HotWheels - App Proposal

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App Description

Main Idea

The idea for this app is to give car enthusiasts a medium to share their cars for other people to see and to interact with. Once a user creates an account they can: post pictures of cars they own, like images of other people's cars, upload a profile picture and much more. A user can either select an image from their gallery or take a picture with their camera. The user can then crop, rotate and flip the image as they like. Once they are happy with the image, they must input the make, model, year and a description of their car. A user can search for other users by username to follow them (so any time they post it will come up on the home page) and they can view and like their posts. Another way to find users to follow is if a user sees a post on the trending page they like, they can click on it and then click on the user to go to their profile and follow them there.

User Stories

1. As a user, I want to create a new account and login so that I can share posts of my car(s) so my followers can see.
2. As a user, I want to be able to search for a user by username so I can find my friends and follow them.
3. As a user, I want to be able to like other posts so that I can show appreciation to other people's cars.
4. As a user, I want to be able to add the location to my posts so that I can show where the picture was taken.
5. As a user, I want to be able to view viral content that is trending so that I can see content posted by people that I may or may not follow.
6. As a user I want to be able to rotate, crop and flip an image so that it is in the correct orientation.
7. As a user I want to be able to logout of my account.
8. As a user I want to be able to change my profile image.
9. As a user, if I like a car in a post I would like to see the details of the car by clicking on the post.

Usability & Background Research

Background

The name of our app is HotWheels as we found it was a relevant name that gave a user context on what our app is about. As a team, we each had a common interest in cars. We thought it was a good niche area. As we all grew up in a generation where social media is a big part of our lives, we knew that there is a gap in the market for apps like Instagram and VSCO but for car enthusiasts. We each like seeing other cars online and getting ideas from those images. We liked the design of Instagram with the navigation bar at the bottom and this inspired us to do the same on our app.

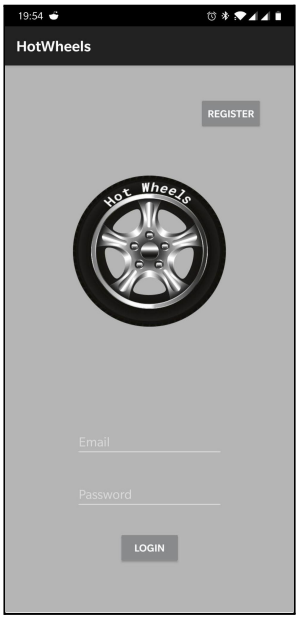
Market Research

The market research we have done on this app is as follows:

- Asked people we know if the app name is good/suitable.
- Asked people if they liked the UI mockup design we created first.
- Searched on the app stores for similar apps and did not find any.
- Asked people to try out the app on their phone.
- Asked car enthusiasts if they would use our app.

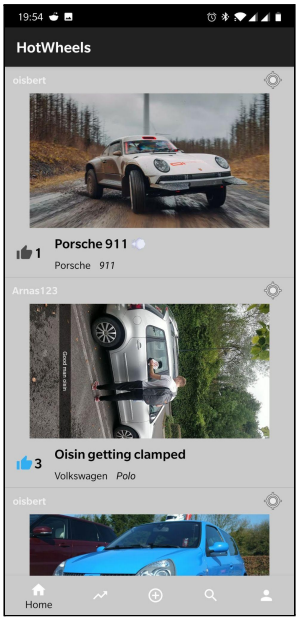
Overall we got good responses during the research and found that it was reasonable to start making the app.

UI Design



- We decided the background colour should be a light grey to give off a bit of an industrial or steel theme as the app is about cars (#BFE1E1E1).
- We decided that the buttons would be a more dark grey to the background to make them float. The text in most of the buttons is white as it contrasts well with the grey.
- Text boxes on the login, register and search screens have light placeholder text until the user enters text which is coloured white.
- We made sure to keep all layouts simple

- We tried to ensure all layouts are responsive to whichever screen they are on
- We have a DarkActionBar with the name of the app at the top of the app.
- The bottom nav bar contains images of the main screens in the app: Home, Trending, Add Post, Search and Profile. Text appears under the image upon selection.
- The home and trending feed are designed the same but have different content.
- The Add Post page is simple, the user just selects the gallery or camera to get an image with.
- The search page just consists of a search bar which is automatically selected when the user goes to the page.



