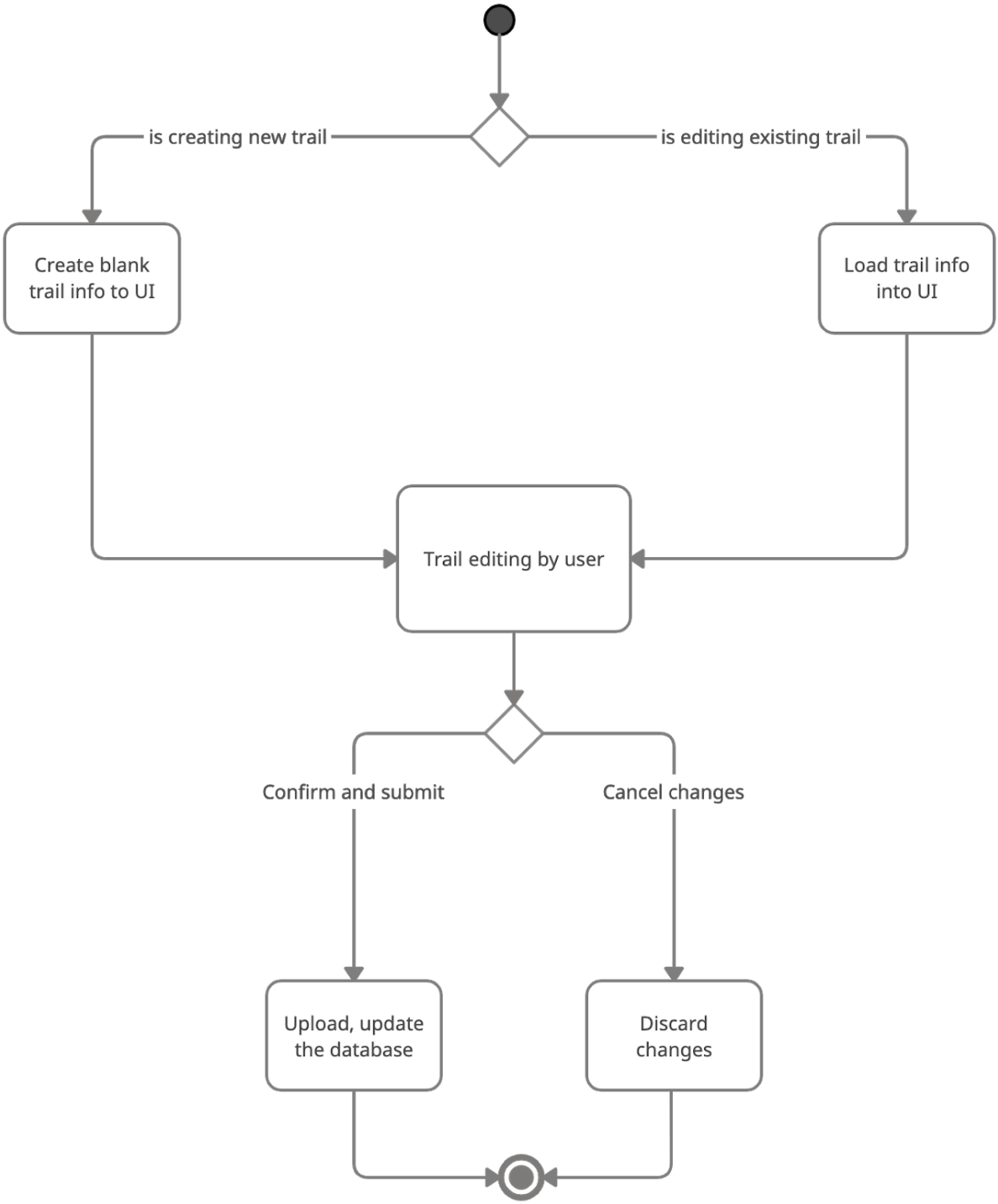


4.3.2 Class Diagram

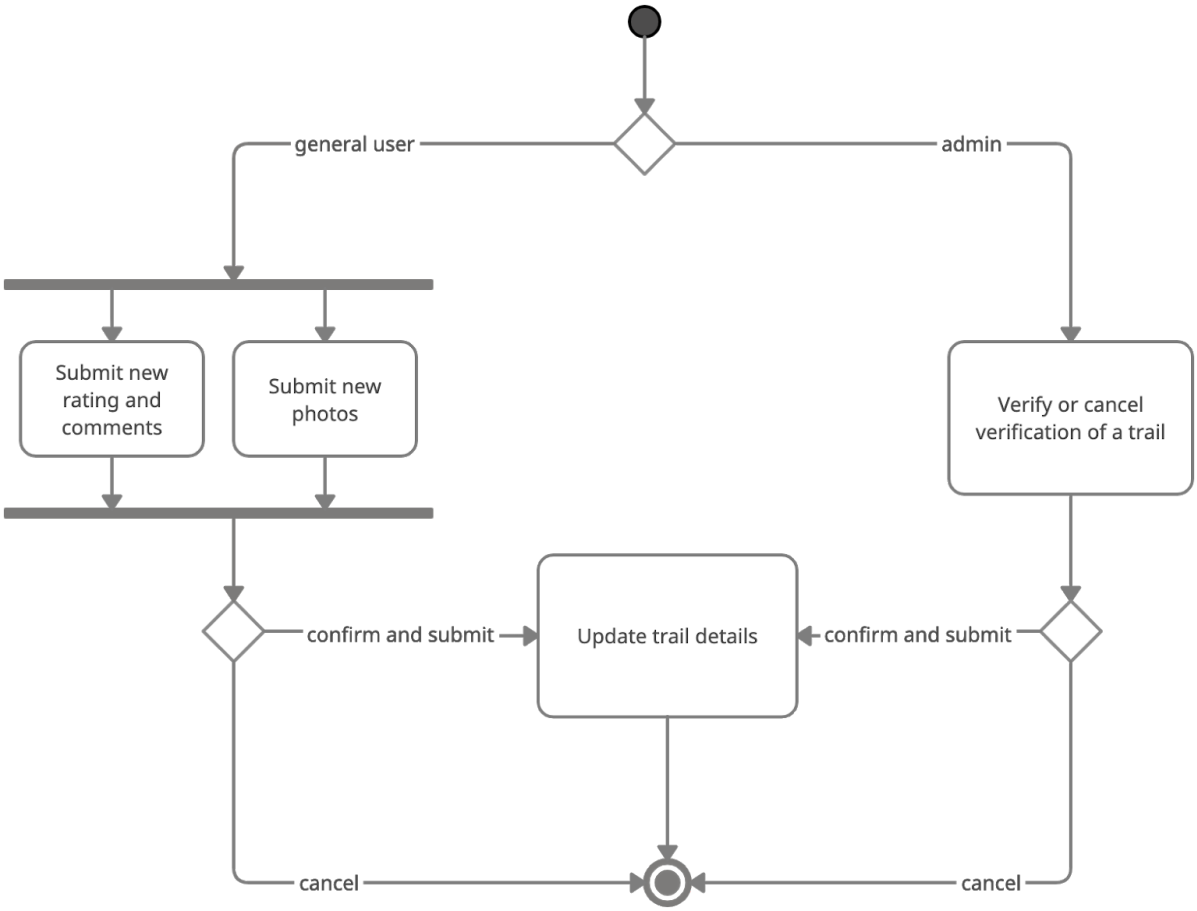


