

National College of Ireland
BSc in Computing – Software Systems
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Technical Report



National
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Contents

1. Executive Summary	5
2. Introduction	6
2.1 Background	6
2.2 Aims	6
2.3 Technologies	7
3. System	8
3.1 Requirements	8
3.1.1 Functional Requirements	8
3.1.2 Data Requirements	13
3.1.3 User Requirements	13
3.1.4 Environmental Requirements	13
3.1.5 Usability Requirements	13
3.2 Design and Architecture	14
3.3 Implementation	15
3.4 Testing	20
3.4.1 Test Findings	25
3.5 Graphical User Interface (GUI)	28
4. Conclusions	35
5. Further Development and Research	36
6. Bibliography	37
7. Appendix	38
7.1 Project Proposal	38
7.2 Requirement Specification	43
7.3 Monthly Log Book	66

National College of Ireland

CIPD Assignment / Project Submission Sheet – 2014/2015

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1. Executive Summary

The main objective of this project is to provide a platform for its users to become more knowledgeable about what recipes they could create, which include or incorporates specific ingredients chosen by them. Users have the ability to include up to 5 different ingredients they wish to find a recipe for and they also have a further choice of excluding up to two specific ingredients that they do not wish to see in any recipe. Aside from building recipes, the user will be welcomed with a social network of foodies that can interact with each other by uploading pictures of what they've made to the 'Food Feed', and making new friends by sending them a friend request. Furthermore, the user will be allowed to comment and like their friends pictures as they will have a separate feed of only their friends activities. In addition to the recipe making side of the platform, the user will have the option of doing no cooking and clicking on the geolocation enabled map and finding a nice restaurant or takeaway near their location.

2. Introduction

2.1 Background

I have decided to make this application mainly because I love cooking and trying to make new dishes. I thought that from a technical approach, the project seemed to be within a standard that I should be able to reach with some hard work. I have saw some websites that have the ingredient maker but I have found them difficult or unenjoyable to work with. I want to build an application that will have the perfect mix of creative functionality and an enjoyable user experience. The inspiration for the food feed does stem from Instagram, we've all seen the people who post nothing but pictures of food they've made and with this app, I'm giving people like this the perfect tools to explore their inner chef!

2.2 Aims

The aim of my project is to create an application that will help users create new dishes, discover new food and become more knowledgeable about preparing and cooking for themselves. The main feature of this application will be to ask the user to enter all the ingredients they currently have (or wish to cook with) and then return all the possible dishes that can be made with some or all of these ingredients. The next most important feature for me to have is a 'food feed'. This will let the user view other people's creations and from there, be able to click on that users profile to view what else they've made and send them a friend request if desired. Along with creating new dishes for yourself and discovering what other people are making, the last feature I want to include is 'Discover'. This feature is here to use when you're feeling like letting someone else do the cooking!

It will take your location and find all the local restaurants and takeaways in your area and you'll be able to decide on where to go from there.

2.3 Technologies

I am using a PHP framework called Laravel to develop. It provides me with multiple prebuilt classes that helps me to implement things that I may not be able to do by developing purely on a simple text editor. I have created a test environment by using a virtual machine and running my project off localhost. I am also using a number of API's to help create a numerous features. Google Maps will be integrated with Google Places and the Yummly API. The latter will be used to handle recipe requests and individual ingredient entries. The former two will be used to create a discover feature which will output nearby eateries for the user.

3. System

3.1 Requirements

- The user must have an account created to activate their session.
- The user must enter valid ingredients to use the create feature.
- The user must enable the browser to track their location

3.1.1 Functional requirements

Requirements will be listed & described via importance

1. *User sessions*

Description & Priority

- This is used to log into the site and start the users session. Starting a user session enables the user to access the sites features. This ranks as a high priority as the social media side of the site would be irrelevant if the site was being used by anonymous users.

Requirement Activation

- The session will start when the user enters an email and matching password into the login form.

Technical Issues

- Spelling mistakes and case sensitive passwords will prohibit the user from successfully logging in when they might think they have entered correct details.

Risks

- A user will not be able to log in regardless of correct details if there has been a break in connection to the database.

Dependencies with other requirements

- Without a user session being started, no other requirement would be accessible.

This makes the user sessions, the number one priority when using the site.

Code Segment

- This snippet of code will show us how the user session is started. The system checks for errors in the users input fields and outputs an inconsistencies it finds.

If it doesn't find any, it proceeds to create a 'session token' for the user.

```
<h3>Sign in</h3>
<div class="row">
  <div class="col-lg-6">
    <form class="form-vertical" role="form" method="post" action="{{ route('auth.signin') }}">
      <div class="form-group{{ $errors->has('email') ? ' has-error' : '' }}">
        <label for="email" class="control-label">Email</label>
        <input type="text" name="email" class="form-control" id="email">
        @if ($errors->has('email'))
          <span class="help-block">{{ $errors->first('email') }}</span>
        @endif
      </div>
      <div class="form-group{{ $errors->has('password') ? ' has-error' : '' }}">
        <label for="password" class="control-label">Password</label>
        <input type="password" name="password" class="form-control" id="password">
        @if ($errors->has('password'))
          <span class="help-block">{{ $errors->first('password') }}</span>
        @endif
      </div>
      <div class="checkbox">
        <label>
          <input type="checkbox" name="remember"> Remember me
        </label>
      </div>
      <div class="form-group">
        <button type="submit" class="btn btn-default">Sign in</button>
      </div>
      <input type="hidden" name="_token" value="{{ Session::token() }}">
    </form>
  </div>
</div>
```

2. *Correct ingredients must be entered into 'Create' to generate results*

Description & Priority

- The user must enter legible ingredients into the form to generate results.

Requirement Activation

- The user will click submit under the create form to view their recipes. The recipes will be returned if the user abides by this requirement.

Technical Issues

- The results are being generated from a third party API called Yummly. If for any reason, the API is having technical issues of its own, then they will also reflect on my site.

Risks

- Users with poor spelling may get frustrated with this requirement as it may cause them decreased functionality.

Dependencies with other requirements

- A user session must be created to access this requirement

Code Segment

- This snippet of code outlines how the backend communicates with the Yummly API to generate a result. (For the purposes of this screenshot, I chopped up the request to make it more readable).

```

public function getResult(Request $request)
{
    $query = $request->input('query');
    $query2 = $request->input('query2');
    $query3 = $request->input('query3');
    $exclude = $request->input('exclude');

    $request = str_replace(' ', '', $query);
    $request = str_replace(' ', '', $query2);
    $request = str_replace(' ', '', $query3);
    $request = str_replace(' ', '', $exclude);

    $client = new Client();
    $res = $client->get(
        'http://api.yummly.com/v1/api/recipes?_app_id=3d78e036&_app_key=2636fe20dd187b190bb3bc471a4fa618&q=
        '.$query.' + '.$query2.' + '.$query3.'&requirePictures=true&excludedIngredient[]='.$exclude.'
        &maxResult=50&paginate=10', ['auth' => ['user', 'pass']]);
    $body = json_decode($res->getBody(), TRUE);
    // { "type": "User", ...

    return view('create.results')
        ->with('body', $body);
}
}

```

3. Geolocation services

Description & Priority

- The user will have their location tracked by the browser. This will find the users current latitude & longitude, which will be read by the google places API to return local restaurants and takeaways in the vicinity.

Requirement Activation

- The user must click on the discover page and accept the popup box which informs them that their location will be accessed from the browser.

