Edinburgh Napier UNIVERSITY

Coursework Report

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1 Introduction

The aim of this report is to explain and justify the design decisions taken within the development of my application.
My application has been designed around Google's maps api[1] as a way for Scottish BMX riders to find an indoor skate-park to ride when it rains.
This app was inspired by the recent winter months making it almost impossible for our crew to ride outdoors and because of the relatively small number of indoor skate-parks in Scotland all of which catering to different riding styles it makes it necessary to at least see a picture of the park or know what to expect before you waste an hour driving somewhere that you will not be able to ride.
Currently the only way to search for skate-parks is through Google however it will only show the location without any images plus there is no way to filter for indoor locations rather than outdoor. This also neglects to give you an insight of the features in the park meaning it may not suit your riding style.
That is why I have implemented a search feature in my app where you can search for parks given your chosen discipline i.e. Park riding (for big ramps), Street riding (Grind boxes and banks) and parks for beginners (small accessible ramps) and for each skate-park plotted on the map there is a corresponding activity in which I have written an overview of the park, I have rated them based on each discipline of riding and have provided an image of the park.
This makes it far easier to find somewhere that you will enjoy plus with the addition of an intent taking you to Google maps navigation it makes it easier to find directions as well.

2 Software Design

The java for my application will consist of 3 main methods building upon different concepts.

Taking User's Location To implement this I will be following Google's maps API tutorial[1] in order to not only handle the permission to use GPS location being accepted but in order for my application to function without location permission as well.

Calculating Distance I will use the user's location in order to calculate the distance between the user and the chosen marker. this will then have to be passed through to the next activity in order to show it to the user in a text view. To do this I will use java's distanceTo method which calculates the crow flies distance from one location to another.

Intents I will use a plethora of intents to open different things throughout the application. They will mainly be used upon button presses to open another activity within the app for example to filter the markers shown on the map based on riding style or to show information about a skate-park. Within the skate-park page I will use an intent to open Google maps in order to navigate to the selected skate-park and another to open the park's web-site. If there are any more external applications which I feel will benefit user experience I will implement them in a similar way.

Figure 1: **Early Design** - The early design of my Application

3 Application Implementation

To begin with my application was based around Google's maps API. I followed Google's map implementation tutorial[1] to create a map which centered on your device's location and plotted the location of all of the indoor skate-parks in Scotland. My main issue with this early build was that the application had a large relatively ugly banner at the top of the application which I eventually removed making the app full screen. From here I was able to set an onClick method to each marker which allowed me to open new activities where I would go through each park in depth.
I wanted the app not only to make it easier to find skate-parks but to easily direct to them as well. To achieve this I set up an intent which opens up Google maps Navigation and directs you to the location of the skate-park using a URI.
I also wanted a suitable image to be shown alongside the description of the skate-park however images do not show you how the skate-park can be ridden. To showcase this I have linked each park's instagram page through an intent and a URI of the page.
I linked each park's website in the same way in order to see pricing and opening times. This opens the user's default browser (in my case Google chrome) with a URI of the URL.
The final feature I added was the home screen which allowed you to select which discipline of riding that you want to do which will only plot parks that fit that specific type of riding. At first I handled this through buttons but after negative user feedback I decided to look into using tiled images instead. To achieve this I implemented a grid view with 4 images from my personal camera roll which are all from the parks featured in the app and set an onClick method which depending on which image you have selected it will open the map with the corresponding markers on it.

Figure 2: **The Map Page** - The map showing all indoor skate-parks in Scotland

4 Implementation Evaluation

4.1 Against The Concept

While my application mainly mirrors the concept a few new features had to be added in. Because certain skate-parks are too large to show in just one image and a multitude of images would clutter the display, I decided to link the instagram page of each skate-park as Instagram is the widest used social media by BMX riders and skate-parks alike.
To avoid the need for constant updates every time that there is a price change or a change to the opening times I have also linked the website of each park. This should make researching each park far easier.

4.2 Comparison With The Competition

Currently there are only two ways to find skate-parks in Scotland. There is a Google search which will show most skate-parks in Scotland regardless of whether they are indoor or outdoor, it will show user reviews however these reviews are generally from parents based on accessibility rather than enthusiasts reviewing the park itself for for example "Kids had a fabulous time, only complaint is seating for spectators isn't brilliant.. but over all.. great fun place and some really lovely staff who play/ help and supervised kids" - Yvonne Connell's Google review of Zone 74[2].

This is the reason that I have decided to leave out user reviews as without someone reading each review to verify they are helpful before they go live, there is no way to verify how useful they will be.

The other application which will allow you to find skate-parks in Scotland is called Pro Addicts[3] and allows you to select whether you skate or ride bikes. This will narrow the skate-parks down to what is good for each. You can then later narrow this down by what features you would like to ride for example a box jump. While using this app I discovered that even though you can filter to include a feature what they accept as that is quite broad for example if you filter for a box jump something with a box jump of 3ft will show up alongside one of 6ft with no difference. It also does not allow you to show indoor only so the map is cluttered with outdoor skate-parks making it impossible to navigate.

