ECE1778 Final Report

# Healthy-Partner

Yadi Xing, MEng(Programmer), #998804799
Qiwei Chen, MI (Programmer), #1006089590
Word count: 1800

# Introduction

Exercising has always been an essential means in maintaining physical and mental health (Liz, 2017). Matt (2020) also stated that over 80 percent of the people who make a *New Years Resolution* join a gym in order to get into a consistent workout routine, however, would end up quitting it within the first 30-days. This statistic represents that people with consistent and independent workout routines may only be minorities. It also implies that many people tend to not enjoy suffering 5 times a week for an hour to gain the latter result. Perhaps, they are discouraged from having the routine because of a variety of reasons although they want to maintain a healthy lifestyle.

Healthy Partner aims to help these majority of people to successfully achieve and maintain a healthy lifestyle in the long term. Because good exercise partners would not only help each other stay healthy, but also bring joys and companionship into exercising (Dejan & Jonny). Healthy Partner would allow users to find partners who share similar interests to team up with each other on this journey.

# Objectives

Healthy Partner aims to help users achieve a healthier lifestyle by allowing them to exercise and socialize at the same time, leading to a better experience, performance and outcome.

With some further research, we discovered that there are a few mobile apps that have the similar objectives as Healthy Partner which are Jaha, Strava, Runsocial, Athlete Network, The Run and more (Jenn, 2015). With these apps, we explored how exercise influences our society, and applied it to a minimal software for users to connect with more people that result in a fun exercise environment. Meanwhile, we also hope that users can learn more from each other about sports and physical health through Healthy Partner. Users, especially the ones who are big fans of sports can also use this app as a platform to make new connections to enjoy sport activities together. Additionally, Healthy Partners may also help the users who do not have much experience but are interested in sports to have a chance to get connected to people on sports, and gradually become interested in sports.

# Statement of functionality & Screen Shots from App
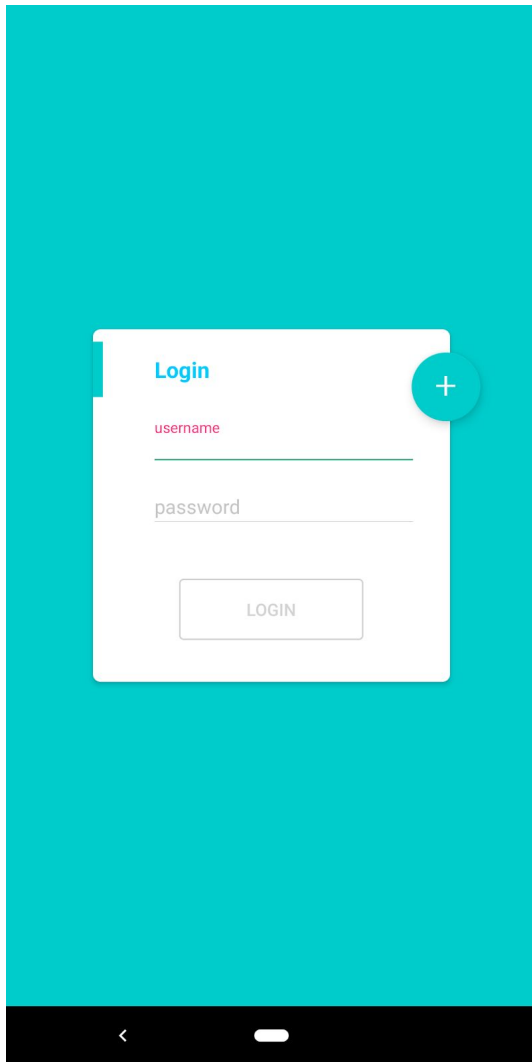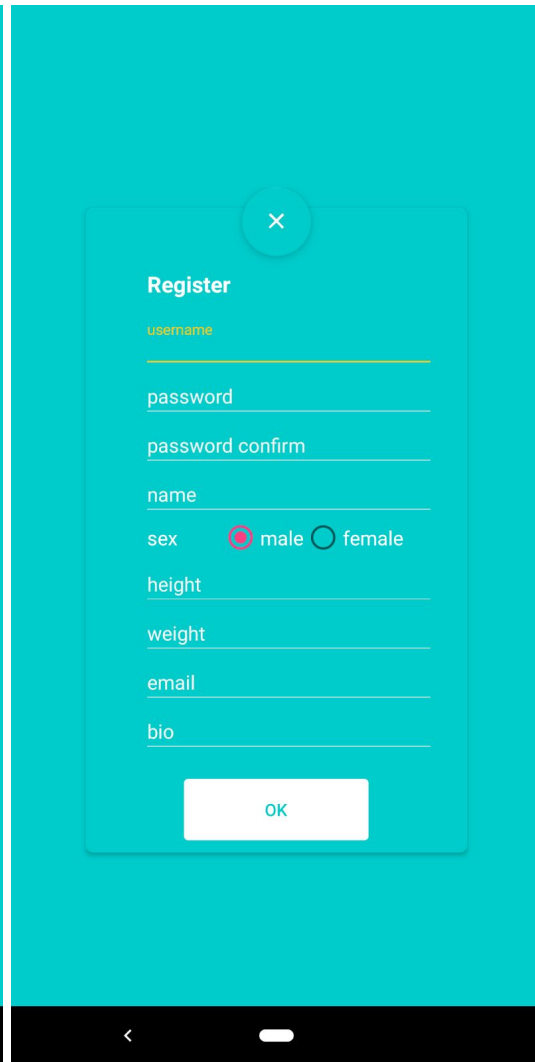
User authentication page:

