Logo, company name

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# Coffee Cars and QR codes

Derek Reid

N00192978

Supervisor: Joachim Pietsch  
Second Reader: Mohammed Cherbatji

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DL836 BSc (Hons) in Creative Computing

# Abstract

The idea behind this project is to develop a Front and Back-end application that will allow users to connect with a Car community which is difficult to connect with through regular social media applications.  
  
The aim of the project is to construct a React based mobile first web application that a user could select a venue where car meets take place on a regular basis. The application will contain information of upcoming meets from different Coffee& Car groups throughout the country. The user can select an event in which the wish to attend and see who else from the community is going to attend. A user can decide to like a post or an image that a user has posted to the community.  
  
The purpose of the application is to allow users to get an insight of the car community and become an active member although they may not have a vehicle that has the street cred of vehicles that are usually shown when an activity takes place. The location of the venue will have a latitude and longitude reference and a possible google map location reference.

The application started as an inquiry to a Coffee & Car meet held in Bray. This meet is held the first Sunday of every month in the IDA business park just off the southern cross road, Bray. It became aware to me after attending this meet that some of the participants would show off their vehicles at other locations throughout the month in different parts of the country. At first it looked like an underground thing where there are no members of any organisation, only people with a shared interest in car culture and showing off their vehicle to a willing audience. Then it was apparent that these people would post on forums, location of meets and times, locations and invite members of the forum. The question is how do you gain access to the forum or even find out about it. My idea is to develop an application that is connected to a QR Code. The public that may have an interest can scan a select QR Code and be guided through it to gain access to this world of Cars/Coffee and new friendships. Car at the meet may have a sticker with said QR Code that can be scanned to allow the public join the community. The restaurant that is in the location can have a flyer on a notice board telling customers of upcoming events and the notice board may display a QR Code that tell customers when such car events take place.

The application started out as a paper prototype and was refined in cardboard before it was developed in a hi-fidelity prototype in Figma. The premiss is that a user would scan a QR Code and be brought to the mobile application when they can view upcoming events in the Coffee and Car community throughout the country. The application will also show other users of the application and the vehicles they own and show at car meets. Users can comment and like a post from other users in the community. A Database Dictionary was developed from an ERD to work out the relationship between aspects of the working application. This was then refined with the aid of my supervisors.

# Acknowledgements

I would like to thank my wife and family for all their support over the last four years in getting me to this stage of the creative computing hons degree course, it hasn’t been an easy road for me but it definitionally has not being an easy road for them. Secondly, I would like to thank my supervisor Joachim Pietism for his support and guidance throughout this process. Lastly, I would like to thank all the lecturer staff whom I have studied under over the last four years in IADT there guidance and support have gotten me to the place I am now.

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# Introduction

The overall aim of this project is to develop a web application using the MERN stack. The mobile and web application will try and connect the Coffee and Car community to offline persons outside their community. The application will be built using React and deployed using Reacts mobile development. The backend will be stored in a MongoDB database and hosted using Vercel. The application will be built using Visual Studio Code editor, written in React.

Technologies:

* MongoDB
* React
* Express
* AWS Bucket

Tools:

* Word
* Figma
* GitHub
* Visual Studio Code
* Journal (Hand-written)

Requirements

* Develop an interaction with the Coffee and cars community.
* QR Code development and implementation.

Design

* Mobile first application.
* Figma Prototype

Implementation

* React
* AWS Bucket
* MongoDb database

Testing

# 2 Requirements

## 2.1 Introduction

The purpose of the requirements phase is to allow for developers to work out what the application should be able to do. It is important to understand what the users would like the application to do rather than the developer deciding what is required.

-----------------------------------------------------------------------------------------------------------------------------------

 The Coffee Cars QR codes application should allow users to view upcoming Car events from a calendar of events. When the event is selected the user should be able to tag it and comment if they will attend or not. Find the location of an upcoming event with a possible google map reference to its location. A user can register for further uses of the application. A registered user can set up a profile. Create a placeholder for vehicle information that they own and images to boot. A flyer could be printed and posted in the coffee shop where the meet takes place. (People who use the) of the coffee shop could scan the QR Code and get details of upcoming Coffee and Car events.