Future Plans

Improved account usability: Give the user more abilities on their account such as changing their personal information and username. It would be nice if the user remains logged in while installed on the user's phone. At the moment, it logs out the user once the app is fully closed.

Videos/GIFs: Allow the user to upload a video or a GIF of a car. Other users would be able to hear the noise the car makes by listening to the video.

Image validation: Make sure that the image is a car on upload. We don't want images that might bring down the user experience of the app.

Sharing feature: It would be nice if a user could share a post on the app to external apps such as Whatsapp. This might be in the form of a URL that can be shared.

Comment & tagging feature: Allow a user to comment on a post. This could allow them to share appreciation of the post or tag their friends in the post so they can see it also.

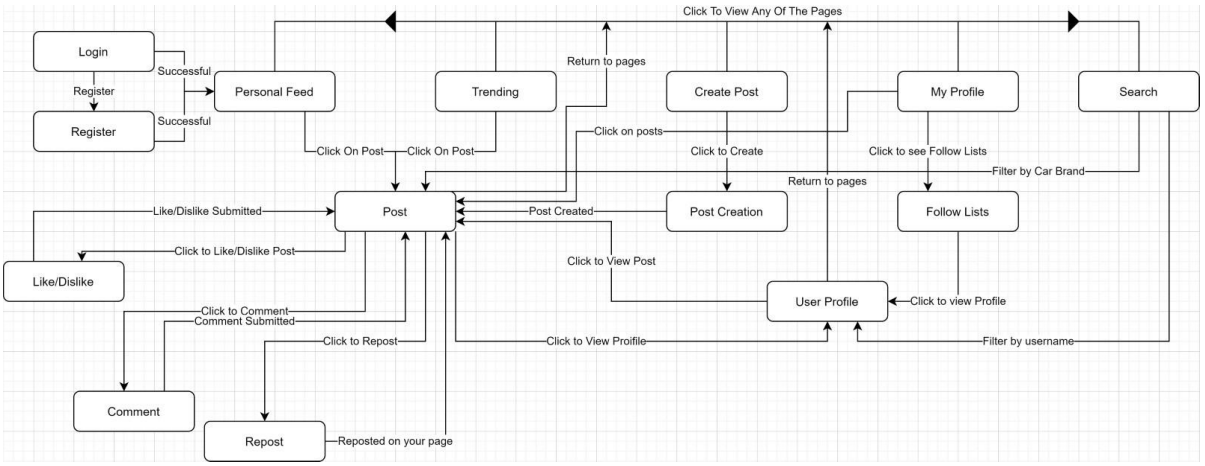
Messaging feature: Allow users to communicate privately in the app.

Mini car games: Have car-related mini games in the app that a user can play when they are bored. An idea of such games is a Traffic racing game where the user must drive a straight road and dodge other cars.

Technology Used & Design/Development process

Navigation and Fragment Design

We wanted a quick and seamless navigation design for the app when switching through the different tabs: *Home, Trending, Add Post, Search and Profile*. We built these tabs in fragments using a single activity called Main Activity. We were able to have the nav bar stay the same as the tabs switched as it was built on the activity. We used different lifecycle events to build the fragments code. We learned in the labs that Fragments load faster than activities. We were happy with the speed the page changed while switching pages using the nav bar. See below the navigation structure we had planned for our app.