This is why I decided not to search by feature but to search by discipline instead. I feel that my application fixes all of the problems of both of these applications as it is simplistic and easy to navigate, it has a meaningful review/overview of each skate-park and it still allows you to easily navigate to each park exactly like Google maps as it opens Google's navigation segment of their maps app.

I feel that this makes it the best of both applications and has enough new features that it will be essential for any Scottish BMX rider.

Figure 3: **the competition** - ProAddicts[3] map view showing all places to ride BMX in Scotland

4.3 Evaluation Against User Feedback

I have been taking feedback throughout the development of my application and have been listening to each issue or suggestion. The first bit of input that I received was that my initial colour scheme of orange and white while pleasing was not fitting with the theme of my application, being something to use on a rainy day, and that it did not match my application's logo being a light blue rain drop. I addressed these issues by swapping the colour scheme out to a more simplistic and elegant light blue and white which mirrored the colour of my application's logo, matched the water colour in the map and mirrored the colour of the Scottish flag which makes the theme of the app a lot clearer.

Another issue that was pointed out to me early on was that the standard grey buttons of android were ugly and did not fit the colour scheme. I later toyed with changing the look of them. I decided that the most aesthetically pleasing theme for them was to mimic the header of the page. This was met with positive reception.

The largest issue that was pointed out to me was that certain skate-park descriptions were a tad off. To remedy this I interviewed a multitude of riders asking them to rate the park on a 5 star rating scale for park, street and for beginner and advanced riding. These interviews fleshed out my park descriptions and my ratings. I feel that this counteracts the main problem pointed out by users which is the lack of user generated reviews. This was intentional however as I cannot think of an effective way to filter reviews to helpful reviews by enthusiasts.

4.4 Possible Improvements

If I were to market this application I would implement a few new features and open the app up to the whole of the UK with every indoor skate-park being documented.

To do this I would contact forums asking riders to review their local indoor parks. This would ensure that the reviews are genuine rider reviews as they would be generated by multiple riders and curated by myself. The only issue with this is that without users contacting me I would be uninformed of any changes or closures to the park. That is why the website and instagram of the parks will be linked.

