John Nash

dublin bikes | DBS

Dublin Bikes Application

Mobile application development



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# Topics and Objectives

The aim of this project was to build an application that users of Dublin Bikes would use in conjunction with their journey. The app would be used after a journey had taken place to document it. This would include a starting/finishing location, journey time length, any pictures the user would like to upload and date of journey. Keen Bike riders could keep track of all their journeys for fitness purposes and avid users of the app/bike service could be given loyalty rewards in the future for certain milestones (5000 km travelled for example). The application also allows the user to view the bike stations/location coordinates for all bike stations in Dublin using the Dublin bike station location API.

In an age where people are becoming more and more conscious about their health/fitness, this Dublin Bikes app combines function with this. Users are encouraged to record their journeys and analyse the data as they choose fit to see if it matches their personal goals.

# Target Audience

The target audience would be young - middle aged professionals who work in traffic heavy areas of Dublin where the use of bikes has many advantages over, say using a car, for example. Dublin bike stations are mainly located in such areas. Most users of this application are more likely to be fitness conscious. Recordings of journeys every day for a week, for example, would then allow the user to calculate calories burned/time spent active etc. On average, bike users are more likely to be environmentally conscious and are actively trying to reduce their carbon footprint. Riding a bike is also considerably less expensive than maintaining a car so people on a budget would be more likely to use this app as they are seeking to reduce their life expenses. For this reason, the application would be free to download on the play store.

# Rationale behind Development Approach

The application was kept simple in design and approach as its core function is simple – record journeys, don’t add unnecessary functions or fields that ultimately will not interest the user. The app must allow documenting of journeys within a short timeframe – it should not take longer than 2-3 minutes. This would allow for documentation to take place directly after the journey. Users would be encouraged to do so as they may forget to do so at a later date.

The quick and straight forward nature of this app is designed to be used directly after a bike journey. Typically, a person with fitness as their main goal does not want to be bothered with any superfluous additions. The layout is kept simple and to the point to facilitate this. Users can login/register and then are taken directly to the main menu where a list of options becomes available – view stations, record journey, or edit profile information.

The app could also be used to check the location of bike stations at a moment’s notice. The location can be accessed through the Dublin Bike API and this even has a number displaying how many bikes are currently available.

# Description of the cloud services

Firebase was the cloud service I choose for the back end storage of my application. Firebase is provided by Google and allows integration with android studio. I was able to utilise firebase to allow users to login, register, upload/view photos and record journey/profile information. Firebase makes use of firebase storage that allows user images to be uploaded. I found this free service to be very user friendly and customizable to suit my needs. For ease of use, I did not require users to be re-enter login information when deploying photos to firebase but they must be logged in prior to reach this functionality. Various buttons are deployed in the app also to demonstrate logout and “save” functionality.

# Differences between prototype and final deliverable

My initial prototype of this application was quite basic was simply a login/register application that allowed users to record basic information on their journey, such as time and date. Originally, my registration page was asking for the user for too much information I decided. It asked for nationality, a username and even gender. I decided this information was unnecessary and the user may query why it was needed at all or if the data could be collected with the idea to be sold on at a later date. I now require only email and password to register.

My original prototype did not have any camera functionality as I did not have the knowledge at that point. I was able to incorporate this into my final deliverable.

The prototype did not incorporate use of any API and the user was not able to view rendered information as a result. For the final product however, I discovered how to access JSON API data eventually and allow the user to view basic information about all the bike stations in Dublin.

Originally, I tried to incorporate a SQL based database system into my application using the cousera template. I could not quite get it to function as I wanted so I decided to switch to firebase and I was glad I made this decision. I found Firebase simpler to use and google provide free storage of users/images.

The prototype and historical documentation of my app can be found below:

https://github.com/johnnash87/My\_Mobile\_App/commits/master

# Technologies/Techniques used

I used JSON file to read Dublin Bikes API about the Dublin bike stations scattered throughout Dublin.

I learned Java (having been familiar with C#) and was able to write code in android studio as a result.

The idea of the application was to have a central main menu page which allowed quick access to whatever function the user desired. 3 basic functions were decided and they are accessible through simple use of buttons.

I was able to use permissions and intents to open the camera function. The application can also allow users to upload photos directly from their phone in case they took a photo but weren’t able to upload it at that time.

I found toast messages very useful to relay quick snippets of information to the user. They have minimal effect on the apps function and I used these messages to state if photos were uploaded successfully or not. It keeps the user up to date and involved. Functions and processes in this application were kept lightweight and the user should not have to wait long for any task.

# Strengths and weaknesses

I think a big strength of my application is its simplicity and ease of use. In my opinion, an app like this needs to be responsive, lightweight and quick. A user can logon, select journey and upload a photo in seconds, which will please busy professionals who are always on the move. Something like recording a journey should be easy, require little to no thought and will increase the likelihood of use.

If the user was looking to find the location of a Dublin bikes app, they could scroll through the “view bike station” view and input the coordinates into google maps which would direct them towards the station. I also parsed the number of “number of bikes” available from the JSON file. This allows users to verify if a bike is available before they rush to the station.

The application does not render the API data in a great way however. Ideally, it would pinpoint the location of all the bike stations on google maps or similar map. The users should also be able to drop pins on google maps which would identify the starting/finishing locations of their bike journeys. An overall increased use of geolocation with this app would be needed as users are on the go typically, this is a weakness of my app.

More brand recognition with Dublin Bikes would be beneficial to reinforce the connection with the company itself. The application has little visual connection to Dublin Bikes apart from the app logo on the user’s phone.

The application does not also display all journey information recorded. Pictures can be viewed at time of upload and profile information can be viewed, but all the previous historical journeys cannot be viewed on a single page. This could frustrate users who were planning to rely on the application to monitor all their journeys and sum up their activity per week, for example.

If I were to redo this project, I would devote more time and effort into displaying the bike stations location on google maps through use of the latitude/longitude coordinates obtained from the API. Though my app is clearly lacking many aspects of a finished project, I learned a lot about android app development. I struggled at times and scrapped material I worked on for many hours, but I put forth my best effort I could within the time frame allowed.

Link to my Git: https://github.com/johnnash87/My\_Mobile\_App

# Appendix

Week 1 / 2 – Researched applications to see what I would like to carry into my application.

Week 3 / 4 – Build a simple login/register page, experimented with layouts and buttons

Week 5 – Build SQL database (which I later scrapped in favour of firebase)

Week 6 – Discovered and spent time learning about JSON files and rendering data to the screen.

Week 7 – Incorporated firebase into the application. Allowed registration, logon and uploading of photos.

Week 8 – Added camera functionality and restructured code. Added main menu page and improved overall design/flow of the app.

# Bibliography

*Used following video tutorials to assist in incorporating Firebase into my application:*

<https://www.youtube.com/watch?v=0NFwF7L-YA8>

https://www.youtube.com/watch?v=tJVBXCNtUuk

<https://www.youtube.com/watch?v=NjTs4lMkRM4>

Used coursera templates for my networking with android JSON activity.

Google maps API /code source: \*\* <https://developers.google.com/maps/documentation/android-api/marker> and https://github.com/hiepxuan2008/GoogleMapDirectionSimple

Dublin bikes logo: http://www.dublinbikes.ie/