Technical Issues

- The results are being generated from a third party API, Google. If for any reason, the API is having technical issues of its own, then they will also reflect on my site.

Risks

- The risk of including a feature that only tracks location but doesn't allow the user to search for a place may not go down well with users.

- Another risk is there being no eateries near a user in a particular area.

This could affect rural users the most.

Dependencies with other requirements

- A user session must be created to access this requirement.

Code Segment

- This snippet of code outlines how the map is generated on the page and how the user's location is requested from the code. Also included is a call to the functions that generate the nearby data on the map

```
<body onload="initMap()">
    <div id="map"></div>

    <script>
        function initMap() {
            var mapDiv = document.getElementById('map');
            var map = new google.maps.Map(mapDiv, {
                center: {lat: 55.257, lng: -7.397},
                zoom: 15
            });
            var infoWindow = new google.maps.InfoWindow({map: map});

            // Try HTML5 geolocation.
            if (navigator.geolocation) {
                navigator.geolocation.getCurrentPosition(function(position) {
                    var pos = {
                        lat: position.coords.latitude,
                        lng: position.coords.longitude
                    };

                    infoWindow.setPosition(pos);
                    infoWindow.setContent('Location found.');
```

3.1.2 Data requirements

All data inputted to this system must abide by how the system was set up. Valid emails must be entered. Furthermore, for the site to be used as it was intended, a massive requirement would be for users to use the tools at their disposal for what they were intended. This includes uploading only pictures of food and refraining from bullying/abuse in the commenting section.

3.1.3 User requirements

The user is required to have a valid email and password to login, this will start their session which enables them to access any feature they please. The user must have access to a browser with an internet connection to reach the site.

3.1.4 Environmental requirements

This application will use an internet browser capable of running http requests, processing PHP, HTML5, JavaScript and adhering to bootstrap CSS configurations. The sites UAT environment was run in Safari.

3.1.5 Usability Requirements

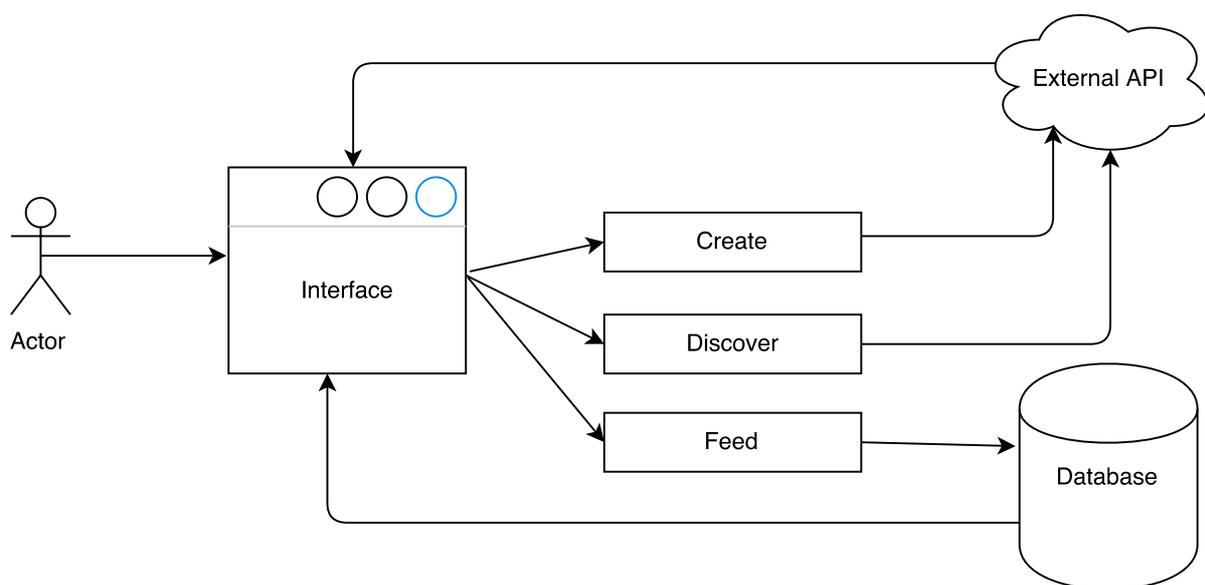
The first and foremost usability requirement is that the website is very user friendly. To ensure this, the website has taken a very minimalistic approach to design. The navigation bar remains the same throughout the site, making it very easy for a user to jump between whichever pages they please.

3.2 Design and Architecture

This project was built using a PHP framework called Laravel. The core functionality of the application come from PHP based models and controllers. These functions can be included anywhere on the site to be used over and over. In the Laravel framework, the frontend is primarily based in the 'views' folder. The views represent different pages on the site and they all extend the navigation bar and the base template for the site. This keeps the sites style looking identical on every page.

A number of other technologies were used to implement various features throughout the site. HTML 5 was used to display the content to the user, JavaScript and JQuery were used for features such as the drag and drop image uploads and parsing JSON data from the API call in the create feature.

The website used the bootstrap package to gain its sleek, well finished look. Bootstrap provided easy manipulation of the websites CSS and has lifted the look of the project to another level. Below, I will outline a simplistic architecture that will handle the basic functionality of the application.



3.3 Implementation

Implementation on this project was difficult in certain areas on this project. The most difficult of these areas was the social media side to the site. It was very difficult because it required quite a lot of functions to be made and stored in the 'user' model folder. These functions are responsible for performing social media based tasks and ensuring they can be used unanimously amongst users. Before I could attempt to implement these functions, there was a lot of logical planning and quite a lot of independent learning through online tutorials

Upon visiting the home page, the system will determine if a session has started by checking a simple if else statement. If it has, then it will return content. If not, it will return a welcome message. The content is displayed on the home page from image paths stored in the database. I have created a function in our home controller that queries the database, performing a GET request for the image table. I then use this function to query the image table for the filenames of the pictures. Lastly, an unordered list is used with a little bit of styling to create the content.

HomeController.php

```
public function index()
{
    $images = DB::table('images')->get();

    return view('home')
        ->with('images', $images);
}
```

home.blade.php

```
<ul>
  @foreach ($images as $image)
    <li>
      <img src= "{{ asset('uploads/' . $image->filename) }}" alt="...">
    </li>
  @endforeach
</ul>
```

Moving on to the Food Feed, we are greeted with the image uploads and the content of user friends. The upload field is from a library called dropzone and it is implemented through JavaScript. I have created a JavaScript function that handles the request of an image being uploaded, when triggered it will send the file to be processed in the controller. In the controller I have defined where I want to store the actual picture, I have renamed the picture to something random and I have created an upload success function to let the user know everything was uploaded ok.

timeline/index.blade.php

```
<script type="text/javascript">
  var token = "{{ Session::token() }}";
  Dropzone.autoDiscover = false;
  var myDropzone = new Dropzone("div#dropzoneFileUpload", {
    url: "{{ route('image.post') }}",
    params: {
      _token: token
    }
  });
  Dropzone.options.myAwesomeDropzone = {
    paramName: "file", // The name that will be used to transfer the file
    maxSize: 2, // MB
    addRemoveLinks: true,
    accept: function(file, done) {
    },
  };
</script>
```

ImageController.php

```
public function postImage(Request $request) {

    $this->validate($request, [
        'file' => 'image|max:4000',
    ]);

    $input = Input::all();

    $destinationPath = 'uploads'; // upload path
    $extension = Input::file('file')->getClientOriginalExtension(); // getting
    $fileName = rand(11111, 99999) . '.' . $extension; // renaming image
    $upload_success = Input::file('file')->move($destinationPath, $fileName);

    Auth::user()->images()->create([
        'filename' => $fileName,
    ]);

    if ($upload_success) {
        return Response::json('success', 200);
    } else {
        return Response::json('error', 400);
    }
}
```

Next we have the Create page. I have created a simple form that asks users to input three ingredients name query, query2 and query3. I have also asked for an excluded ingredient called exclude. I pass all of these value into a http request which is sent to the Yummly API. I JSON decode the body and pluck array to display the content I wish in the results file. In the results file you can see that I'm going to use content from the \$body response and I'm using an array called 'matches'. This is where I find the recipes, ratings and pictures. Lastly, I create an unordered list and call the various objects I want to use.