## Requirements gathering

2.2.1 Similar applications

Look at and document three similar applications.  Be sure to include the following for each:

* Screen shots
* Descriptions
* Advantages
* Disadvantages

--------------------------------------------------------------------------------------------------------------------------------------  
A quick Google search for coffee and card brings a lot of Facebook and Instagram responses. There is a website called <https://www.carthrottle.com> and one from the RIAC, the Royal Irish Automobile Club <https://www.riac.ie> ----- Firstly, we will look at the two web application before we examine the social media power houses of Facebook and Instagram.  
After accepting a privacy notice in CarThrottle we are brought to a home page where the main screen is a YouTube link to a car meet that was held six years ago.A screenshot of a car

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Figure . CarThrottle cover page.

The website CarThrottle has a wonderful image of a Porsche 911gt from 2015. This image is a link to a You Tube video. The top left of the webpage has a burger menu which has a nice dropdown showing links to other parts of the web application.

Graphical user interface

Description automatically generated with medium confidence  
 Figure . CarThrottle Burger menu drop down.

The dropdown looks very pleasant, but the user must choose an option to proceed with viewing the web page. Although the web page was found using a Google search named “Coffee and Cars” when you select the home menu icon from the Burger dropdown menu it brings you too an up to date web application.

Graphical user interface, website

Description automatically generatedFigure . Car Throttle after selecting Home from Burger menu.

From the new homepage you can see that CarThrottle have Facebook and Instagram pages with a healthy YouTube subscriber base. This goes to show that the two power houses are not trusted to cover user involvement with their community.

|  |  |
| --- | --- |
| Heuristic Evaluation of www.carthrottle.com | Comment (+ Example if present) |
| Aesthetic and minimalist design | The visual aspect from the google result of coffee and cars is a clean and crisp web application. In the main part of the web page there is a button called “Car Spotting” where it invites users to engage with images of cars that are seen in other places then car meets. |
| The Bell Icon | The bell icon gives a notification when you revisit a page. This is a nice invite to join the community.Graphical user interface, text, application  Description automatically generated |
| Burger Menu Dropdown | The dropdown menu has several avenues to go down. The use of Icons make it clear to users to what they entail. |
| Consistency and standards | Consistent icons used throughout the site to represent points of interest. A simple colour palette that only has one colour with black and white. |
| Above the fold | The majority of the web-based pages use the above the fold philosophy of keeping it clean and invites the user to explore lower. |
| Minimal Navbar packed to the brim. | The Navbar looks minimal but holds many features such as burger menu, Notification, search bar, sign in, to name but a few. |
| Video page | This page includes list of videos using a card system that is clean and crisp. The repetition of cards and layout is very pleasing and easy to navigate. |
| Sign In | Sign in gives the option to sign in through Facebook |
| Job | It is obvious that there is good funding to this web application as production value to its content. |
| Overall | The overall aspect of the CarThrottel web application is of a well-planned, executed and delivered app. Users are encouraged to get into the community. |

 Figure . Heuristic Evaluation of CarThrottle

The other website that comes from a google search is <http://www.riac.ie/news/riac-cars-and-coffee-2022>. This front page looks very busy with an image of an old Alfa Romero with some text across the centre which works out to be navbar. Below the fold the webpage has some text and an image of some vintage cars in a shed. Below this a form to leave a reply to a comment that does not exist.