4.3.3 Activity Diagram

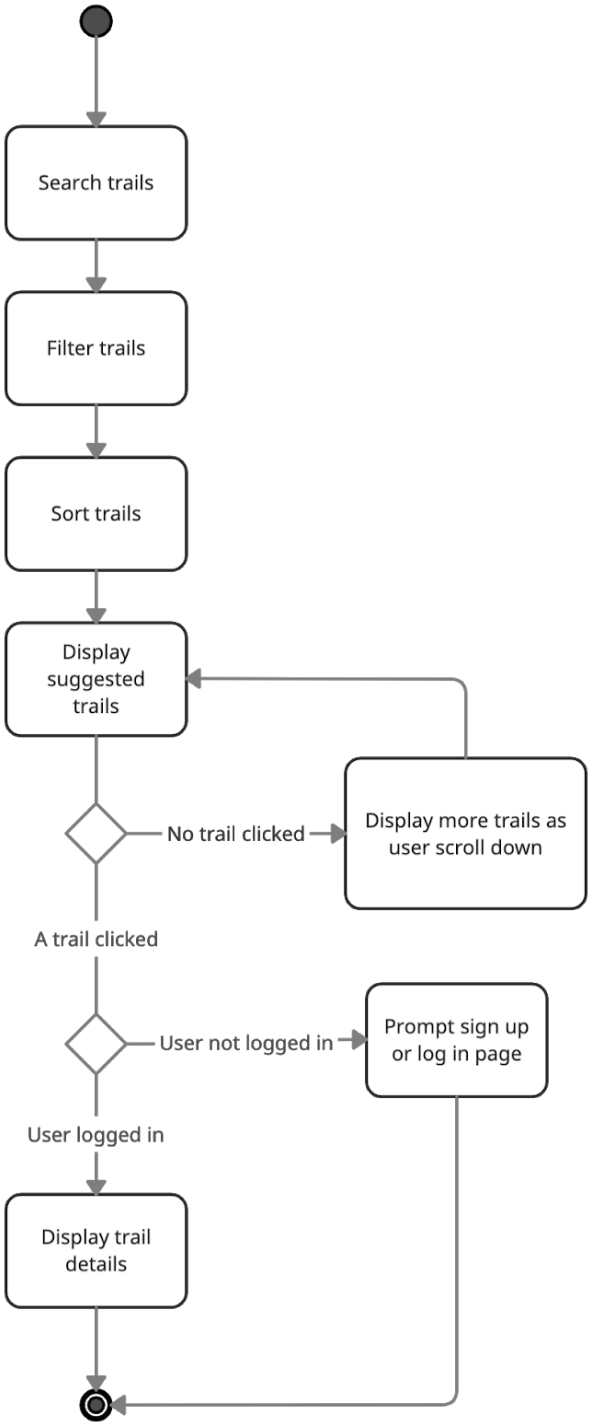
Planner



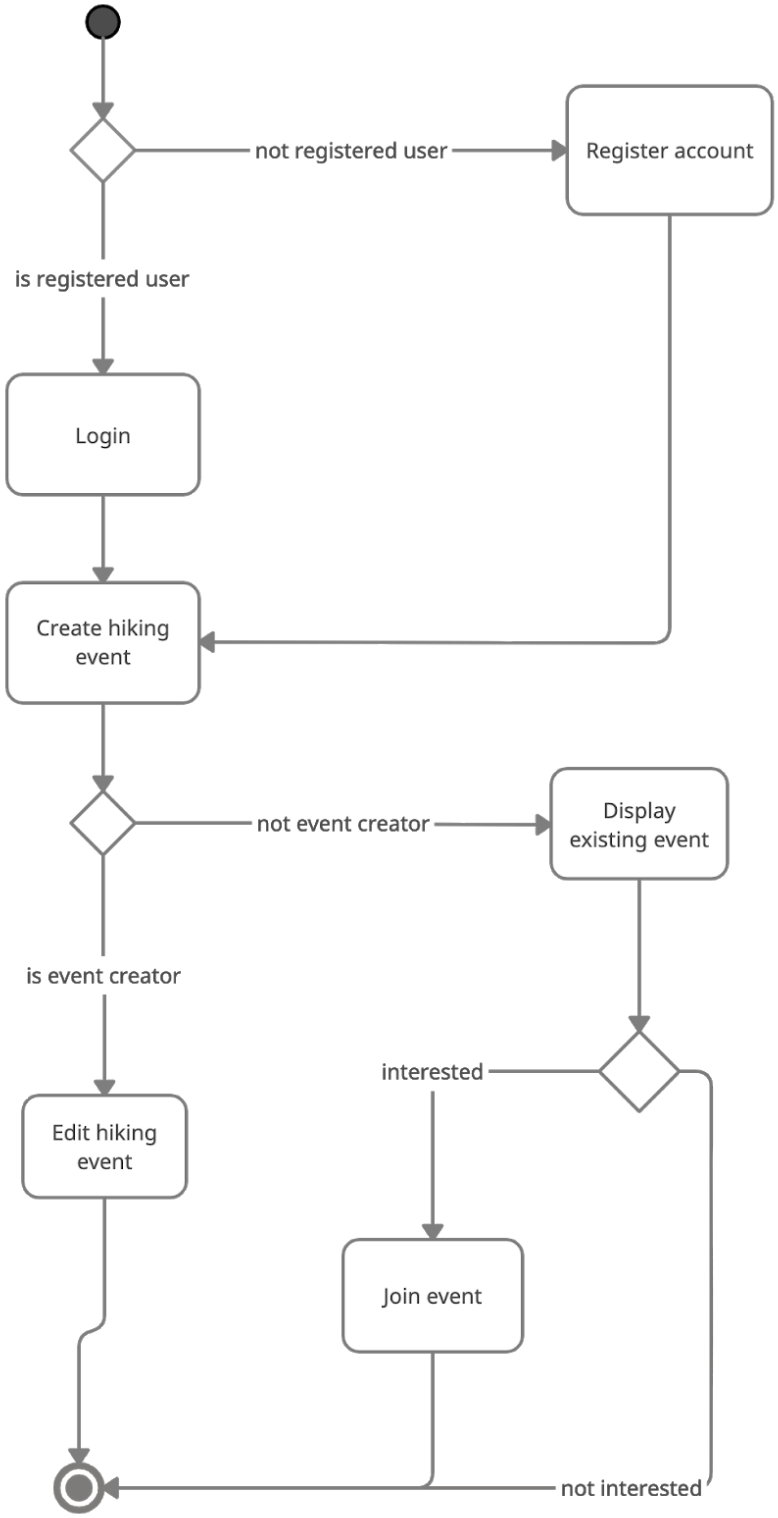