CreateController.php (chopped up request for viewing purposes)

```
public function getResult(Request $request)
{
    $query = $request->input('query');
    $query2 = $request->input('query2');
    $query3 = $request->input('query3');
    $exclude = $request->input('exclude');

    $request = str_replace(' ', '', $query);
    $request = str_replace(' ', '', $query2);
    $request = str_replace(' ', '', $query3);
    $request = str_replace(' ', '', $exclude);

    $client = new Client();
    $res = $client->get(
        'http://api.yummly.com/v1/api/recipes?_app_id=3d78e036&_app_key=2636fe20dd187b190bb3bc471a4fa618&q='
        . $query . ' ' . $query2 . ' ' . $query3 . '&requirePictures=true&excludedIngredient[]='. $exclude . '
        &maxResult=50&paginate=10', ['auth' => ['user', 'pass']]);
    $body = json_decode($res->getBody(), TRUE);
    // { "type": "User", ....

    return view('create.results')
        ->with('body', $body);
}
}
```

create/results.blade.php

```
div class = "row">
@foreach ($body['matches'] as $recipe)
<div class = "col-sm-6 col-md-3">
    <div href = "#" class = "thumbnail" style="min-height:550px;height:50px;overflow-y:auto;">
        <u>
            <h4>{{ $recipe['recipeName'] }}</h4>

            <div>
                @foreach ($recipe['imageUrlsBySize'] as $image)
                <img src= "{{{ $image }}" alt="Recipe Image">
                @endforeach
                <h4>Rating: {{ $recipe['rating'] }}/5</h4>
            </div>

            <div>
                <h4><u>Ingredients</u></h4>

                @foreach ($recipe['ingredients'] as $ingredients)
                <p>{{ $ingredients }}</p>
                @endforeach

            </div>
        </u>
    </div>
</div>
@endforeach
```

My last feature, Discover is implemented using the Google Maps API along with the Google Places API.

I have created the body to load the map as soon as the page is accessed. Using geolocation, I have found the users location by pinpointing their latitude and longitude. This will give me a variable I've called 'pos'.

Once the variable is created, I can create other functions that need a location to work. I have here, made a function to find nearby places. Google Places have a predefined list of places you can choose to search for and I chose restaurants, takeaways and delivery places.

discover/index.blade.php (creating pos variable)

```
if (navigator.geolocation) {
    navigator.geolocation.getCurrentPosition(function(position) {
        var pos = {
            lat: position.coords.latitude,
            lng: position.coords.longitude
        };

        infoWindow.setPosition(pos);
        infoWindow.setContent('Location found.');
```

```
map.setCenter(pos);
addNearByPlaces(pos);
createMarker(pos);
```

finding nearby places

```
function addNearByPlaces(pos) {
    var nearByService = new google.maps.places.PlacesService(map);
    var request = {
        location: pos,
        radius: 1000,
        types: ['restaurant', 'meal_delivery', 'meal_takeaway']
    };
    nearByService.nearbySearch(request, handleNearBySearchResults);
}
```

3.4 Testing

The following test has been carried out using a client who has never before seen this web application. My aim is to get a grasp of how easy the website is to use for a user. My client is a 20 years old and her name is Paula. Throughout the session, I will document myself by using **bold italics** and the participant as regular font.

Hi Paula, today we'll be testing a web site that I've been working on so that I can get an understanding of what it's like for people to use. I'd like to make it very clear that you cannot do anything wrong in this test, if something goes wrong it will not be a fault of yours. I'd like to hear exactly what you think so please feel free to say whatever pops into your head when you're using the website. Feel free to ask me any questions as we go along but for the most part, I'm going to leave you use the site by yourself. Do you have any questions before we get started?

- No, it's all very clear.

Before we get started, I'm going to ask you a few questions so that we can get a better knowledge of your familiarity with web applications and any technical skills you may have. Firstly, what do you do all day? Are you in full time employment?

- I'm a full time student. I work weekends in a hotel.

What do you study in college? Is it a tough course?

- I'm studying a Bachelor in Deaf Studies. It's a tough course but I find it really enjoyable.

Ok great, can you tell me roughly how much time per week you spend on the internet? This can involve web browsing, checking emails, being productive etc.

- Yes I spend about 3 hours a day on it, mostly using social media like Instagram and Facebook. I spend a little bit of time checking emails, mostly to do with college.

Do you have any favourite websites?

- I read a lot of online blogs but my favourite website is probably Instagram.

I'm going to call out a list of web technologies, can you tell me if you've ever heard of any of them or what they are used for? PHP, HTML, JavaScript, API, Bootstrap.

- I don't know what bootstrap is but I have heard of the rest of them. I think JavaScript is how people write code and an API is how to put twitter or something like that on a different website.

Thanks, let's start looking at the website (I now open Foodie on the browser).

I'm just going to ask you to look at this screen for little while and I want you to tell me what you think of it.

- Ok. I like the minimalistic design, the tagline is short and sweet but I don't really know what's going on here. I'm presuming it's a food website but there's no pictures or anything nice to look at.

Go ahead and try sign yourself into the site and similarly to last time, pause and take a look about before you click anything.

- I better register for an account by the looks of things. This is actually pretty straight forward. Oh, an error. Its saying I didn't enter a long enough password. Ok I'm registered now. I'm going to click sign in. Wow this looks really good. I like how I can see lots of different pictures of food rather than scrolling through a long page. I like how these pictures expand when I click them

If you were at home, what would be the first thing that you would click on?

- Definitely one of these pictures! The garlic bread looks delicious, I really like like how these pictures expand when I click them.

Alright, now we're going to try and do some specific tasks. Firstly, I'd like to see if you can find any other users on the website from this account you've created.

- By clicking on friends. Oh it says I have no friends, that makes sense. I'm going to write a name into this search box instead. I found someone called Liam Barkley when searched for 'Liam' in the search bar. His page looks nice, there's a lot of pictures on here. I'm going to like that steak he made.

How do you think you'd be able stay connected with this user?

- By adding him as a friend. That was easy! Hopefully he accepts.

Can you now click on the Food Feed and tell me what you see and what you want to do?

- This looks like where I can upload pictures. The mouse icon turns into a little glove when I hover over the image so I guess I'll click here. My directory pops up, I'm going to choose this picture of peppers because it's the only thing that looks like food in my saved files! It gave me a big tick over the image, I'm guessing that means it's been uploaded ok.

Ok that's great can I ask you to now go to the Create page and again tell me everything that goes through your head.