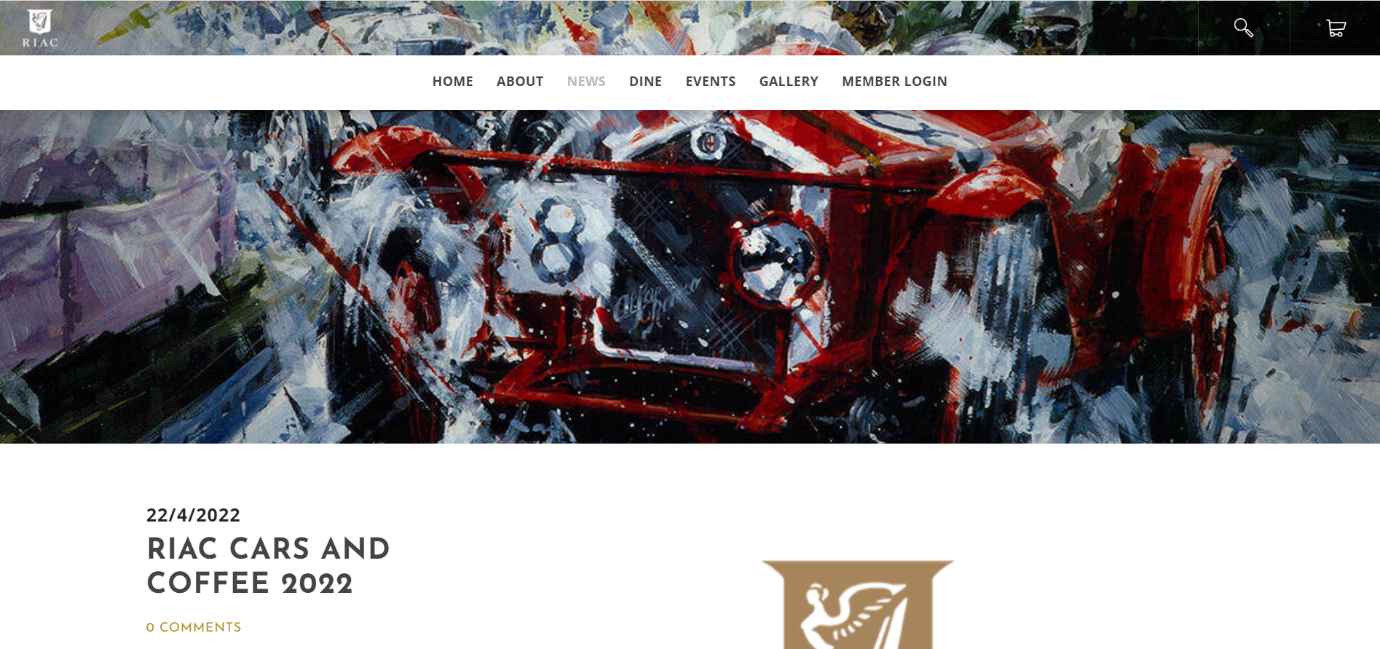


Figure . RIAC Coffee Cars Google response

A picture containing graphical user interface

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Figure . RIAC Below the Fold

|  |  |
| --- | --- |
| Heuristic Evaluation of www.riac.coffee-cars- | Comment (+ Example if present) |
| Aesthetic and minimalist design | The visual aspect from RIAC coffee cars is lazy. A fantastic image of a vintage car but very little else. |
| The Search Icon | The search icon turns the Navbar into a blank strip of white with a search icon and the text search. No blinking text indicator. |
| Below the fold | Below the fold the webpage gives some text and an image, very clean but does not inspire the user to proceed into the website |
| Consistency and standards | Little use of icons used throughout the site. A simple colour palette that only has one colour with black and white. The images used are busy and distract the eye. |
| Navbar packed to the brim. | The Navbar has a lot of text components in it, although they are well laid out, they are not inviting. |
| Overall | The overall aspect of the RIAC web application is a webpage with little information and not inviting. |

Figure . RAIC coffee cars web presentation.

* + 1. Interviews

Conduct interviews with 3 or 4 users to find out what the important features for them for the app are.  There may be various issues that arise in multiple interviews. These can be grouped together into a number of themes.

* + 1. Survey

You can create a questionnaire and use the results of the questionnaire as a basis for finding out requirements.

