

# **RURoomates?**

## Design Document Senior Project Spring 2020

Richard Baird, Collin Stilwell, Karl Cebulski, Nicholas Fanourgakis, Samantha Mongiello, Erik Ewell, Zachary Ringhoff

# Table of Contents

<b>RURoomates?</b>	<b>1</b>
Table of Contents	2
High Level Description	3
Screens	4
Login Screen	4
Edit/Fill out Questionnaire	5
Home Screen	6
Menu Button	7
Change Questionnaire	8
User's Profile View + Edit Profile	9
Other User's Profile View	10
Messenger Screen	11
Chat Screen	12
Screen Navigation	13
Technology Stack	14
Database Schema	15
Backend Information	16
Flask Endpoints	17
Firebase	17
Input and Output	17

## High Level Description

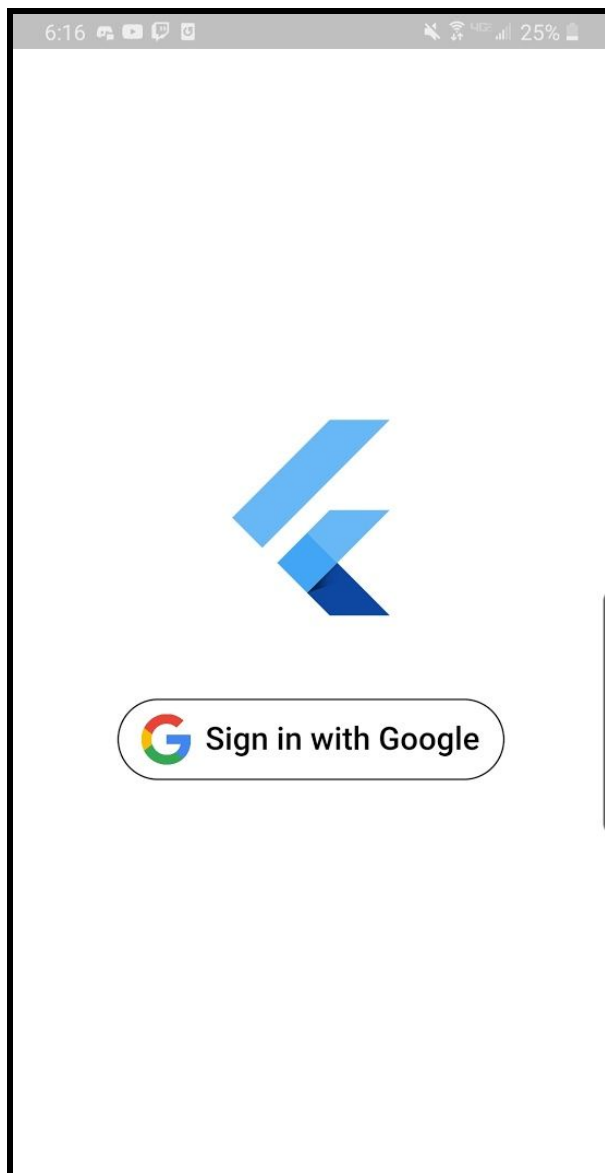
The Purpose of this application is to give users a more interactive and efficient way to find roommates at Rowan University. By orienting the app around user to user interaction, it gives a more personable manner to find potential matches, rather than the system currently in place by the university.

When the user creates an account they will fill out a general roommate questionnaire consisting of sleeping habits, social life, and basic expectations to model the candidates they would be best suited for. Along with this information, there will be the option to personalize the users profile with social media, an about me bio, and other traits to further depict themselves. The app will match people based on the percentage of common answers on the questionnaire between users. The app will then add the match to the pool of potential roommate candidates for the user to reach out to.