Trail review



Trail searcher

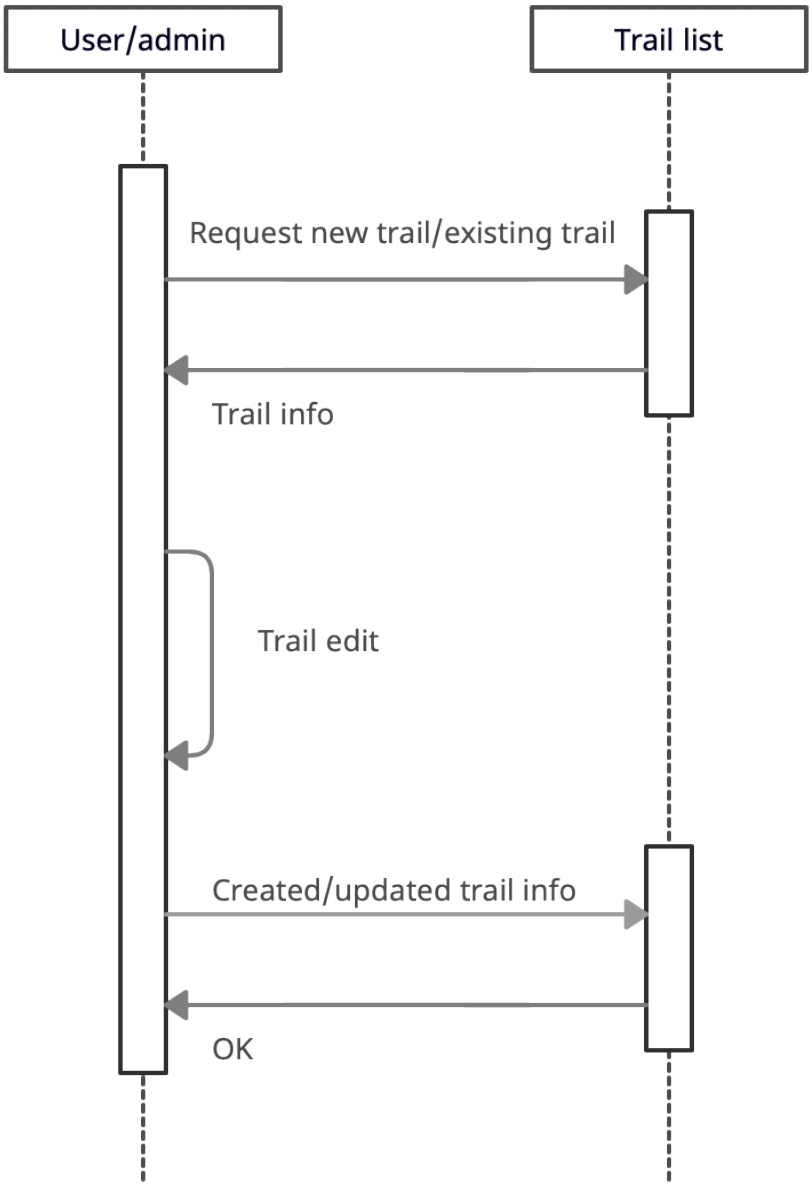


Hiking event

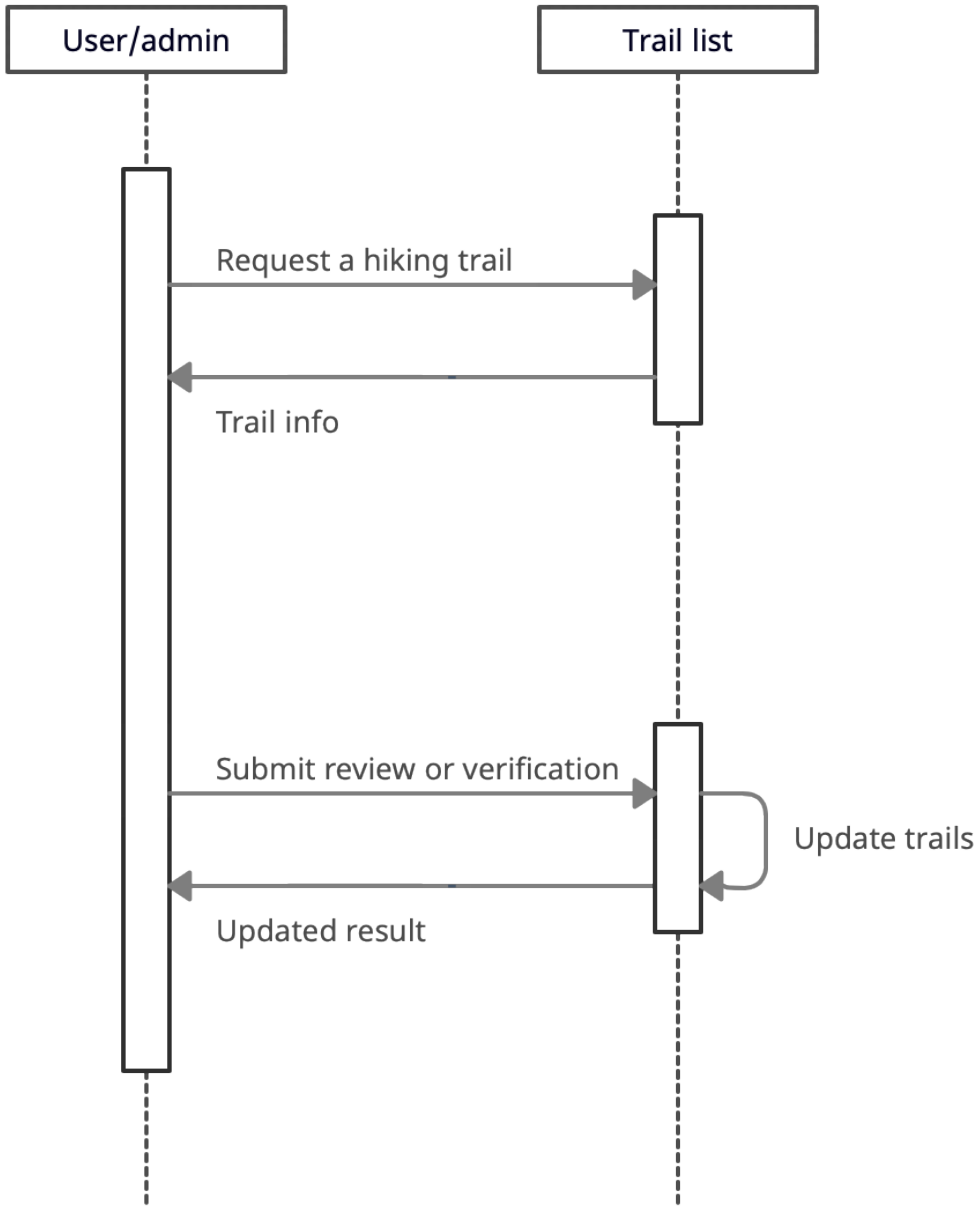