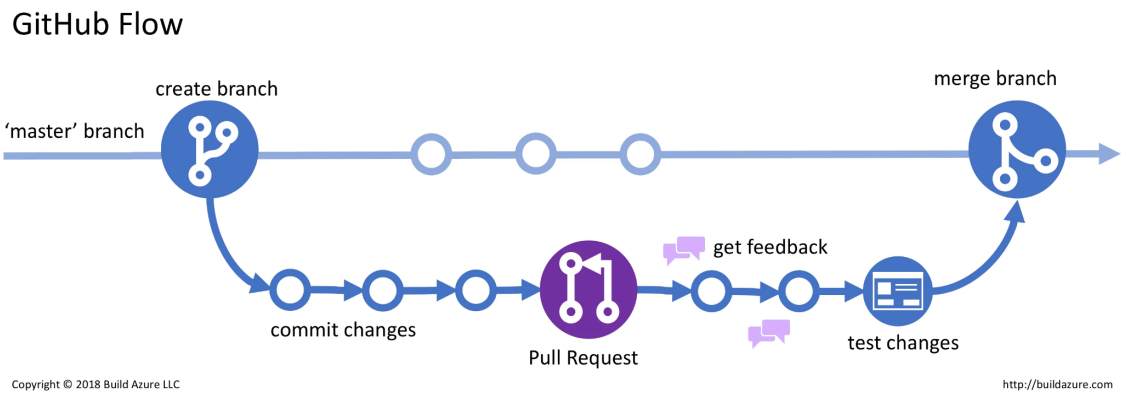


Database Implementation

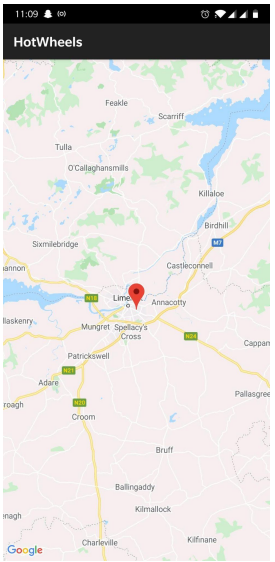
The database we used was a Firebase Firestore Database which is a NoSQL document database. The structure we decided to use for this was to contain all data within the users collection. Within the users collection there is the users documents. In each user, there is a field with their username and collections for their posts, followers and the people they follow. Posts are made up of the various fields that the user enters when creating the post: *brand, model, description, engine, year, description and the x and y coordinates for the location.* Other fields such as the unique post ID and the time and date the post was created are stored there also. In the post there is a collection called likes with the ID of each user that liked the post. In the following and followers collection there are just the IDs of the users. For authenticating a user we used the Firebase Authentication service.

Code Development Practices

For this project I suggested we should use a GitHub Flow development workflow. I decided that it would be a more adaptable workflow for the project at hand. GitHub Flow is a lightweight, branch-based workflow where deployments can be made regularly. When we wanted to add a feature we made a feature branch. If there was a Hotfix we needed to make then we simply treated it as a feature branch and merged it once the fix was complete.



We also used a Trello board to keep track of work items. When we thought of something to do we inserted it into the To Do section and moved it along as we went.



Frameworks, API's & Libraries We Used

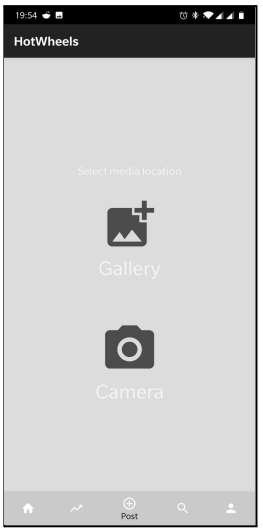
- Image Cropper Library
- Firebase Cloud Firestore
- Firebase Auth UI
- Google Maps Platform
- Google Location Services
- Phone camera and gallery
- CircularImageView