## Screens

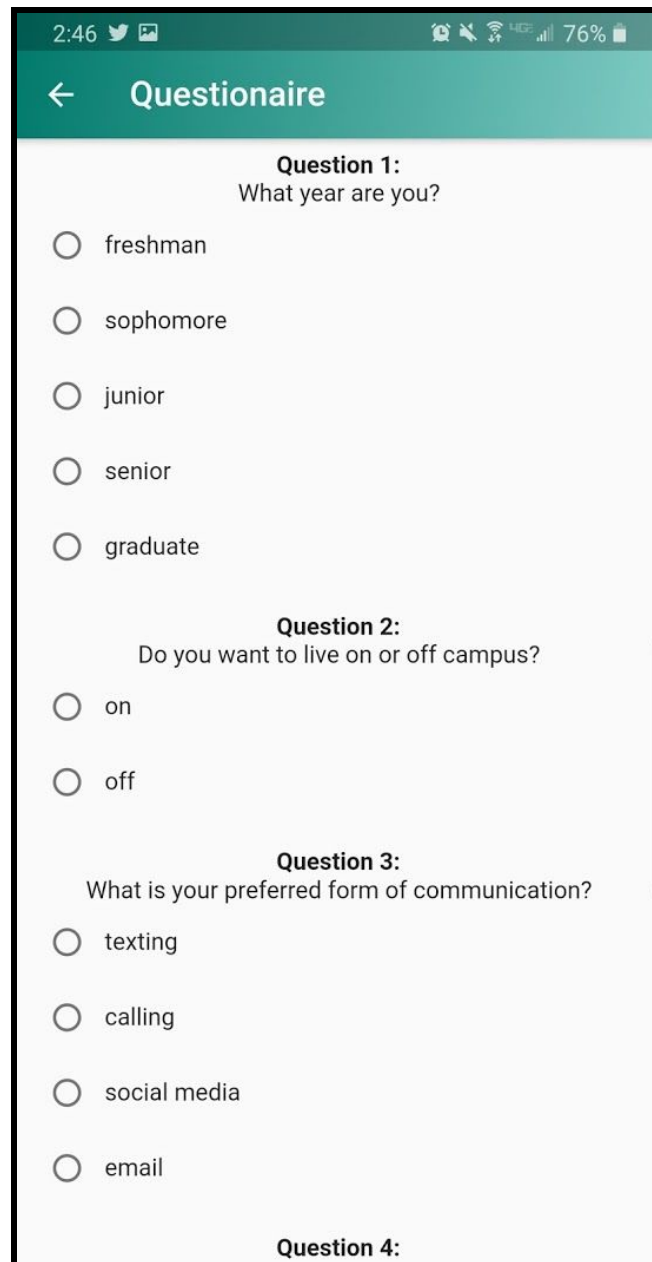
### Login Screen

The Login Screen is the first screen that new users will see as they progress through the application. Here the user will login using a Google account, which all Rowan University students are provided with. Google OAuth will verify these credentials and redirect the created user to the home screen. If a user already has an account this process will be skipped and bypassed to the home screen.



## Edit/Fill out Questionnaire

Prompted after the Login Screen for new users, profiles must fill out a questionnaire of general roommate questions with radio buttons corresponding to each answer. Once all of these questions are completed the user can click “continue” and be directed to the homescreen. If the user has an existing account, just like the Login In screen, this page will be bypassed.



The screenshot shows a mobile application interface for a questionnaire. At the top, there is a teal header bar with a back arrow icon and the title "Questionnaire". Below the header, the screen displays four questions, each with radio button options. The status bar at the very top shows the time as 2:46, along with icons for social media, notifications, and battery level at 76%.