figure 1: User login page            figure 2: User registration page



**After User Authentication**, users can navigate to their profile page (*figure 3*) by clicking the hamburger menu button. Once getting on to the profile page, users can choose the following 5 main activities: Account, Exercise, Calendar, Partner and Chats (*figure 4*).

figure 3: User profile page                    figure 4: Main menu
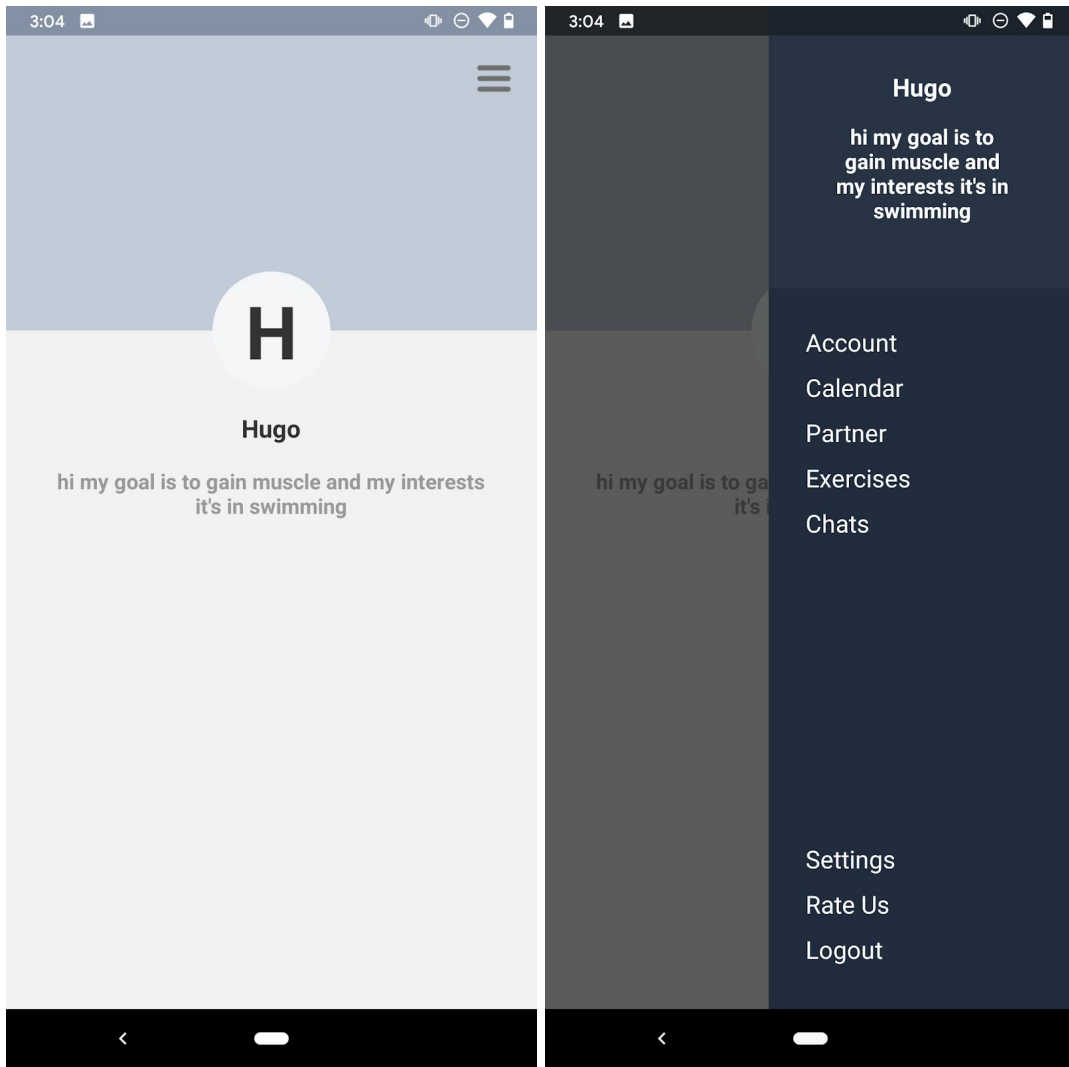
**The Account page** then allows users to view the personal information they inputted during the registration (*figure 5*). Most importantly, users can view their ratings from the account page which is an average score that the user received after every workout event from a partner.