- Judging by the forms I'm guessing this is where I make a recipe? The page is pretty blank and it doesn't really give me an incentive to do anything apart from the one line of text above the forms. I'm going to enter some ingredients in here and see what happens. ***(At this point Paula enters ingredients and clicks submit without entering an excluded ingredient. This causes an error to occur. I explain to her that she found a bug that has made its way to the beta version. We continue the test by entering a full query.)*** I really like how this is displayed, there's so much variety from entering only a couple of ingredients. I've never seen anything like some of these, they look really nice. The picture is a great help because I can see what it looks like when cooked!

Alright this will be the last feature I'll ask you to use for me. Click on the Discover feature please and tell me how it is for you.

- This is a little bit slow at loading. I like how the browser asks you for your location first before tracking where you are.

I like the animation of all the knives and forks dropping onto the map! This is really handy! It might be a little irrelevant if I were using it at home because I know all the local takeaways, but for people in new places I think it would be really handy!

Before we finish up, is there any final comments you would like to make? This can include any or multiple of the following. The layout, functionality, the purpose of the app etc.

- I really liked how simple it was to move back and forth between the pages, all of the headings at the top make sense and there wasn't too many there for me to lose interest in.

Thanks for your time Paula, the session is now completed.

- It was my pleasure. Thanks!

3.4.1 Test Findings

From this test I was able to measure user satisfaction, effectiveness of the application and efficiency of the application. Our user did not have a great knowledge of web technologies background, she was however very interested in social media sites which made me very interested in her opinion of my application. As she was testing the beta version of the project, I was expecting a few complaints over the general CSS of the site. Paula was quick to point out that she liked the minimalistic design of the web site but in some places it could have done with pictures to help encourage her to do the functionality that has been set in place for the user.

Homepage – this was a hit in the test. The user was very satisfied when they were welcomed with multiple images they could click on and enlarge. Paula commented on how looking at these images and clicking on them would take her attention over anything on the navigation bar. This is good because I wanted to provide a very attractive feature to welcome the user to the site.

Food Feed – This was somewhat a hit in the test, but some small changes will have to be applied before the site goes live. As I have been developing using dummy data, this test session has shown me that I need to pay some more attention to the details of pages before a user has made any friends. At the minute, the site is not making it attractive to the user to go and find friends and add them. I will have to add some more details to my if else statements to combat this shortcoming. The overall efficiency of how easy it was to upload a photo for the user was reassuring and it will not take much to tweak this feature for the better.

Create – Similarly to the Food Feed, this has fallen down in how it was delivered to the user. As it is my main feature, I will need to encourage users to try it from the get go. I could do this by adding pictures on the login screen to advertise it. I also need to make it clearer to the user what exactly to do. Paula is a young woman who had the correct assumption that the text fields were there to enter information into. An older user or less internet savvy users would have struggled here. Paula also found a bug that escaped my test environment and found its way to the beta version. This was embarrassing, but none the less I'm happy it was found before the project goes live. When she was able to access the recipes, she loved the simplistic design of them. She liked how they were all spread out on the one page on scrollable sliders and how she didn't have to click back and forth into one recipe after another. They were also visually pleasing for her. This was all good feedback for me.

Discover – The map did not initialise very quickly when Paula clicked on the page. We had done this test in a coffee shop where the Wi-Fi wasn't great. This is not an excuse but more so a realisation that the application was not developed thinking of users with poor internet connection. This is an issue that will not be viable to tackle before the deadline but it is definitely something I will have an interest in looking at in the future. Aside from the slow loading, she quite liked the feature. As we were doing the test in a coffee shop, she like being able to see everywhere she could eat nearby. She did however, comment on the irrelevance this feature would have for her at home as she already knows all her local restaurants. I took this information on board and I may add a search function so a user can search an area they are thinking about going for dinner.

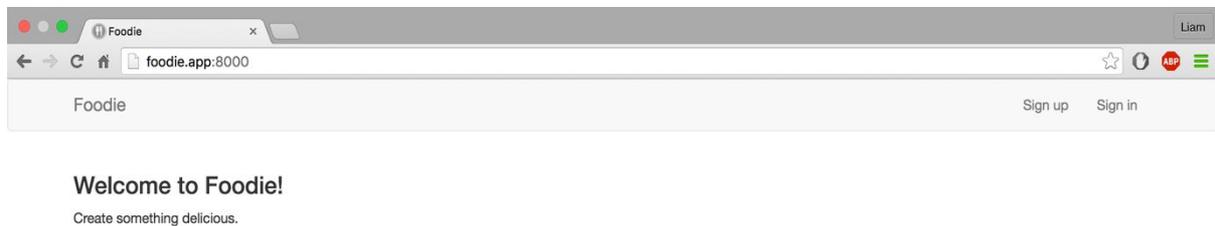
All in all, this was a very fulfilling exercise. There was nothing drastically wrong with the application and it showed real potential in being of a standard that would have a shot of going mainstream once the rough edges were smoothed off.

3.5 Graphical User Interface (GUI) Layout

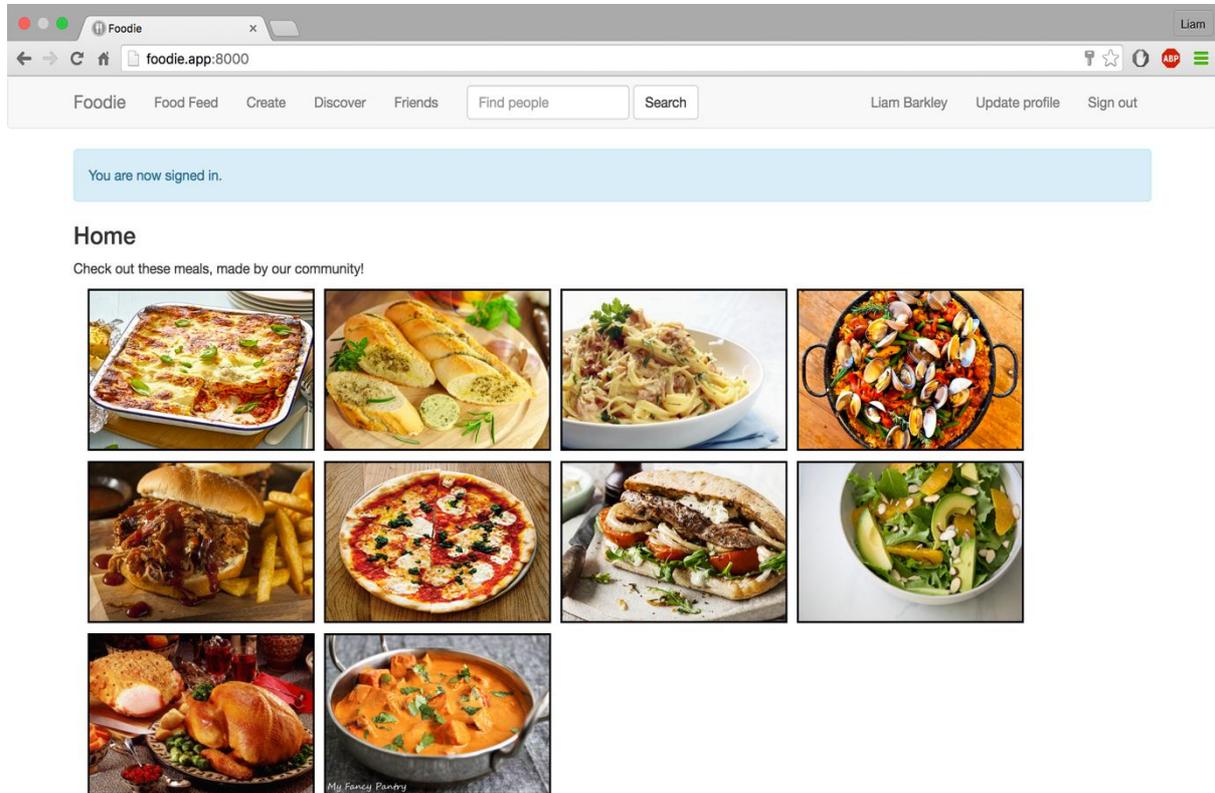
The following screenshots are taken from a beta version of the project. The final version may look a little different.