**Question 1:**  
What year are you?

- ☐ freshman
- ☐ sophomore
- ☐ junior
- ☐ senior
- ☐ graduate

**Question 2:**  
Do you want to live on or off campus?

- ☐ on
- ☐ off

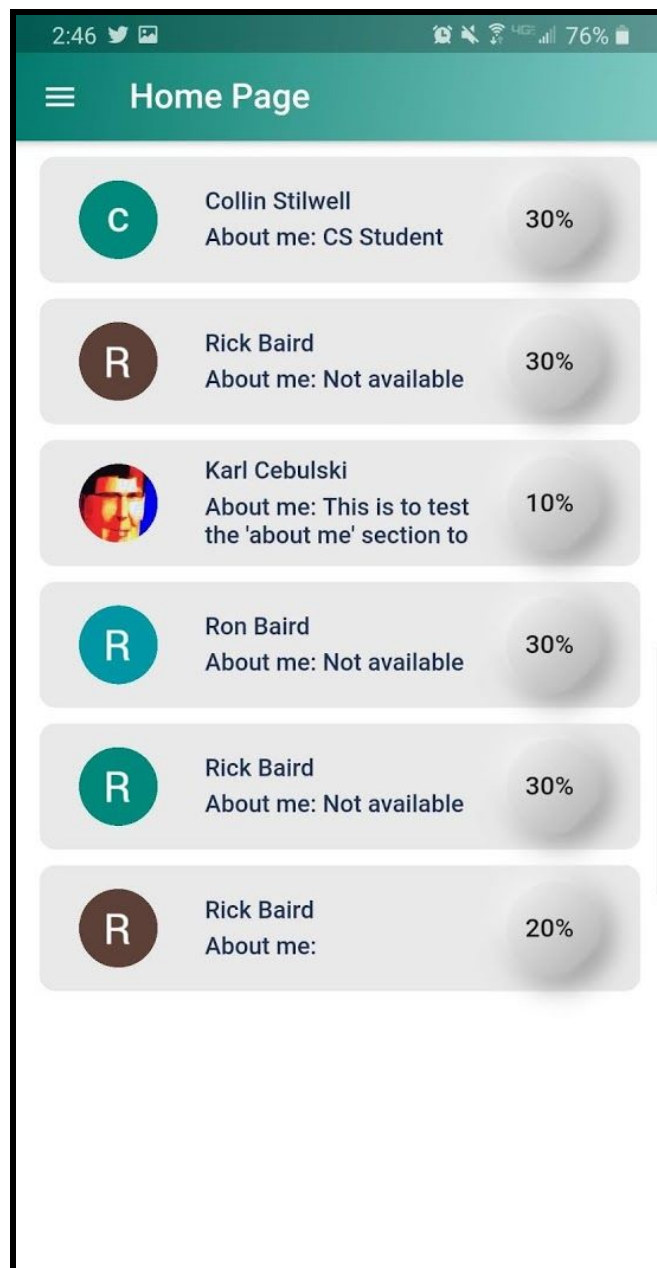
**Question 3:**  
What is your preferred form of communication?