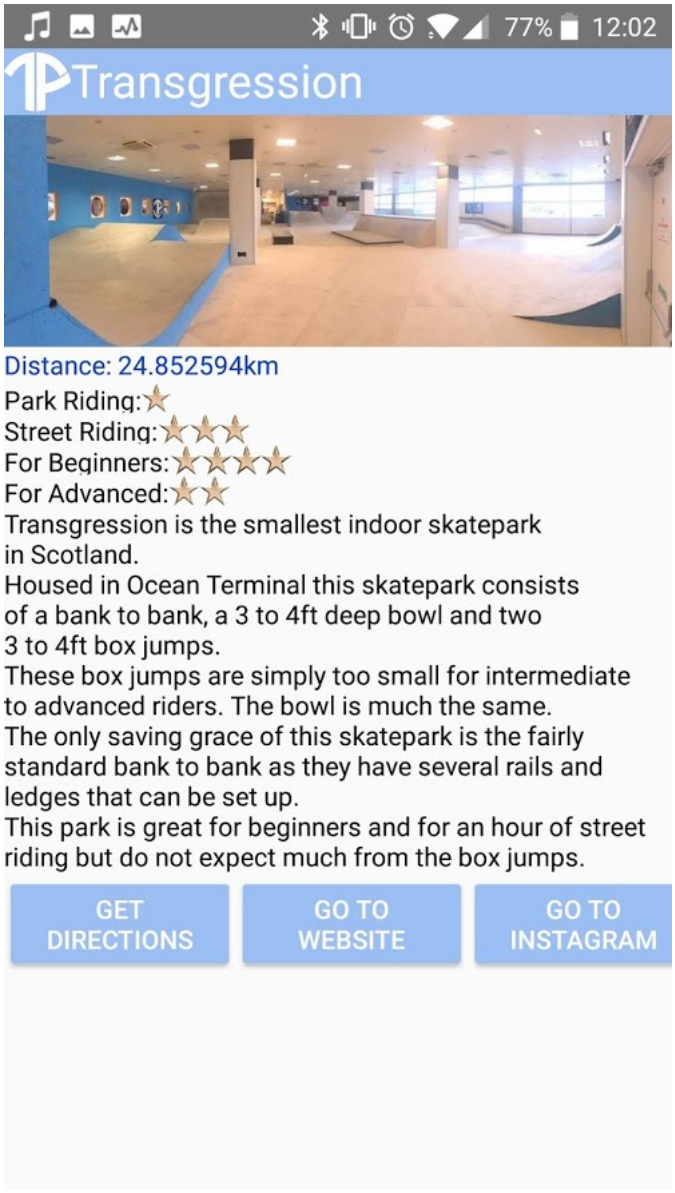

Figure 4: **skate-park page** - The descriptive page of Transgression Skatepark

5 Personal Evaluation

Throughout the development of my application I have faced with a plethora of issues. Most notably of which has been centering the map on the user's location. I started tackling this problem in the workbook however I encountered a multitude of errors. I was then instructed to search for Google's developer site which has tutorials on how to use the Google maps API. Instead of trying to implement this into the app that I had already written I decided to start from scratch just in case the errors were due to something else.
Once I had finished Google's tutorial I had a far greater understanding of how the API worked allowing me to start adding markers and changing the colour. I later decided to revert to the stock colour scheme as it is more familiar and aesthetically pleasing but the experimentation benefited my understanding of android apps as a whole.
Another issue that I faced was showing the distance away from each park on their activity.
To achieve this I calculated the distance when the marker was clicked. From here I had to research how to pass parameters between activities. I then placed an empty text view in the xml file of each park and populated that in the java file by retrieving the distance and converting it to a string. This gave me a greater idea of how intents work and made my functions such as opening instagram or getting directions far easier to learn.
The Final issue that I faced was in the design of the homepage. Initially the homepage was a series of buttons for each discipline. This was met with far from ideal user reception so I decided to replace these with images.
When I first tried to do this the images were all placed one below another and completely filled the page. I decided that this wasn't the design that I wanted so I decided to research a layout like Microsoft's tile view. I read up on tile views which appeared to be what I was looking for and after a bit of experimentation I was able to set an onClick method which took what image you were on and opened the corresponding Activity for example the Park Image opens up a map which only shows skate-parks that are good for park riding.
This gave me a far greater appreciation for UI design and has widened my skill set for both software design and the physical UI design.

References

[1] Google, "Select current place and show details on a map," 2018.

[2] Y. Connell, "Zone 74 review," 2017.

[3] ProAddicts, "Proaddicts: Bmx and skate spots," 2018.

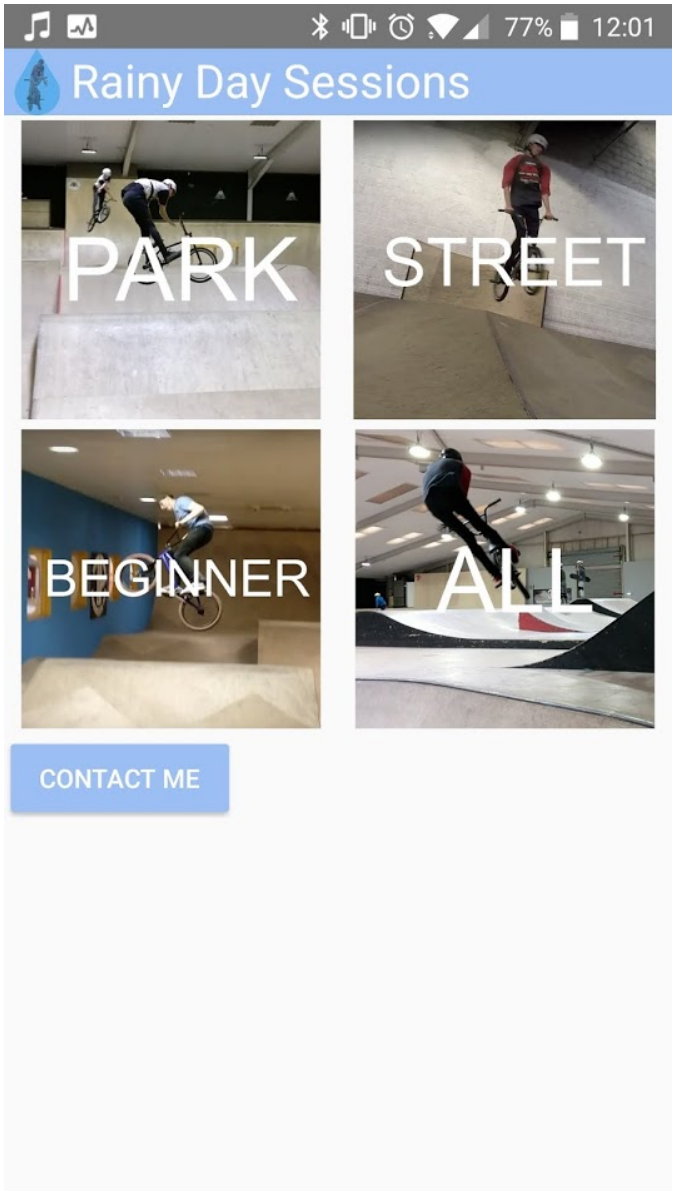

Figure 5: **Homepage** - The homepage of my application