4.3.4 Sequence Diagram

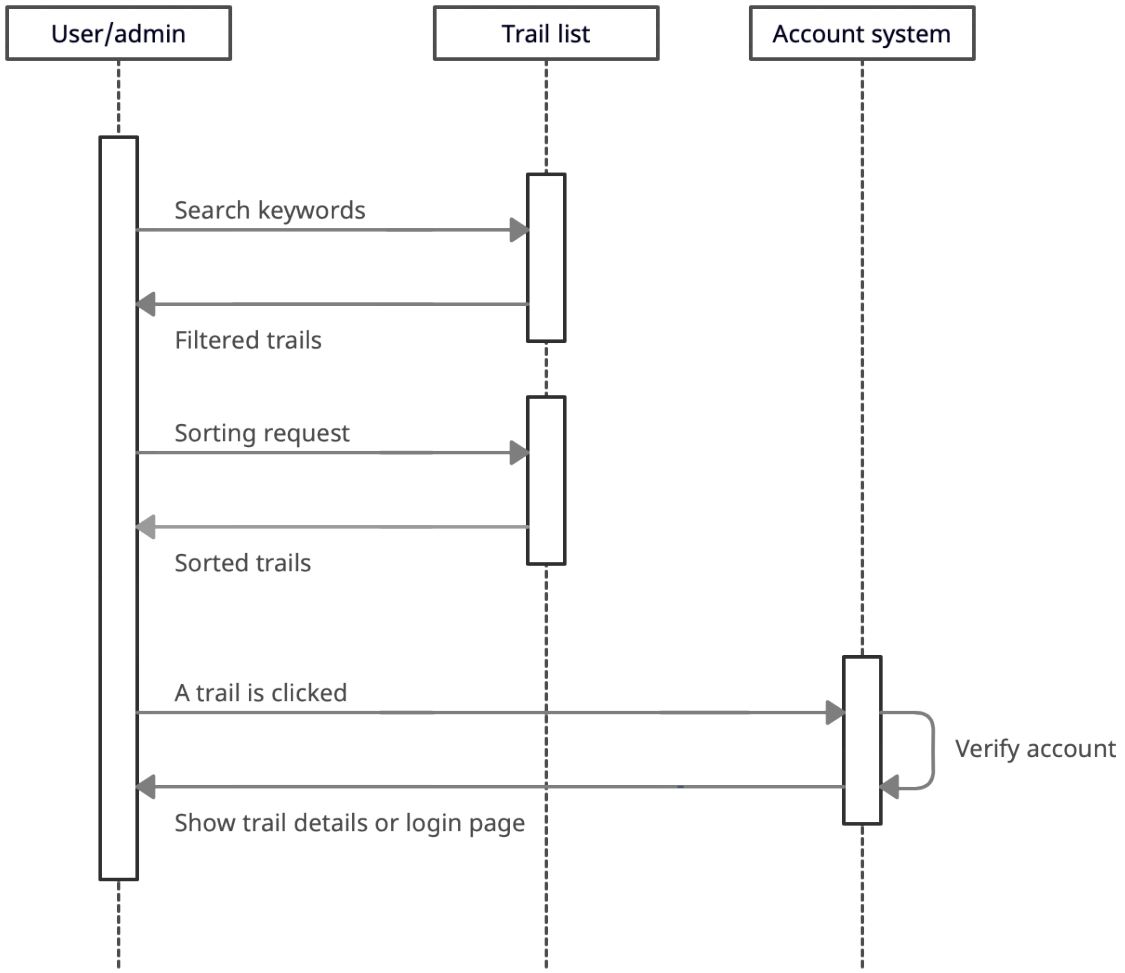
Planner