- ☐ texting
- ☐ calling
- ☐ social media
- ☐ email

**Question 4:**

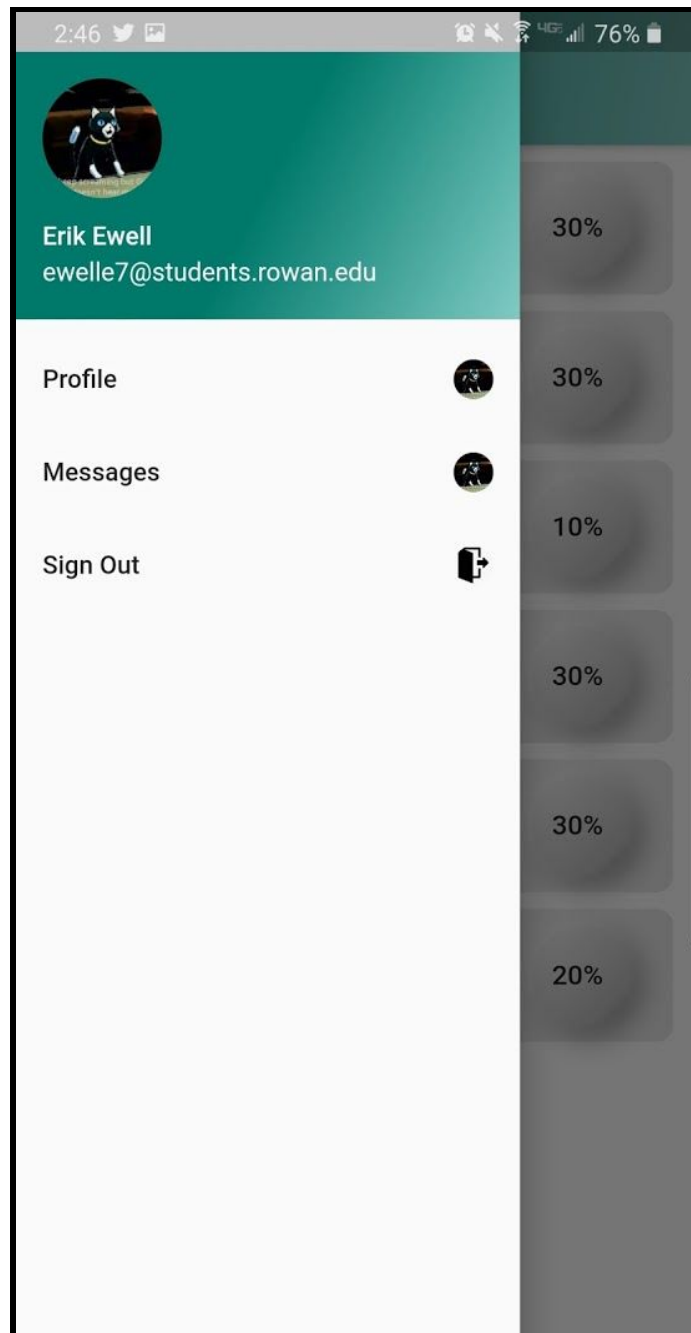
## Home Screen

This page shows a list of similar matches a user has with other users based off of the questionnaire. This screen will show the other user's main profile picture with a bio description and how similar they matched (percentage or maybe another type of indicator of how similar they matched). It would allow a user to click and view another user's profile. They also have the option of messaging their potential matches by clicking on their profiles.



## Menu Button

This will take up  $\frac{3}{4}$  of the page to show a list of menu options. The user will be able to select different pages from the menu button such as their profile, the questionnaire, the home page, the messages page, settings, and being able to logout. This will be the main navigation tool used within the app.



## Change Questionnaire

This page allows the user to edit the questionnaire that they filled out upon creating a profile. This page can be accessed at any time after a profile is created. The page will depict the current answers that are saved to said profile and will allow the user to alter them. Once the answers are altered the algorithm will rematch the user to the pool of profiles, creating a new stack of matches.