*figure 5: User info page*          *figure 6: Exercise info page*
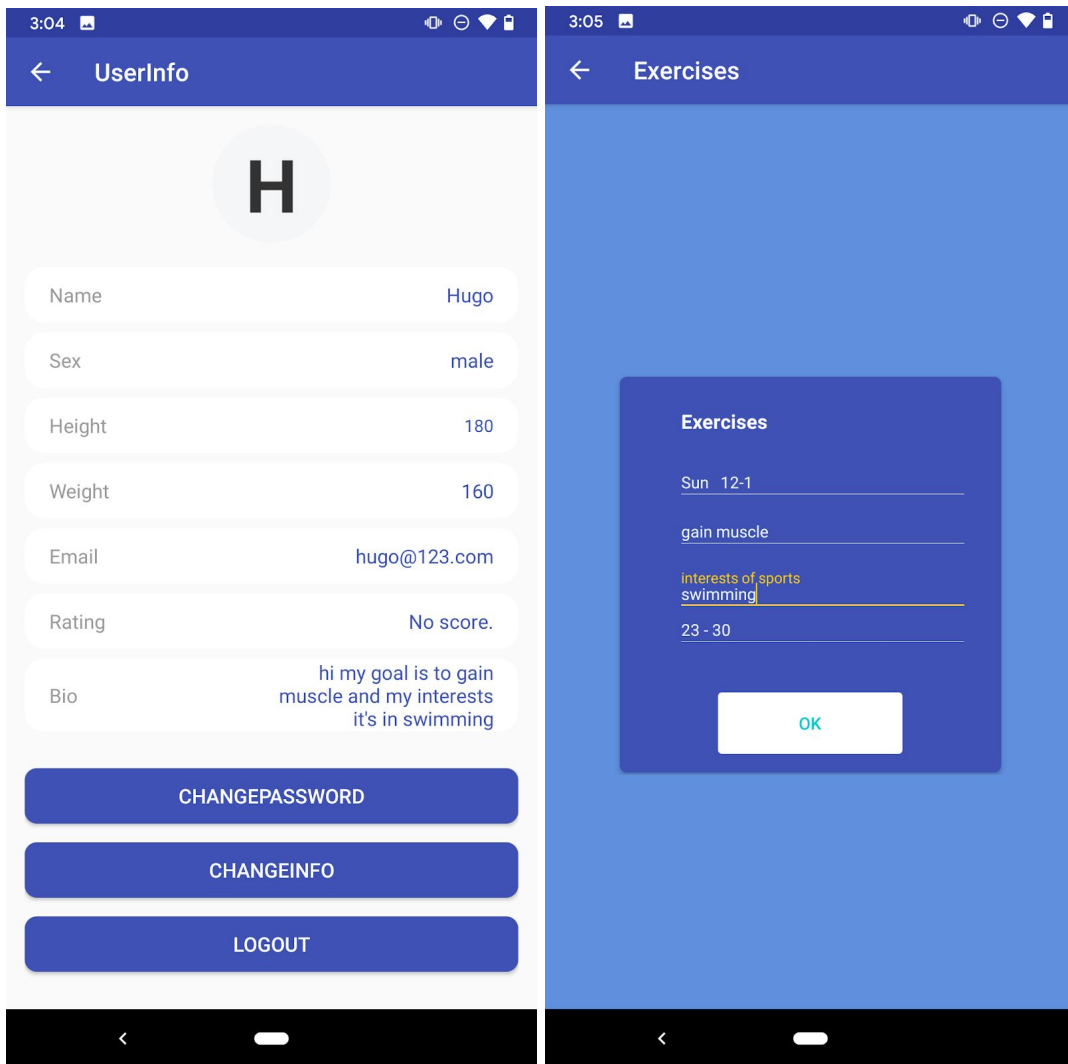
**In the Exercise page** (*figure 6*), it requires users to set up their availability time range, goal of exercise, type of sports they like and their age group, allowing them to search for compatible exercise partners.