* 1. Requirements modelling
     1. Personas

These are fictional characters to help the developer understand the users’ needs. They also help identify who the relevant users are.

* + 1. Functional requirements

Some of the functional requirements for the web application are registering a user/admin, then login capabilities. The application will have users predetermined as non-admins while select others will have admin prevails through the Mongo DB database. Regular registered users will have the ability to login and view some upcoming events.

|  |  |  |
| --- | --- | --- |
| # | Functional Requirement | Priority |
| 1 | As a user, I want to be able to sign up and log in to the application. | High |
| 2 | As an administrator, I want to be able to add new data to the database through the application. | High |
| 3 | As a user I would like to be given the location of a car meet. | High |
| 4 | As a user I would like to know the starting time of an event. |  |
| 5 | As a user I would like to view single user. | High |
| 6 | As a user, being able to make a positive comment on an image. | High |
| 7 | As a user I would like to view images of vehicles. | Medium |
| 8 | As a user/admin, I want to remove non positive comments from users. | Medium |
| 9 | As a user, I want to see upcoming events. | Medium |
| 10 | As a user, I would like to see some information before signing up. | Medium |
| 11 | As a user, being able to see the location of the venue. | Medium |
| 12 | As a user, to knowing when the activity ends. | Low |
| 13 |  | Low |
|  |  |  |
|  |  |  |

* + 1. Non-functional requirements

These are requirements which if not met do not stop the application from working, but which mean that the application is not working as well as it should.  They are usually based on issues such as:

* Usability
* Performance
* Security

* + 1. Use Case Diagrams

Consists of actors and use cases.  You should document each individual use case.

* 1. Feasibility

This section describes which technologies are planned to be used in the development of the application.  It then explains if there are any issues in terms of the technical feasibility of the project, for example, if there are two different types of software which may have compatibility issues.

* 1. Conclusion

Write a couple of paragraphs summing up the chapter.  Explain what area your project is about.  Describe what the chapter has discussed.

# Design

## 3.1 Introduction

The design of the Coffee Cars and QR Codes is a mobile first web application that is built using the MERN stack. The application is designed to be user friendly and easy to navigate. The external part of this project is the design of flyers that contain QR Codes to connect offline users interested in Cars and Car restoration/modification. The mobile app will have a QR Codes scanner available to it for users of the application to scan induvial vehicles to get detailed information on the built of the vehicle.

## 3.2 Program Design

### 3.2.1 Technologies

The process started with pen and paper. The first idea came from folding a sheet of paper three times. This gives a sheet of eight equal rectangles, very similar to a mobile phone screen. A rough sketch of a phone screen is drawn and what is going to being displayed on then. A basic layout of the mobile application’s home screen, login details, main viewpoint is sketched on the paper.  
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------Insert figure here of paper prototype--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------  
After that process we moved onto a Lo-fidelity prototype, which involved having a A4 notepad and folding the pages in half portrait style and drawing the outline of a mobile phone on each face. The prototype is drawn onto the first page and then the process a user may take when they press an imaginary button or screen swipe. This starts to iron out any faults in the application before a Hi-fidelity prototype is developed.  
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------Insert lo-fidelity prototype figure here----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------  
Next I got some cardboard and cut out some mobile phone shapes and added a top layer so I could slide better drawn images of the application onto cards and slide them into the screen. This was used to show test cases where the application would bring them when they would interact with the application.  
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------Insert figure of Hi-fidelity prototype---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------  
The next design stage is to refine the application with the use of Figma. Figma is a collaborative web application for design. It is used to design web and mobile applications. Figma can be shared between team members, where each member can critique, comment and design parts of the design.  
John Montayne ran a workshop showing us some of the fundamentals of Figma. While in the workshop, John explained the importance of making components and getting the smaller details correct, as this will make our workflow better. At this stage I looked at a colour scheme and decided on the following ones.

Figure . Colour scheme mark 1.

In discussion with my supervisor, it was decided that there were too many Primary colours in the colour scheme so I fixed on the following scheme. This may be altered in the future and will be added to this section and will be noted as such.