2:46 76%

← Questionnaire

**Question 1:**  
What year are you?

☐ freshman

☐ sophomore

☐ junior

☐ senior

☐ graduate

**Question 2:**  
Do you want to live on or off campus?

☐ on

☐ off

**Question 3:**  
What is your preferred form of communication?

☐ texting

☐ calling

☐ social media

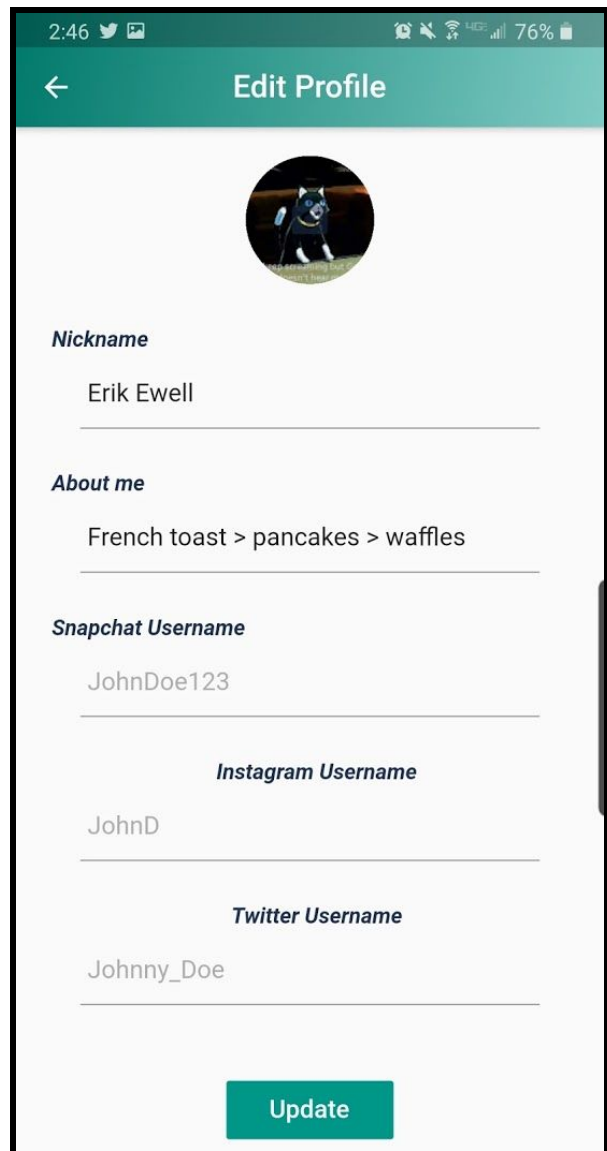
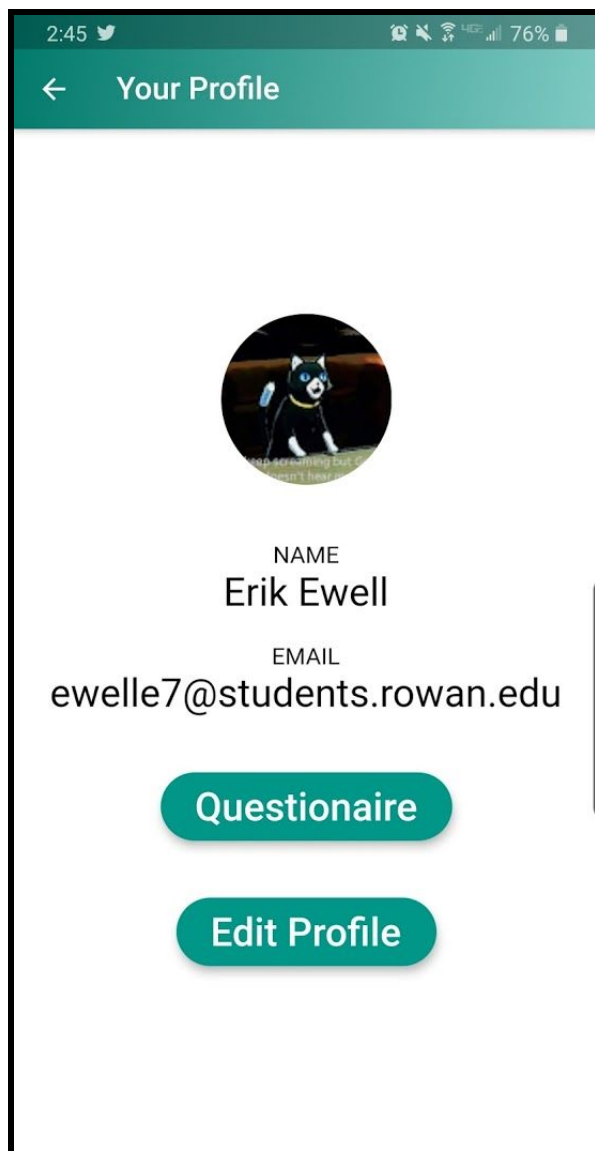
☐ email