Home Screen

These are the home screens, the first is displayed to everyone who doesn't have an active session. Users have the option to sign in or sign up.



The second home screen is displayed after the user logs in. Its purpose is to display pictures uploaded from different users on the site. Users will have the ability to click on the name linked to the picture and view that persons profile.



Create

This is the create page, the user will input their desired ingredients and any ingredients they may not want to use.

Foodie Food Feed Create Discover Friends Find people Search Liam Barkley Update profile Sign out

Create

Enter your ingredients here!

Ingredient 1

Ingredient 2

Ingredient 3

Don't want something in your recipe? Exclude it here!

Excluded ingredient

Search

The users selected ingredients will be displayed with a picture, a rating out of 5 and the ingredients it takes to make the returned dish.

Foodie

foodie.app:8000/create/results?query=Ham&query2=Turkey&query3=Stuffing&exclude=Carrot

Foodie Food Feed Create Discover Friends Find people Search Cathal Condon Update profile Sign out

Country Bread Stuffing with Smoked Ham, Goat Cheese, and Dried Cherries

Rating: 5/5
Ingredients
dried tart cherries
country white bread
olive oil
chopped fresh thyme
large garlic cloves
butter
finely chopped onion
celery
ham
chopped green bell pepper

Chicken Stuffed With Ham And Cheese

Rating: 4/5
Ingredients
ham
hard cheese
eggs
cream
white bread
bell pepper
parsley
salt
pepper
hen
chicken meat

Corn Bread and Ham Stuffing with Caramelized Apples and Fennel

Rating: 5/5
Ingredients
unsalted butter
extra-virgin olive oil
ham
fennel bulb
granny smith apples
leeks
kosher salt
freshly ground pepper
stuffing
sliced green onions

Apple, Leek, and Sage Stuffing

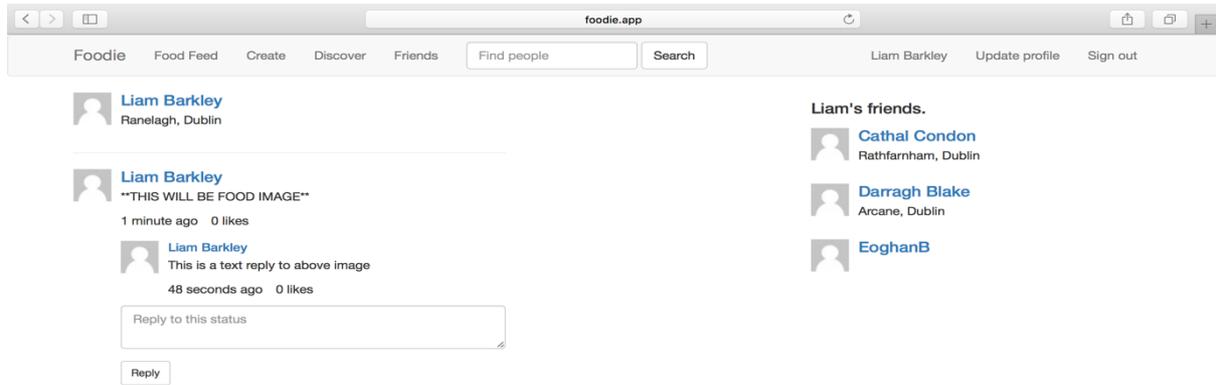

Creole-Stuffed Turkey


Prosciutto & Fig Stuffing


Ham and Cheese Stuffed Crepe

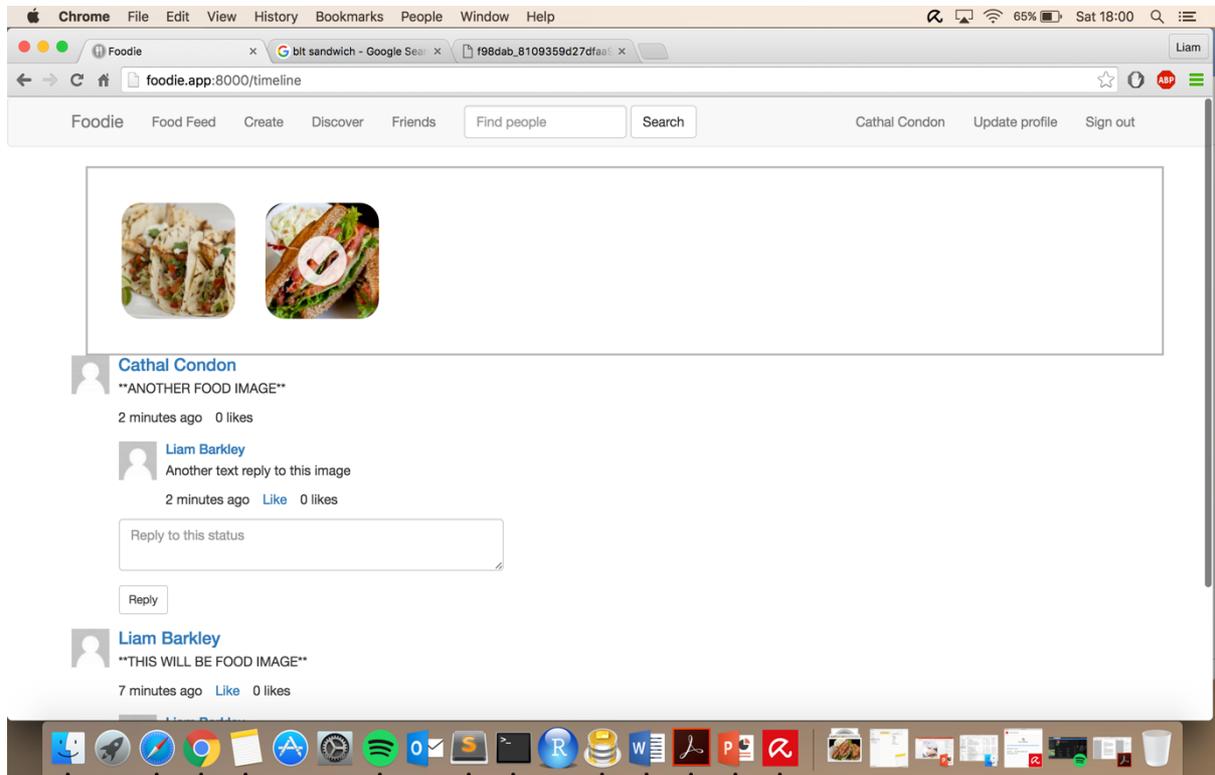

Profile

On the profile page, there will be a feed of the users uploaded images accompanied with a text reply (if any). The user will be able to see a preview of their friends on this page too.