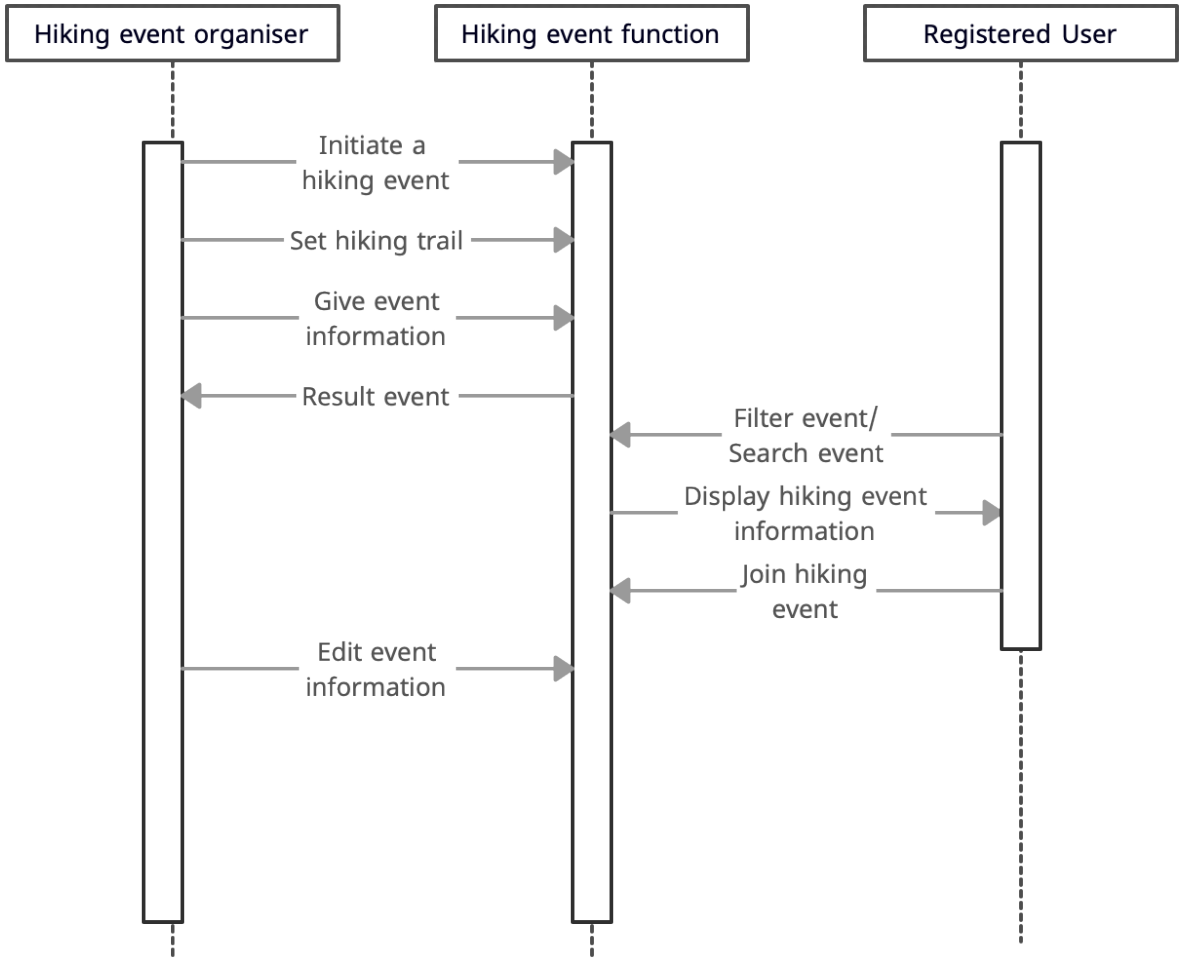
Trail review



Trail searcher



Hiking event



5 REFERENCES

[1] SCMP, “Why so many people get into trouble when hiking in Hong Kong”, 2017. [Online]. Available: https://www.scmp.com/news/hong-kong/health-environment/article/2123492/why-so-many-people-get-trouble-when-hiking-hong [Accessed: 14 - Feb - 2021]