**Question 4:**



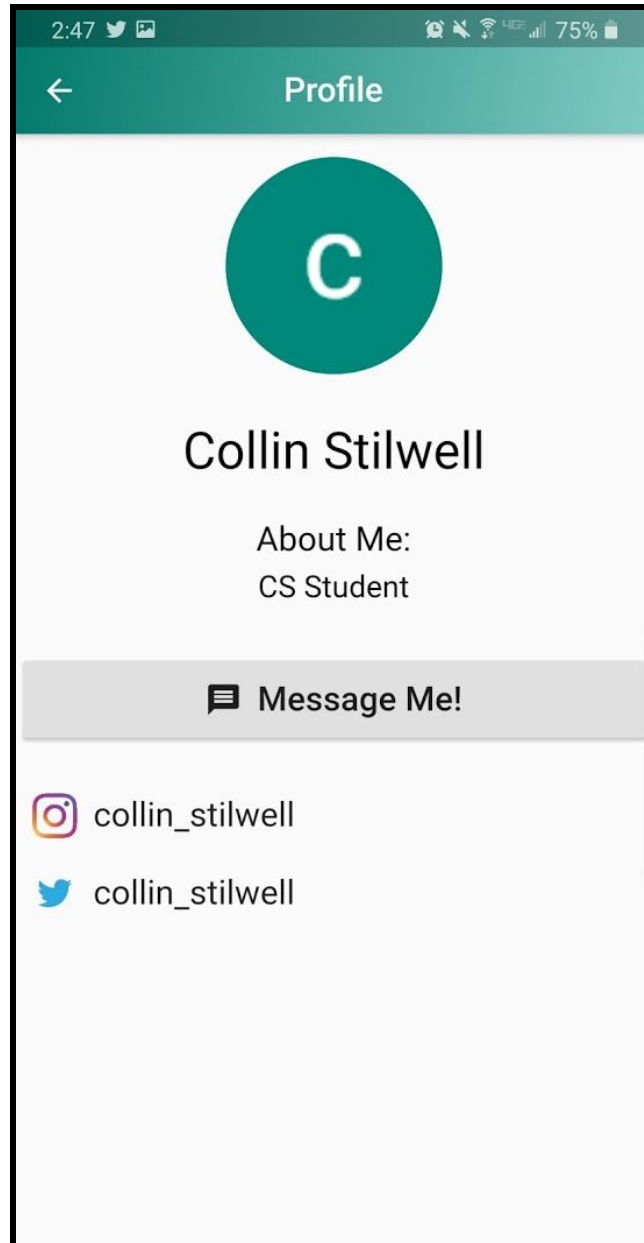
## User's Profile View + Edit Profile

This page is not a requirement but more so an added layer for the user to describe who they are aside from the hard coded questionnaire. This gives the user a chance to add a bio and attach social media links if they choose to. This screen also serves as a preview to show the user how others will see how their profile will be displayed. The user will also be able to edit their user profile information and will be able to edit their nickname, email, as well as Twitter and Instagram.



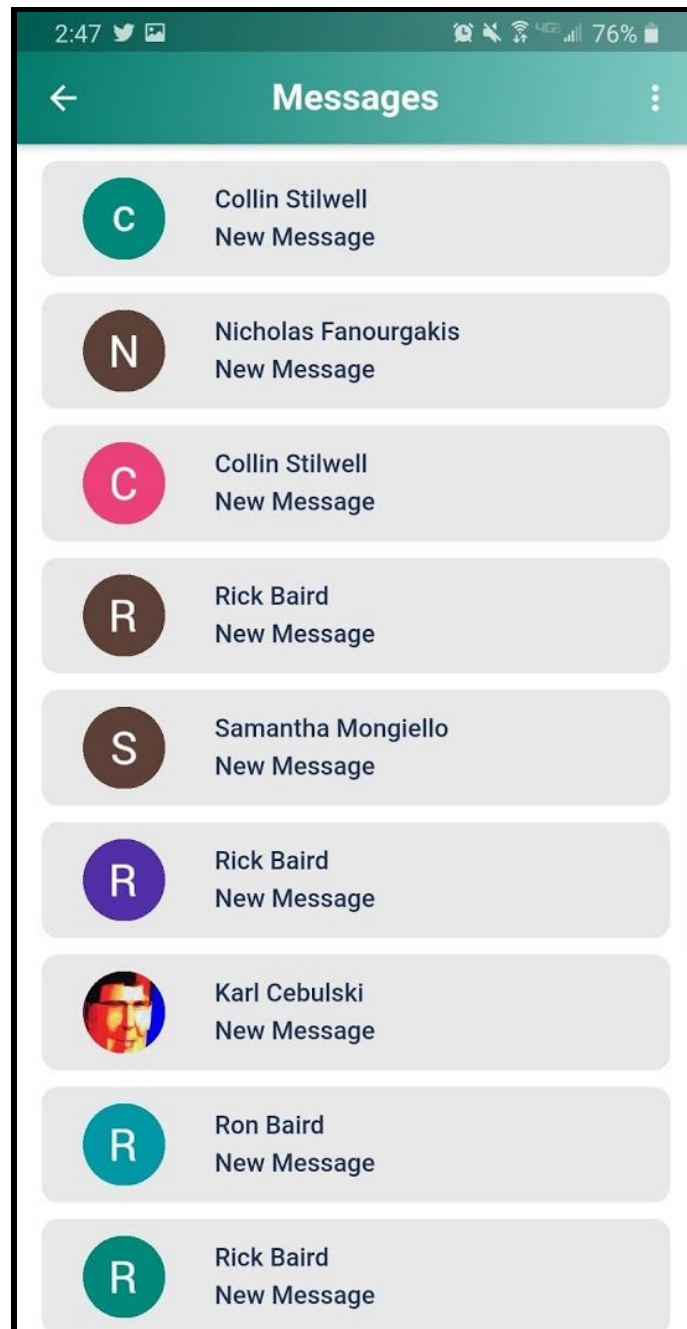
## Other User's Profile View

This page allows a user to view another user's profile. This will include the other user's pictures, bio, option to message chat, and social media apps associated with their username they put in when they edit their profile