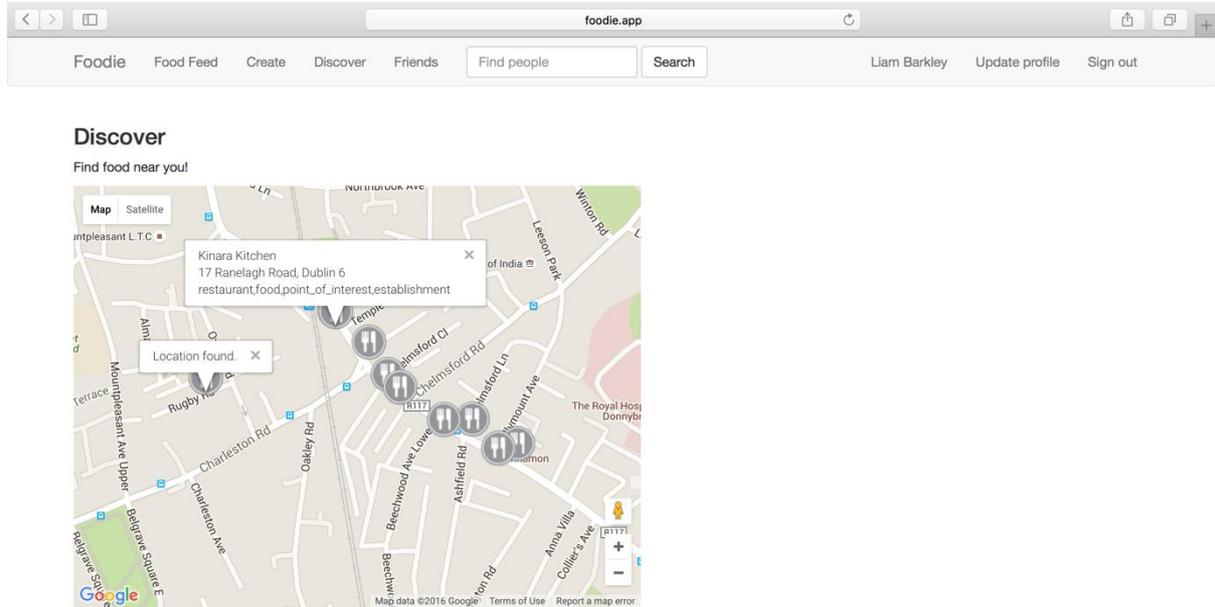
Food Feed

The food feed is where the user can upload images of something they've created and they can also see what their friends have made. The user will be able to like and comment on all of their friends activity here.



Discover

The discover page takes the users location and returns nearby restaurants and takeaways. In this example we can see the users location being found and the local restaurants and takeaways being returned.



4. Conclusions

I have enjoyed making this application both as a developer and as a user for the future. Foodie has pushed me further than I thought imaginable and I am very pleased with the final product. I had a fair amount of web technologies experience beforehand, but this project has excelled me above and beyond what I thought my limitations were. I used the Laravel framework to develop which was a great decision, it helped speed up the development in lots of routine areas that would have had me creating lots of basic helper classes. I have one regret worth mentioning in this conclusion, I was not happy with how I couldn't find a solution to save the ingredient data to the database in a logical, efficient way as they were always a different array size which would have cause me querying problems when making requests. This will be something I will definitely address in future work and I am very confident in this application building into a solid platform with real potential to be a commercial success.

5. Further development or research

There are a number of things I would like to expand on with this application. The first would be making a mobile application. I think this would be the stepping stone the application would need to become a very useful app to many people. It would also mean the features of the application are much easier for a user to access and use. Being mobile would bring greater functionality to the likes of Discover and Create.

The next most important thing for me to research is how to make the application accessible to users over all networks. I want the application to respond the same over someone using their phone as a hotspot for internet and another using 100mb of broadband. It is very frustrating for me to see users not get the same experience as others because they have a poor internet connection.

Lastly, I would have to inquire into upgrading my API plans. The Yummly plan I'm on now only accepts 30,000 calls before it is deprecated and Google requires you to let them know if your using their services for a private project or a public application. Upgrading these plans will be a costly venture and I would want to have my other further developments met before I could consider expanding my application like this.

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7. Appendix

7.1 Project Proposal

- **Objectives**

The basic concept of my project is to create an application that will help users create new dishes, discover new food and become more knowledgeable about preparing and cooking for themselves. The main feature of this application will be to ask the user to enter all the ingredients they currently have (or wish to cook with) and then return all the possible dishes they can make with these ingredients. I will add a refiner into the search which will let the user return dishes with one, two or three ingredients missing. The next most important feature for me to have is a 'food feed'. This will let the user view other people's creations (or what they've created with a new found recipe!). I may add in a 'like' or 'up-vote' function, but I don't think it's a necessity at the minute. I don't want my app to be a food version of instagram, I want it to be slightly cleverer than that. Along with creating new dishes for yourself and discovering what other people are making, the last feature I want to include in 'food finder'. This feature is here to use when you're feeling like letting someone else do the cooking! It will take your location and find all the local restaurants and takeaways in your area and you'll be able to decide on where to go from there.

Functionality summary

- Create via entered ingredients
- View your profile (page containing dishes user has made)
- Food Feed (page containing dishes created by community)
- Food Finder (page containing local restaurants and takeaways near the user)

- About (How to use the website etc.)

- **Background**

I have decided to make this application mainly because I love cooking and trying to make new dishes. I thought that from a technical approach, the project seemed to be within a standard that I should be able to reach with some hard work. I have seen some websites that have the ingredient maker but I have found them difficult or unenjoyable to work with. I want to build an application that will have the perfect mix of creative functionality and an enjoyable user experience. The inspiration for the food feed does stem from Instagram, we've all seen the people who post nothing but pictures of food they've made and with this app, I'm giving people like this the perfect tools to explore their inner chef!

- **Technical Approach**

At this stage of the year and at this stage of the project, I am still very much still within the planning stage. I have considered multiple languages that could work well for this project but have not decided on one for certain yet. I would prefer to make this application exclusively to mobile which is leaning me heavily towards creating it on Android. I have already downloaded Android Studio and it seems relatively nice to work with. The main reason I want the app to be mobile exclusive is the appeal of having an upload via camera/gallery to server.