**The Partner page** (*figure 7*) shows the matched partners for the current user. From the partners' main activity, users can navigate to Search partner activity and request received activity through the hamburger menu. The Request Received activity allows users to view the match request that they receive from other users. The Search Partner activity allows users to search for potential partners. The matching algorithm supporting the search partner function will suggest matches for users who share similar availability, review ratings, fitness goals, interests in sports and age group upon user's request. For instance, after a user provides one's exercise attribute in the exercise page, the user can then request to search for users in the partner page. The matching algorithm would rank and present the users based on the similarity of their exercise attribute.
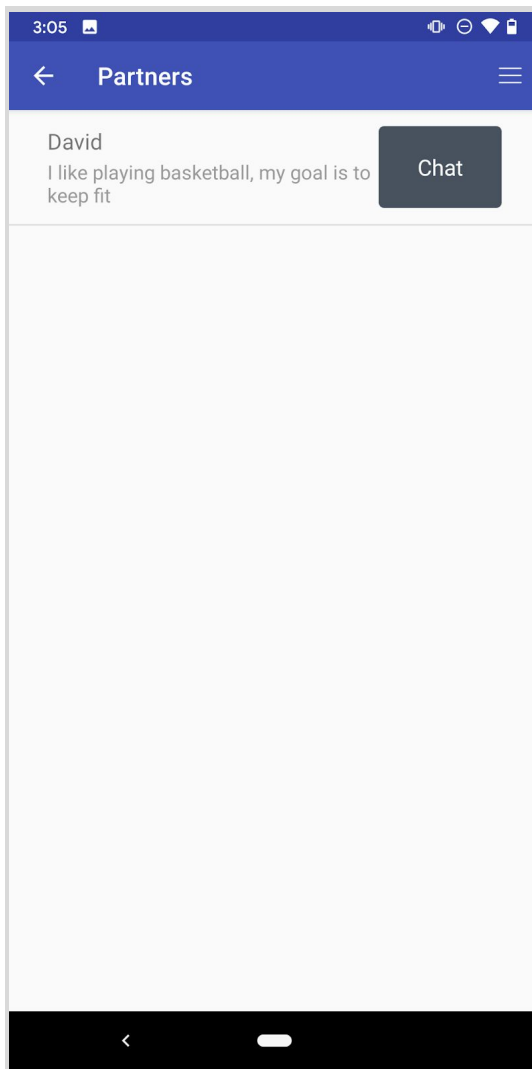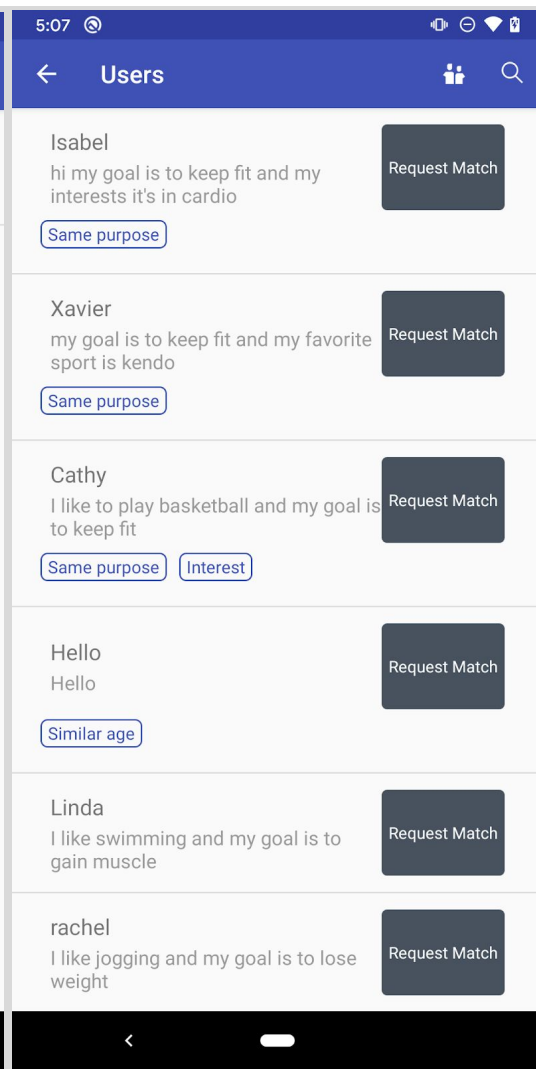
**The Calendar function** *(figure 9)* allows users to set up and cancel exercise events. Users can click on a desired date and send a message to a particular partner to let them know what exercise activity they would like to enjoy while asking them to join. Once the partner agrees to join the activity, the activity will be set up on the calendar with the participants' names and time included. After the event is completed, users can rate their partner's performance on a scale of 5.
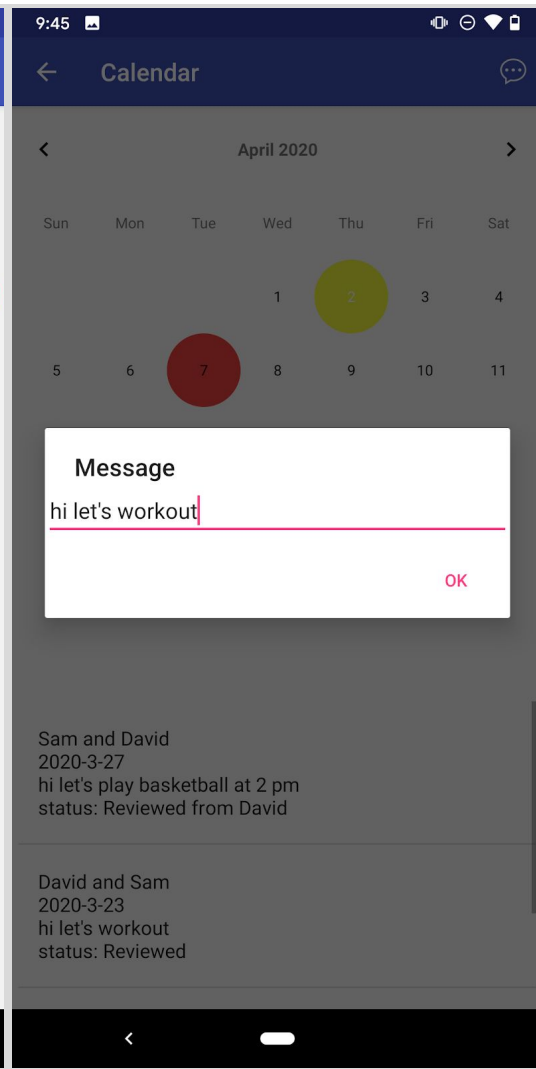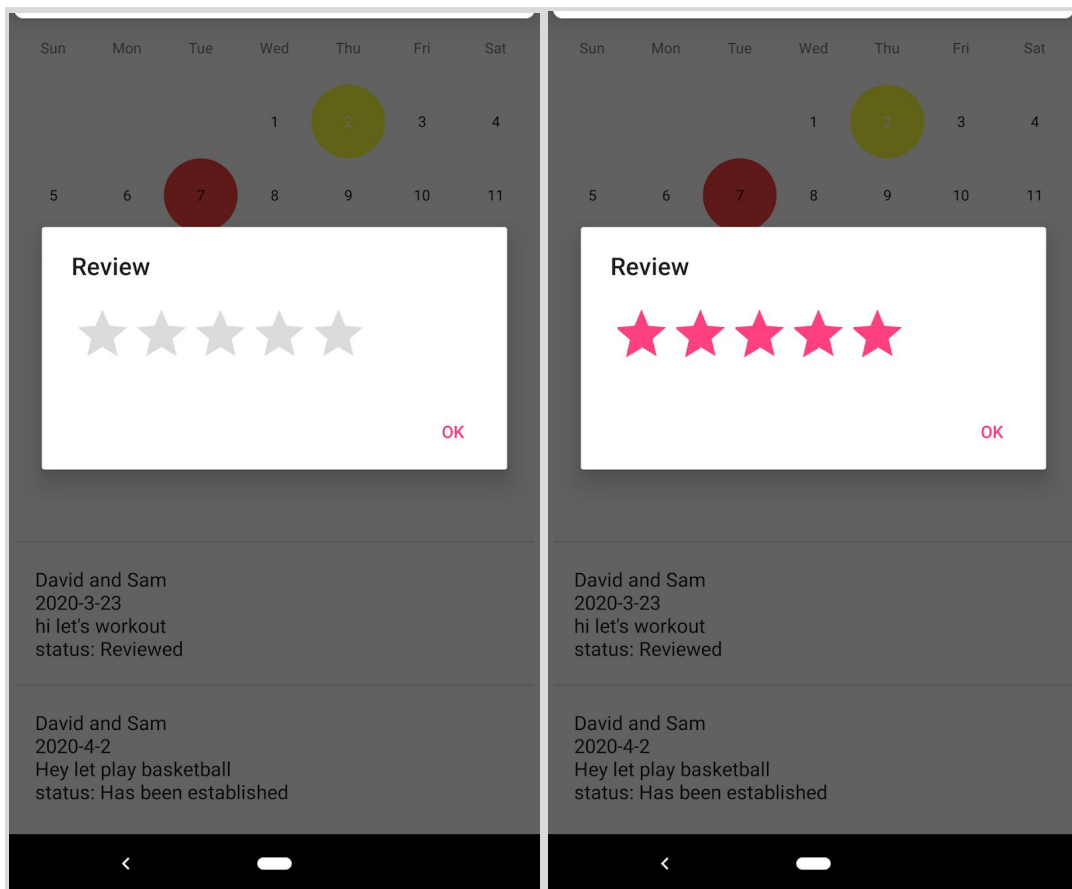
figure 11: Review function          figure 12: Review by stars