Figure . Colour scheme after discussion with supervisor.

The other main item that was selected at this time was the typeface. The type of font that was selected is Roboto. For the Headings in the application Roboto Mono with a weight of 400 and a size of 40px and a line height of 52px. The secondary type of font to compliment the heading font was Roboto Slab with a similar weight and a size of 32px with a line height of 42.2px. Although this is what is decided on the size and weight can be adjusted to suit the area it is being placed in. The font used in the mobile application would be similar but a smaller size and line height.

Heading Text,

Secondary Text,

Figure . Text family used in mobile and web application.

Text

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Figure . Screen shot of Figma design.

I also started to use GitHub as a repository at this time. GitHub is mainly used for software developers to stage their code. It is a great way to develop an application as each time a commit is pushed to the tree a new version of the application is created. A developer can visit older stages of code through GitHub’s technology. For me I wanted to show the development stages of Figma. Instead of filing a final version, with GitHub I could save various stages of the design process and share these with my supervisor.

Figure GitHub Link https://github.com/IADT-projects/y4-project-Derek-n00192978

When my supervisor was pleased with the development of my design then and only then do I start to code. For this I will be using Visual Studio Code. Visual Studio Code is a source-code editor developed and owned by Microsoft. It is a wonderful application for writing, editing, debugging, and refining mobile and desktop applications. It supports many languages, such as HTML, VUE, React, Angular, C#, Java and JavaScript to mention just a few.

### 3.2.2 Structure of React

### 3.2.3 Design Patterns

### 3.2.4 Business rules

* An Event has a Latitude/Longitude.
* Admin can create an Event.
* A user can attend an Event.
* A user can have a Vehicle.
* A user can follow another User. / follower.
* A user can have a follower. / followee.
* A user can have a profile image.
* A vehicle can have many images.
* A vehicle can be liked.
* An Event can be commented on.
* A user can make a comment on a vehicle.
* A user can like a comment from another user.
* A vehicle can have a type.

### 

### 3.2.5 Database design

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table Name | Attribute | Contents | Type | Format | Range | Required | PK or FK | FK |
| user | id | user id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | email | email | VARCHAR (25) | Xxxx xxx | Max 25 Char |  |  |  |
|  | password | password | VARCHAR (25) | Xxxx xxx | Max 25 Char |  |  |  |
|  | fName | John | VARCHAR (25) | Xxxx xxx | Max Char 25 |  |  |  |
|  | admin | Yes/no | Boolean |  |  |  |  |  |
|  | profile\_image | Profile\_image | VARCHAR (225) | Xxxx xxx | Mac Char 225 |  |  |  |
| event | id | Event id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | Date/time | date/time | Date/Time | 12/02/2023 |  |  |  |  |
|  | latitude | Latitude number | VARCHAR (50) | Xxxx Xxx | Max 50 Char |  |  |  |
|  | longitude | Longitude number | VARCHAR (50) | Xxxx xxx | Max 50 Char |  |  |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user\_id |
|  | description | Description of event | VARCHAR (225) | Xxxx xxx | Max 225 Char |  |  |  |
|  | title | title of event | VARCHAR (50) | Xxxx xxx | Max 50 Char |  |  |  |
|  | event\_image | image details | VARCHAR (50) | Xxxx xxx | Max 50 Char |  |  |  |
| vehicle | id | vehicle id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | make | Ford | VARCHAR (50) | xxxxx | Max 50 Char |  |  |  |
|  | model | ranger | VARCHAR (25) | Xxxx xxx | MAX 25 Char | Y |  |  |
|  | year | 2014 | VARCHAR (10) | xxxxx | Max 10 Char |  |  |  |
|  | fuel | electric | VARCHAR (25) | Xxxx xxx | MAX 25 Char |  |  |  |
|  | description | Description of vehicle | VARCHAR (225) | Xxxx xxx | Max 225 Char |  |  |  |
|  | forSale | Yes/no | Boolean | Xxxx xxx |  |  |  |  |
|  | user\_id | User id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user id |
|  | type\_id | type\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | type id |
| follower | id | follower id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | follower\_id | user id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | follower id |
|  | followee\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | followee id |
| event\_calendar | id | event-calendar id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | text | Event calendar\_details | VARCHAR (225) | Xxxx xxx | MAX CHAR 255 |  |  |  |
|  | Date/time | Date/time of event | Date/time | 23/02/23 |  |  |  |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user id |
|  | event\_id | event\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | event id |
| comment\_like | id | comment\_like\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user id |
|  | comment\_id | comment\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | commentid |
| Vehicle\_like | id | image\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK | User id |
|  | vehicle\_id | vehicle\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | vehicle id |
| event\_comment\_like | event\_comment\_like\_id | event\_comment\_like\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user id |
|  | comment\_id | comment\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | comment id |
| comment | id | comment\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | text | Event calendar\_details | VARCHAR (225) | Xxxx xxx | MAX CHAR 255 |  |  |  |
|  | Date/time | Date/time of event | Date/time | 23/02/23 |  |  |  |  |
|  | user\_id | user\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | user id |
|  | vehicle\_id | vehicle\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | vehicle id |
| type | \_id | type\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | name | Tractor | VARCHAR (50) | Xxxx | Max 50 Char |  |  |  |
| image | \_id | image\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | PK |  |
|  | name | Tractor | VARCHAR (50) | Xxxx | Max 50 Char |  |  |  |
|  | vehicle\_id | vehicle\_id number | BIGINT[UNSIGED] | 101 | 0-184467440737095 | Y | FK | vehicle id |