Research

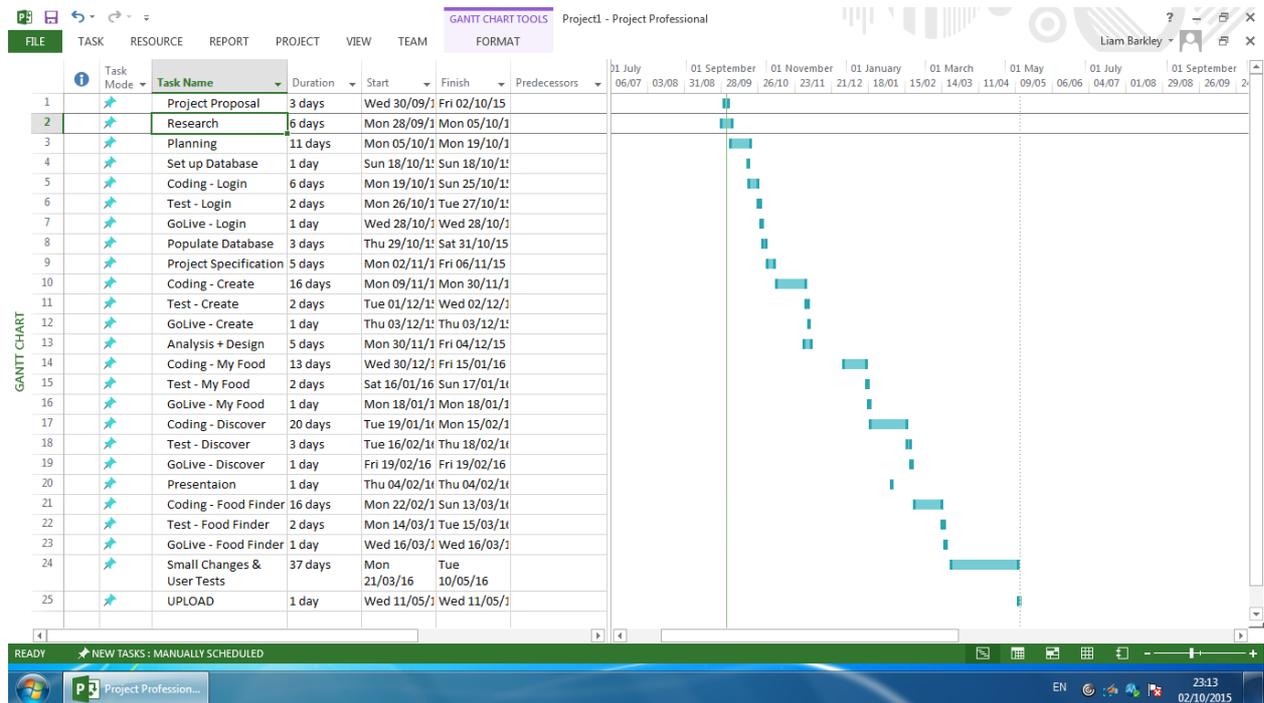
I will have a great deal more research to do before I attempt to start coding. I will be relying heavily on

- Online tutorials - plurasight, YouTube
- Books – I have found a book called ‘Android Programming – The Big Nerd Ranch Guide’ which has had multiple very good reviews from programmers of all skill levels. I have a few cookbooks with simple recipes that I will use as initial dishes that can be searched for. I am also confident I will find multiple books of use in NCI’s library.
- IDE – Android Studio. I’m looking into eclipse but I like the look of Android Studio more.

• Special resources required

Yelp API & Google Maps API for restaurants for Food Finder. Year subscription for a database

• Project Plan



• Technical Details

I'm still researching possibilities. Current draft of details look like Java and XML to be developed in Android Studio

• Evaluation

I will evaluate the system with a series of system tests. I intend on making a Use Case which will highlight every requirement of the app and I will begin testing stage by stage when development of the area is completed. Multiple users will be created for testing and I have considered making a development environment and a UAT environment so that once a stage of the application passes all tests, it will go live and will not be affected until a newer version of the app is tested successfully and installed. After I am happy with the system testing, I will have a few end users test it via general use.

This shouldn't highlight any significant bugs because they should have been picked up by the system tests. It will however give me some much needed feedback on what the experience of the app is like for a new user and if there is any small changes that would improve the overall experience.

Liam Barkley 02/10/15

7.2 Requirements Specification

Introduction

- **Purpose**

The purpose of this document is to set out the requirements for the development of a recipe sharing through social media mobile application. The intended customers are every person who loves food, cooking, and discovering new ways to cook.

- **Project Scope**

The scope of the project is to develop a mobile application that will create a community for users to share and find food dishes via recipes & pictures. The system shall make use of a mobile application that will provide the mechanics for a responsive, convenient way of accessing the content. I was in contact with Damien Mac Namara (my project supervisor) and Dermot Fleming (Project manager at my work placement company). After speaking to these people, I was able to draw up a list of requirements for my project

- Login – The user must create a profile to have the ability to contribute to the community.
- Create – Allows a user to enter ingredients they wish to cook with into a recipe finder and all possible dishes that use these ingredients will be returned

- My Food – Allows the user to access all previous recipes/pictures they've created.
- Food Feed – Allows the user to access recipes/pictures submitted by other users
- Food Finder – Takes users location and displays restaurants and takeaway in close proximity

• **User Requirements Definition**

The main objective of this project is to implement the requirements I've outlined above, whilst also creating a user friendly experience for the clients. The user friendly requirements will be implemented via small tweaks to the core functionality such as in the create section, the user shouldn't have to type out the entire word of the ingredient they are trying to submit, a suggested clickable word will appear after a few letters are typed. This will avoid any errors that could come about from poor spelling and will speed up the process of getting to your desired recipe.

- The user must have an android device.
- The user must have Foodie downloaded onto their device.
- The user must have a valid email address.

• **Requirements Specification**

• **Physical requirements**

The application will be used generally in the home by people looking to make themselves a meal via in app instructions.

- **Functional requirements**

Requirements will be listed & described via importance

8. *Internet connection*

Description & Priority

- The user must have an internet connection to be able to access content.

Requirement Activation

- The connection will start whenever the application is opened by the user

Technical Issues

- The technical issue is quite obvious, if there is no internet then there will be no access to the application

Use Case

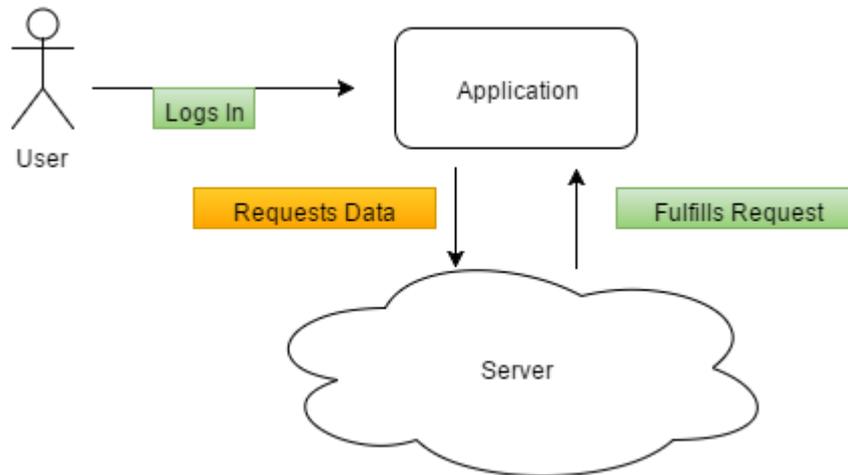
Scope

The scope of this use case is to connect to the internet

Description

This use case describes the way in which the application connects to the internet

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode.

Activation

This use case starts when the user opens the application, enters their details and logs in

Main flow

- The system provides the user with a box to enter username and password
- The user enters username and password
- The system sends entered credentials to database (via internet)
- The user gets logged in

Alternate flow

- The system provides the user with a box to enter username and password

- The user enters username and password
- The system sends entered credentials to database (via internet)
- The system rejects unrecognised credentials and does not log user in.

Exceptional flow

- The system provides the user with a box to enter username and password
- The user enters username and password
- The system sends entered credentials to database (via internet)
- User is returned 'No internet connection detected' error message
- Login fails

Termination

The system presents the home page

Post condition

The system goes into a wait state

9. *Application must connect to database*

Description & Priority

- An active database description must be available for the user to be able to use all the features of the application.

Requirement Activation

- The user will be prompted to login when the application is opened. Upon logging in, the user will gain access to database content.