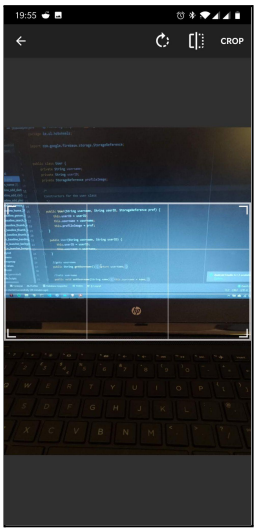
My Contribution

Some of my Responsibilities

Feature: Add Post

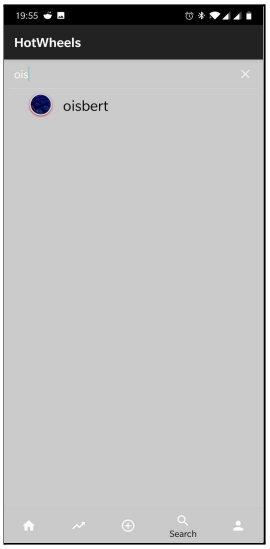
I had the responsibility of making the Add Post feature. I made a simple layout with two buttons - camera and gallery. I added a Permissions.java file with the required permissions (i.e. read, write, camera permissions). When the user first installs the app, when they navigate to the Add Post page they will be asked by the app to allow or deny access to the camera and gallery. If a user selects a deny option, they will be asked again if they click on one of the buttons that needs that permission. If a user selects a camera, the image they take must be saved to the phone so the full quality is maintained (this turned out to be very tricky to implement). Once an image is selected (either taken by the camera or selected in the gallery) the user can crop, rotate or flip the image. I decided to restrict the cropping to an aspect ratio of 16:9 to keep all images the same size.



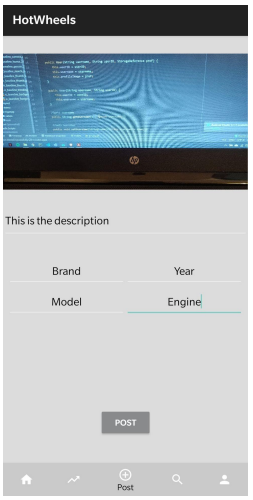


Feature: Search

I had the responsibility of making the Search feature. I made the layout very simple with just a search text view at the top and a RecyclerView below it. When a user goes to the search page the search box is selected and the keyboard will come up automatically. On this page the user can search for another user by username. The search works if the user only inputs part of a username (see image to the right). It will filter the users list when the search query is submitted. In an earlier version, the users were filtered each time the search query text changed but I felt that this was not a great user experience. When the search page loads, it fetches all users into an ArrayList. I decided to make a User class with the necessary constructor so I could populate the ArrayList with Users. When the users are filtered, the results are displayed in the RecyclerView. I created the



UserAdapter to bridge between the RecyclerView and the filtered users list. The user can click on any of the results to go to that user's page and follow them there.



Feature: Create Post

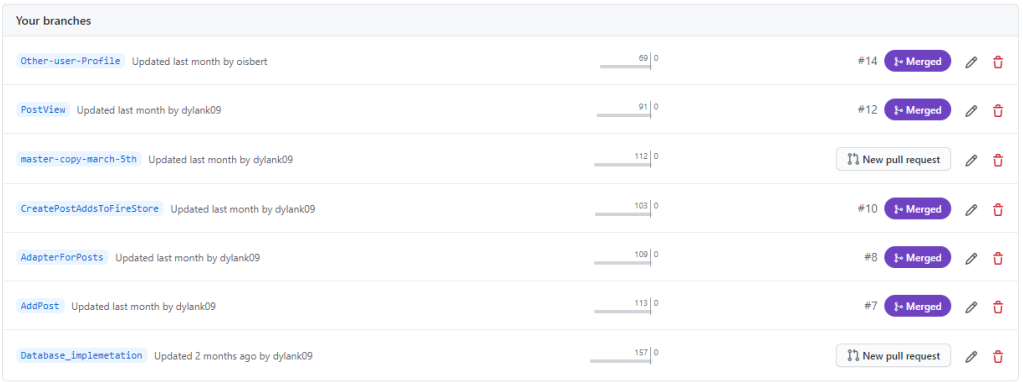
I helped to make the Create Post feature. Once the image is cropped, it gets sent to the CreatePostFragment using a Bundle. The create post uses the Bundle to get the image's URI and display it. I made the layout using a TableLayout along with TableRows and put the different fields such as brand, model, engine and year in as text boxes for the user to fill out.