Figure . Database dictionary

### User Flow Diagram

ERD Version 2 08/02/2023

Diagram

Description automatically generated

Figure . ERD Version 2 08/02/2023

## Conclusion

The work undertaken is this section is the foundation to the work for the backend application framework. Having ironed out all issues with the supervisors has helped make the next process work a lot easier. Getting the Prototype image in Figma helps to visualize what the application can do but also an understanding of what is required to be developed in the background to support the frontend application. Talking with Mohammed made the second version of the ERD more simplified that the original ERD developed by myself.

# Implementation

## Introduction

## 4.2 Scrum Methodology

## Development environment

## 4.3 Sprint 1

Major Project – DL836 BSc in Creative Computing

Record of Sprint Review meeting between student and supervisor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student** | Derek Reid N000192978 | | **Supervisor** | Joachim Pietsch |
| Sprint #2 | Design sprint 1 |  | Date | 17/01/2023 – 24/01/2023 |
| **Items discussed at this meeting:**  In this sprint we began to look at the design elements of the mobile application Sue held a workshop on starting a design to work towards, In it she discussed the working of crazy 8, where you fold a sheet of paper into 8 squares and design a screen on each section of the page. We also talked about the flow of a mobile application and what to look for in a good working application. John Montayne held a Figma workshop and gave us an example of making Components. Grainne Carroll uploaded a number of video tutorials on Teams for us to follow about Figma.  In our weekly meeting Joachim looked at the progress of the mobile design and gave some insights to making it mare streamline and user friendly. | | | | |
| **Activities and/or Backlog items complete:**  In this Sprint I have worked on the design elements and with Figma have worked on a basic layout and refined the colour scheme. Worked on a paper prototype and flash cards to detail how the application flows from one screen to another. This will be an ongoing item. | | | | |
| **Activities and/or Backlog items to complete prior to next review:**  I must investigate how the likes of WhatsApp use a QR code scanner to work from within the application. Refine the footer to remove the profile tab and possible have a calendar instead. Investigate the register/login methods and the access to a camera/location in an application. | | | | |
| I, the student, confirm that the above is an accurate record of the meeting.  Signature of student: 24/01/2023 | | | | |
| I, the supervisor, confirm that the above is an accurate record of the meeting.  Signature of supervisor: | | | | |