The **two-way review system** *(figure 11)* was not presented in the function options, however, it will require matched users to rate each other after an exercise event on the calendar page. Users with good reviews will get more matches with other users who also have high ratings when searching for the next partner.

Lastly, **chat functionality** (figure 13) allows matched users to communicate with each other in a chat box after they are matched. Users can send messages to get to know more about each other.

*figure 13: Chat interface*
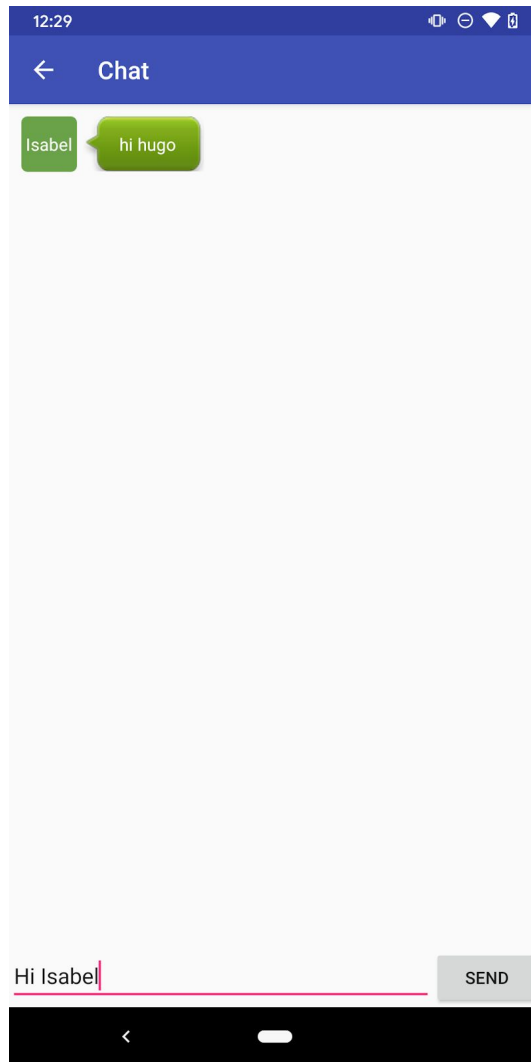
## Overall Design

*Figure 14* shows a block diagram which represents the overall design architecture of the app. It consists of the back end section encapsulated with the database, the two-way review system and the matching algorithm. Additionally, user actions such as set up, cancel event, search and match, and rating can be performed repeatedly. Most importantly, the user profile page is a portal for users to take advantage of all the functionalities.