Other Responsibilities Include:

- Set up the image cropper library to work on our images.
- Helped make the login and register functionality.
- Made various layouts.
- Helped make the navigation bar.
- Helped make the Post class.
- Helped make the Profile page.
- Helped set up the Firebase database and how we would store things such as users and images and likes on it.
- Whenever a teammate needed help, I helped them with the code.

GitHub

During my internship I used Git on a day-to-day basis and I was able to help my teammates with GitHub. I showed them how to use branches on Android Studio, how to push their code, how to create a pull request on GitHub and more.



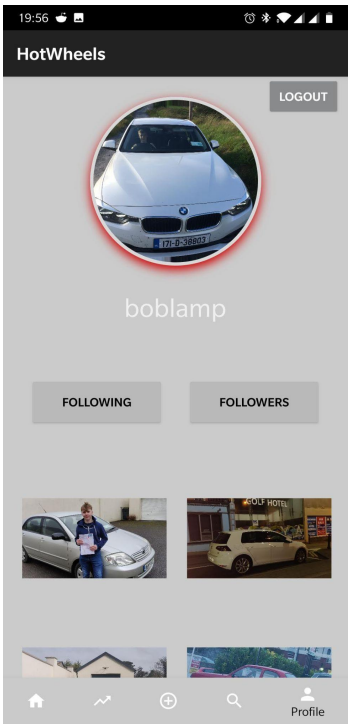
My branches

Links & Pictures

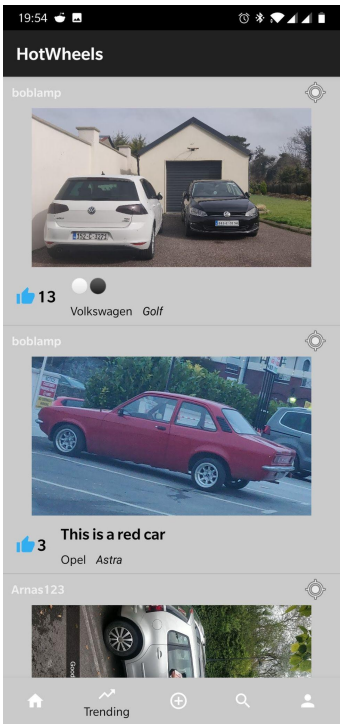
Group App Prototype (GitHub repository)

[HotWheels - GitHub Repository]

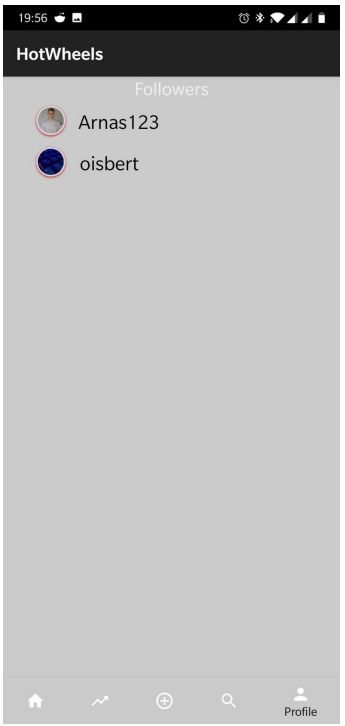
Profile Page



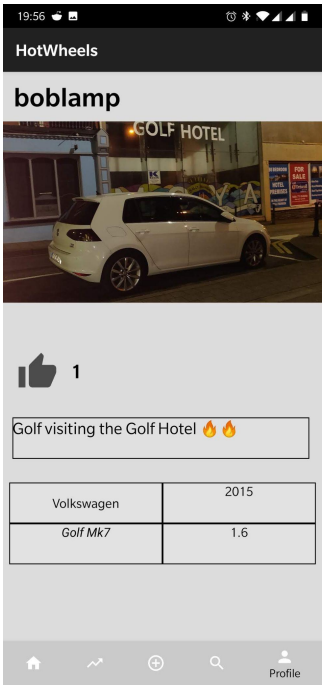
Home Page



Followers List



Post Page



Other user profile