## 4.5 Sprint 2

Major Project – DL836 BSc in Creative Computing

Record of Sprint Review meeting between student and supervisor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student** | Derek Reid N000192978 | | **Supervisor** | Joachim Pietsch |
| Sprint #3 | Implementation 1 |  | Date | 31/01/2023 – 16/02/2023 |
| **Items discussed at this meeting:**  In this sprint the application was looked at in depth, from developing a prototype in Figma that ran through the process of clicking on a mobile screen to simulate a walk through event. Developing a ERD and Database dictionary so work can commence on the backend application. looking a Design patterns for react to learn what a design pattern is. Learning about conpoments. | | | | |
| **Activities and/or Backlog items complete:**  In this sprint I have completed a Figma mobile, and Web based application design with a walk through for this prototype. The Express backend has begun now that I have complete the ERD and Database Dictionary. A MongoDB has been setup and is ready to connect to an insomnia program. | | | | |
| **Activities and/or Backlog items to complete prior to next review:**  The design pattern to be complete. Develop the first implementation of the working prototype of the backend. Look at a LinkedIn learning course advised by my supervisor to help with the design pattern. | | | | |
| I, the student, confirm that the above is an accurate record of the meeting.  Signature of student: 28/02/2023 | | | | |
| I, the supervisor, confirm that the above is an accurate record of the meeting.  Signature of supervisor: | | | | |

4.6 Sprint 3

Major Project – DL836 BSc in Creative Computing

Record of Sprint Review meeting between student and supervisor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student** | Derek Reid N000192978 | | **Supervisor** | Joachim Pietsch |
| Sprint #4 | Design 2 |  | Date | 28/02/2023 – 13/03/2023 |
| **Items discussed at this meeting:** | | | | |
| **Activities and/or Backlog items complete:** | | | | |
| **Activities and/or Backlog items to complete prior to next review:** | | | | |
| I, the student, confirm that the above is an accurate record of the meeting.  Signature of student: 28/02/2023 | | | | |
| I, the supervisor, confirm that the above is an accurate record of the meeting.  Signature of supervisor: | | | | |

### 4.6.1 Goal

### 4.6.2 Item 1

### 4.6.3 Item 2

## 4.7 Sprint 3

### 4.7.1 Goal

### 4.7.2 Item 1

### 4.7.3 Item 2

## 4.8 Sprint 4

### 4.8.1 Goal

### 4.8.2 Item 1

### 4.8.3 Item 2

## 4.9 Sprint 5

### 4.9.1 Goal

### 4.9.2 Item 1

### 4.9.3 Item 2

## 4.10 Sprint 6

### 4.10.1 Goal

### 4.10.2 Item 1

### 4.10.3 Item 2

## 4.11 Sprint 7

### 4.11.1 Goal

### 4.11.2 Item 1

### 4.11.3 Item 2

## 4.12 Sprint 8

### 4.12.1 Goal

### 4.12.2 Item 1

### 4.12.3 Item 2

## 4.13 Sprint 9

### 4.13.1 Goal

### 4.13.2 Item 1

### 4.13.3 Item 2

## 4.14 Conclusion

# Testing

## Introduction

## Functional Testing

### Navigation

### CRUD

### Discussion of Functional Testing

## User Testing

## Conclusion

# Project Management

## Introduction

## Proposal

## Requirements

## Design

## Implementation

## Testing

## SCRUM Methodology

## Project Management Tools

### Figma

Description

Include Diagrams

How it worked

### GitHub

Description

How it is used

How it worked in practice

### Journal

## Reflection

# Business Opportunities

## Introduction

### Conclusion

# Conclusion of Major Project

One paragraph on the background, the overall aim and the goals of the project.

One paragraph on the technologies used in the project.

Research

Design

Implementation

Testing

Overall result

Project management

What was learnt

How the project could be further developed

### Your views on the project

### Completing a large software development project

### Working with a supervisor

### Technical skills

### Further competencies and skills

## 8.2 Conclusion

## 