## Messenger Screen

The messenger screen will contain people who have contacted you through the chat screen or from anyone that you contacted with. Clicking on one of the tabs will open up the chat screen, which will display previously sent messages and will let you talk with a potential roommate



## Chat Screen

If a user wishes to chat with a potential roommate, he/she can chat with him/her through a messenger-like interface. Two users have to be selected as potential matches before this can be selected.



## Screen Navigation

When a new or returning user opens the app they will be prompted to a screen to login with their Rowan google account. New users will immediately be prompted to a questionnaire screen to fill out. After that the new user will be on the Edit Profile page to set up their profile whereas the returning users will already be at the home screen. The home screen will include a menu/hamburger partial screen that will include a list of buttons to navigate to other screens.

The menu button will include a list of other screens to navigate to which will include a Profile Screen, Questionnaire Screen, Home Screen, Messages Screen, and a Logout Button. The Questionnaire Screen will display a list of questions followed by the user's answer selected by a radio button. Once the questionnaire is finished the user will be returned back to the Home Screen. The Home Screen will display a list of other users that are similarly matched with a description of their bio. The Messages Screen will display the other user's profile picture with a chat screen where the user and the user and the other user can talk to each other. The Logout Button will have the user logout and exit the app once they press on the button.

The Messenger Screen will display a list of messages of all the other users that the current user has chatted with. It will display the other user's profile photo along with the previous message that was sent.

The Other User's Profile Screen will display the other user's photo, bio, and other information about themselves.

## Technology Stack

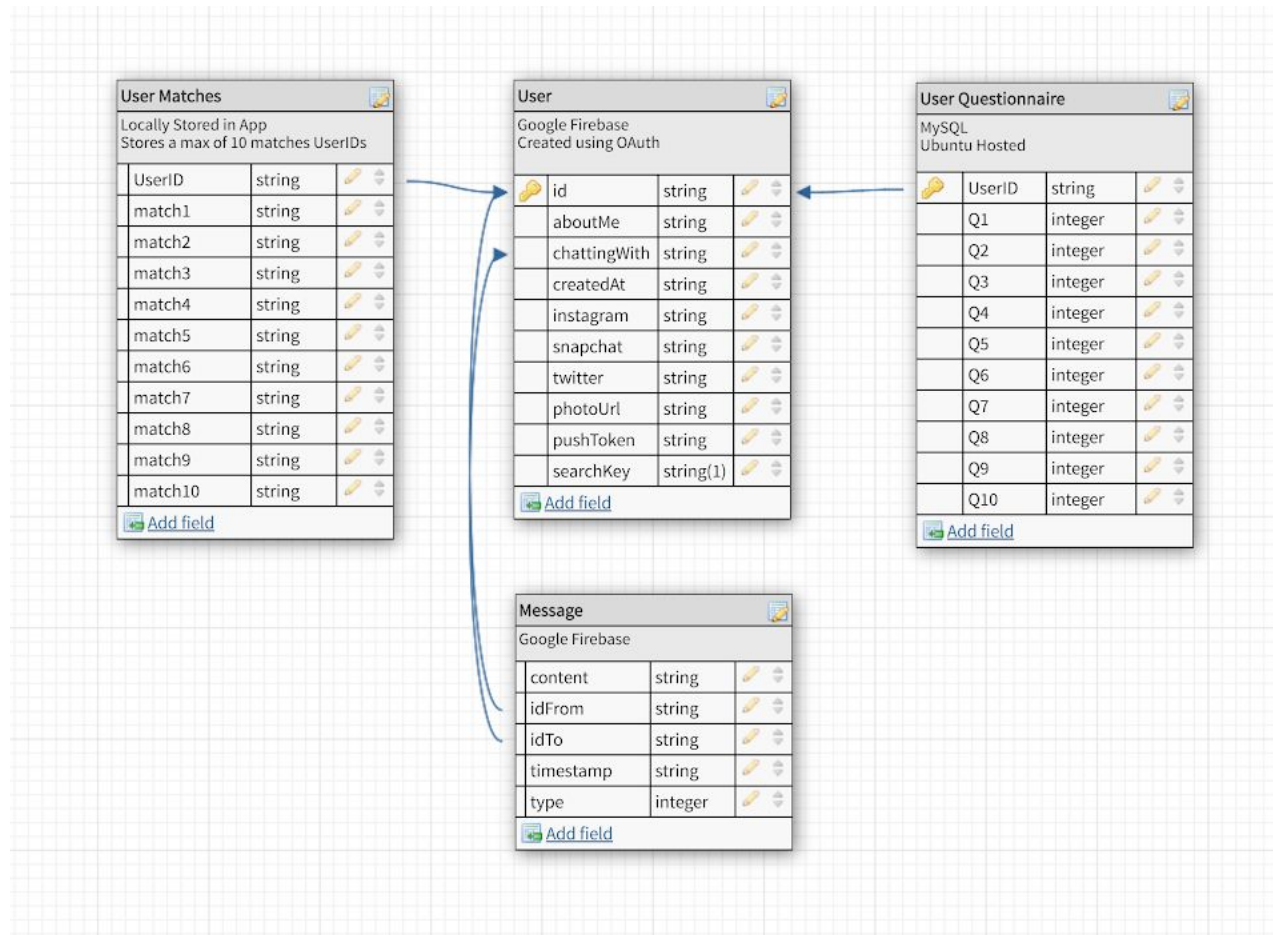
The application was developed using Dart and the Flutter SDK. We desired to use the relatively new programming language and framework to ensure ease of development and the ability to create a cross platform application with little modification needed. We tested the application by running it through emulation or by running it on physical mobile devices using USB debugging.