*figure 14: Block Diagram*
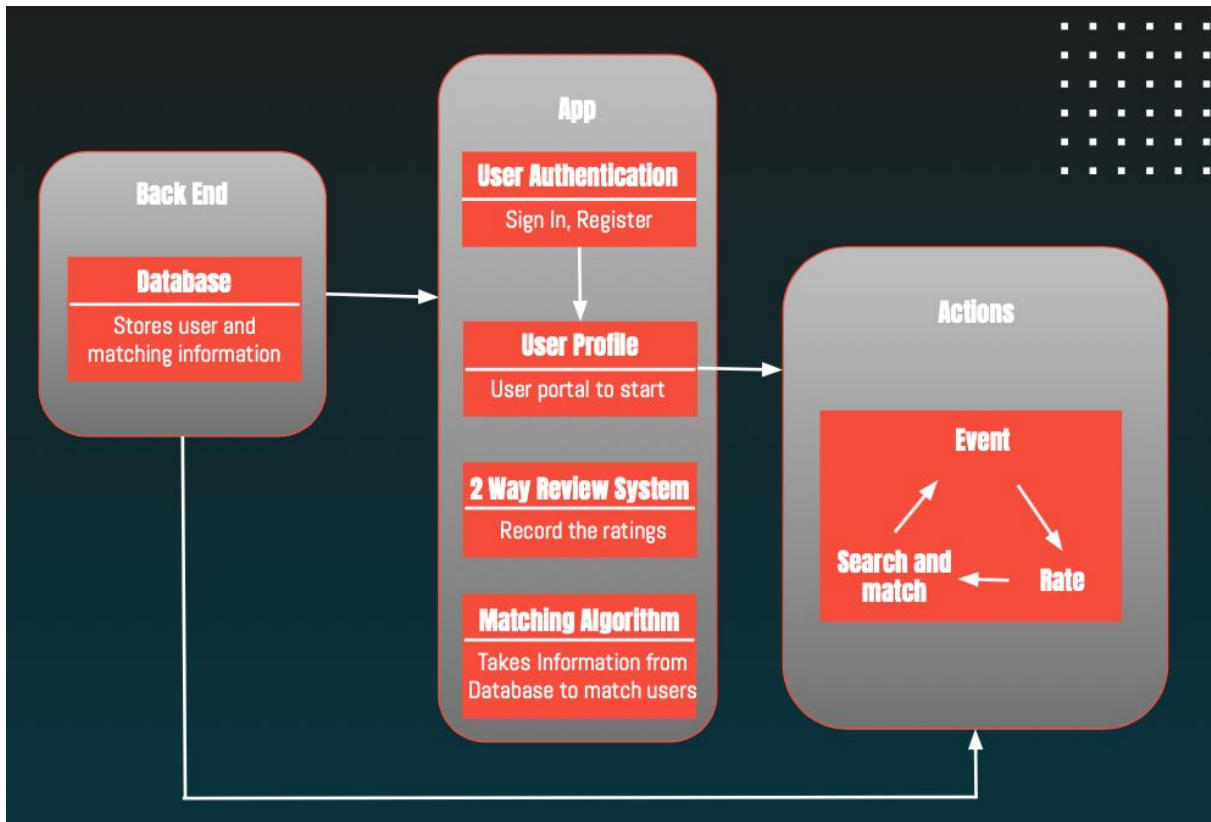
**Back end structure:**

The database stores all the user information such as user's exercise attributes, ratings, matched partners and the calendar's events information.

**In the App:**

Two-way review system is an encapsulated function in the app. It records each user's received rating and presents average ratings on the user's account information. Additionally, each user's rating will be sent to the matching algorithm as an input for the next search.