We employed the use of a MySQL server running from AWS. The application will store the questionnaire answers associated with the users ID (Firebase Primary Key) and query the top 10 matches to be sent to the front end. The server has the functionality and endpoints needed to submit a new questionnaire as well as update an existing one. We have chosen MySQL over options due to its simplicity and for being a great fit for the kind of application we are developing.

The server itself and the scripts needed to make comparisons between user tables was developed using Python and the Flask Library. We also took advantage of SQLAlchemy for database scripting and Marshmallow for schema structure.

We will also be taking advantage of Firebase for storing the user's credentials accessed through Google OAuth. We also store general personal profile information such as social media accounts and biography information. There is a separate table in Firebase managing messaging between users, that is organized through user IDs between both parties.

# Database Schema



## Backend Information

The backend is used for storing information regarding the user's questionnaire, searching for users by name, and storing miscellaneous profile information. It will communicate with the AWS MySQL server. The data will be accessed using Rest api to make web service posts and requests.

The user database is connected to Google's firebase database for signing in. The user will be required to sign in through Google's OAuth services. Firebase will also handle the in app chat room between users.

## Flask Endpoints

### **GET /product/<id>**

Returns the questionnaire answers for the corresponding <id>.

### **POST /product/<id>**

Updates the questionnaire answers for the user <id>.

### **PUT /product/<id>**

Creates a new row for <id> with corresponding questionnaire answers.

### **GET /product**

Returns the <id> for every entry in the table.

### **GET /compare/<id>**

Returns a list of <id> and the corresponding percent match for the given <id>. The list contains 10 indices with the highest percent match values.

## Firebase

Used for storing user profile information, storing and syncing chat room information, viewing other user profiles, and for populating the home screen with the necessary information (profiles and profile information).



## Input and Output

**Input:** Users of the RURoommates application will mainly traverse its features using buttons on the screen. Users will also have to use their phone keyboard and textual input for certain features, such as editing their user profile and chatting with potential roommate finds.

**Output:** When a user is finished with his/her questionnaire, he/she will be given a scrollable list containing those who matched based on his/her answers to the questions. When using the chat feature, messages from both sender and receiver will output to the users' screens.