Matching algorithm is implemented based on weighted scoring calculation and quicksort, it takes all the user's exercise attributes into consideration. When a user is searching for partners, the system will search for all existing potential partner's information including availability, ratings, exercise goal, interests of sports and age group, in an order of weighted score from 1 to 5. The system will then rank the potential partners based on the quantified similarity of the users' information. Each similarity in a single field will contribute each field's weighted score towards the potential user's total ranking score in a single search. In the end, the potential partners will be presented on the search result page in order based on their similarity ranking.

**Actions:**

Once users input their profile information and exercise information on the user's profile page, they can search for partners, set up exercise events, meet with partners offline and rate their partners based on their event experience. These actions can be performed repeatedly in the life cycle of the software.

# Reflection

Except for gaining experience in Android projects, many lessons were learned during this projection. First of all, we discovered that it is better to narrow down the focus since we do not know where to start during the early stage of the project. Our instructors and TAs were very helpful while trying to narrow down the focus by providing valuable feedback.

The collaboration through github provided great convenience before and continued to show its advantage during this period of time. We could work independently and pull everything up through online meetings easily by using github. The group members benefited a lot from the ability of issue tracking with GitHub due to the integrated project management platform that GitHub offers. We also realized how important it is to get feedback from different perspectives. It led us to think out of the programmer framework and consider the improvements and changes that would benefit our app the most.

Furthermore, we gained collaborating skills within a group, which includes breaking down one big task into many small subtasks and finally putting pieces together to complete the big task. Last but not least, we had extensive learnings for UI development including integrating backend data with frontend Interface.

# Contribution by Each Group Member

Programmer (Yadi Xing) As a programmer, the followings are my major responsibilities throughout the project:

a) Responsible for frontend development including basic UI design, UI improvement, as well as user experience optimization. Modified UI design based on feedback from peer review, instructor and Ta.

b) Designed overall structure for the app

c) Collaborated with Qiwei for the implementation of the two-way review system

d) Designed and implemented the calendar page

Programmer (Qiwei Chen) As a programmer, my major roles in the development process are listed as follows:

a) Responsible for general backend development and function handlers and activities.

b) I am responsible for design and implementation of database schema and structure with firebase database

 c) I implemented the matching algorithm upon discussion result with Yadi of important matching criterias and their corresponding priority

c) Constructed chat system and tested thoroughly

# Future Work

Our project focuses on the completion of the basic functionalities as proposed. For instance, the sign-up and authentication system, the partner activity and matching algorithm, review system and the design of the user calendar. The app could be improved by adding more components and features such as community section, where users can post pictures and blogs about their exercising experience and share it to other social network applications. Therefore, we should not only focus on advertising our application but also encouraging people to share their experience through our app.

Moreover, we should also technologically improve our matching algorithm to make sure it works fast and precisely when the number of users has grown to a significant amount. This can be done via redesign of the database schema and query command. Our group may also consider adding new features like allowing users search partners geologically close to them and team sport functions for sports that require multiple players: for example basketball, soccer and etc. Users can simply start by creating a group at a certain time and location. Other users could see the group in their page and decide whether they are interested to join the sport event. We may also consider refactoring the code so that users could have better user experience when using our app.

# Publication

Video of final presentation: yes, all members agree to post it publicly

Report: yes, all members agree to post it publicly
Source code: no, all members does not agree to post it publicly

# References

Dynamicsc.com. 2020. Why You're Inconsistent With Your Workouts (And How To Fix It!). [online] Available at: <https://www.dynamicsc.com/blog/why-youre-inconsistent-with-your-workouts-and-how-to-fix-it > [Accessed 01 Feb 2020].

Fit Bottomed Girls. 2020. 5 Apps To Help You Find Your Perfect Workout Buddy. [online] Available at: <https://fitbottomedgirls.com/2015/09/5-apps-to-help-you-find-your-perfect-workout-buddy/ > [Accessed 01 Feb 2020].

Harvard Gazette. 2020. Over Nearly 80 Years, Harvard Study Has Been Showing How To Live A Healthy And Happy Life. [online] Available at: <https://news.harvard.edu/gazette/story/2017/04/over-nearly-80-years-harvard-study-has-been-showing-how-to-live-a-healthy-and-happy-life/ > [Accessed 03 Feb 2020].

The Core™ - Guides on Protein, Supplements & Training | BULK POWDERS®. 2020. Benefits Of Working Out With A Partner | The Core™. [online] Available at: <https://www.bulkpowders.co.uk/the-core/benefits-of-working-out-with-a-partner/ > [Accessed 01 Feb 2020].