Technical Issues

- Database errors may arise if chosen server is unreliable. Hopefully this will be a low risk, but it will always be a potential problem with an app that relies on the use of a server

Use Case

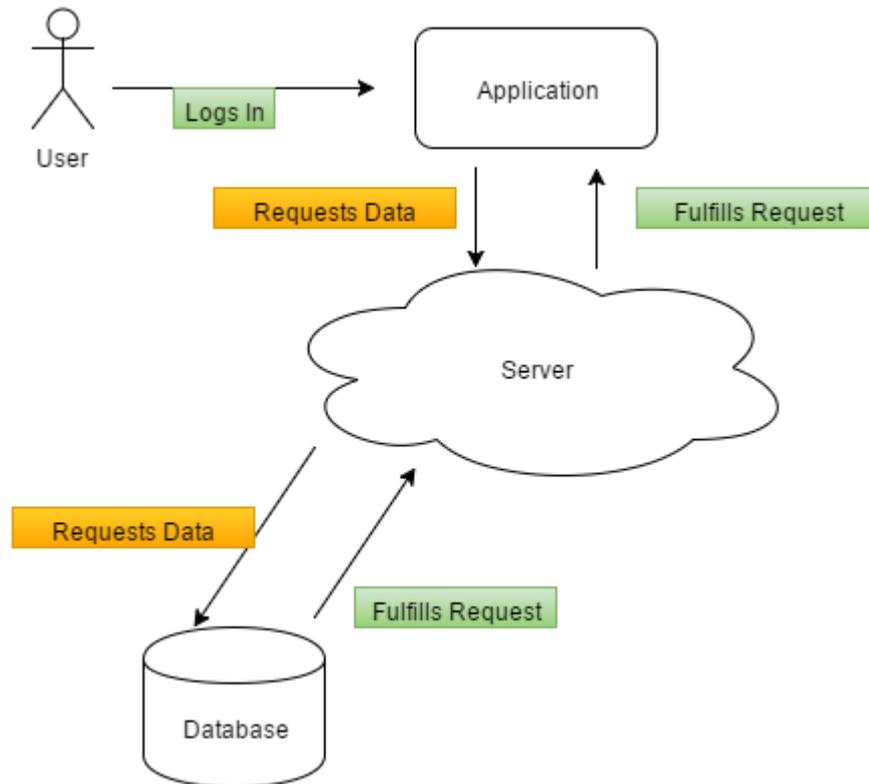
Scope

The scope of this use case is to connect to the database

Description

This use case describes the process of a user interacting with the system to connect to the database

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode

Activation

This use case starts when the user clicks login with valid credentials

Main flow

- The system identifies the credentials as correct
- The user is logged in
- The system displays the home page
- The user clicks on a tab that contains recipes
- The system connects to the database and returns desired content

Alternate flow

- The system identifies the credentials as correct
- The user is logged in
- The system displays the home page
- The user clicks on a tab that contains recipes
- The system returns 'connection to database failed' error

Exceptional flow

- Does not apply for this use case

Termination

The system presents desired feature

Post condition

The system goes into a wait state

10. Add new recipe

Description & Priority

- The user will have the ability to add their own recipe, along with a recipe to the database for other users to view

Requirement Activation

- This requirement will be activated when the user clicks on 'add recipe' from the create page.

Risks

- The potential of a small minority of users sabotaging the application by uploading pictures that are unrelated to food, causing a poor user experience for everyone else. This can be combated by a moderator or strict banning process of perpetrators.

Use Case

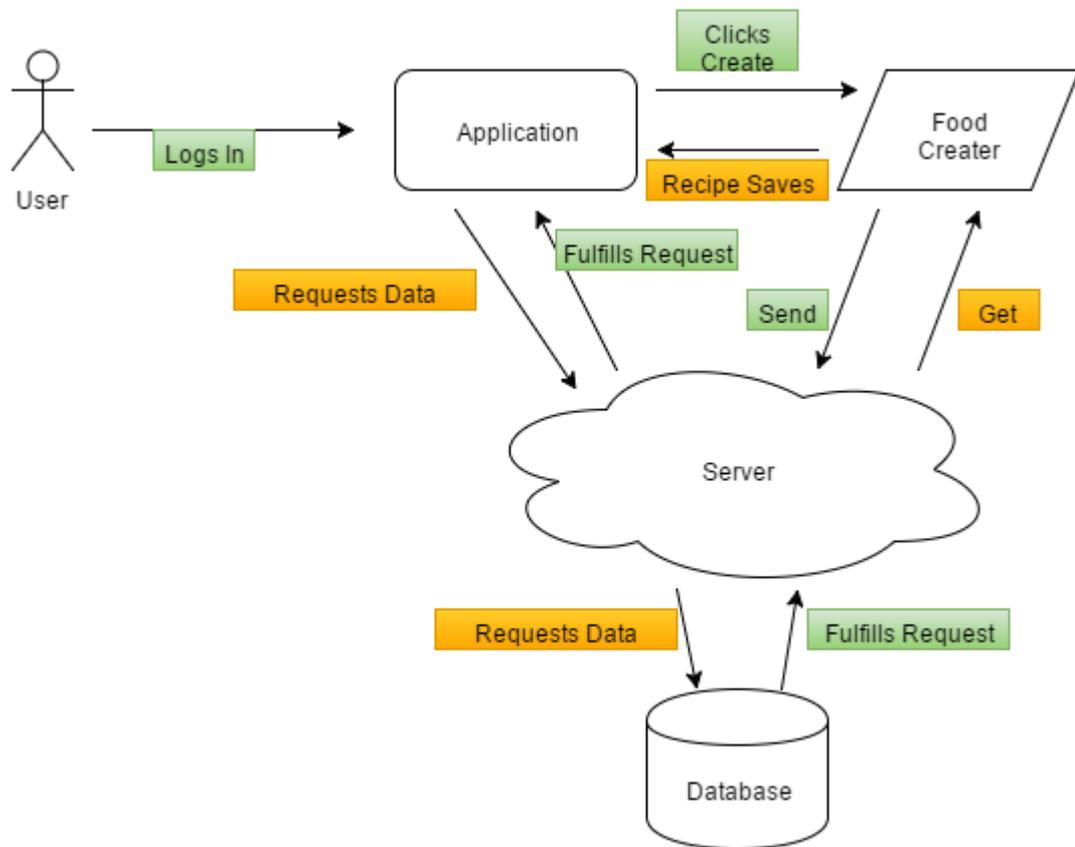
Scope

The scope of this use case is to create a new recipe

Description

This use case describes the process of creating and saving a new recipe to the database

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode

Activation

This use case starts when the user clicks 'save recipe' after making one via the create feature

Main flow

- The system identifies ingredients and prompts user for further information
- The user gives the recipe a name and uploads a picture
- The system connects to the database and sends the data

- The user is notified from a 'successful upload' message

Alternate flow

- The system identifies ingredients and prompts user for further information
- The user gives the recipe a name and uploads a picture
- The system connects to the database and sends the data
- The user is notified of an ingredient not present in database and prompted to add it (to be verified by administrator)
- The system connects to database and sends data
- Database recognises recipes from the recently added ingredient(s)
- The user is notified from a 'successful upload' message

Exceptional flow

- The system identifies ingredients and prompts user for further information
- The user gives the recipe a name and uploads a picture
- The system connects to the database and sends the data
- Database does not respond
- The user is notified via an 'unsuccessful upload' message

Termination

The system presents the Food Feed

Post condition

The system goes into a wait state

11. API Calls

Description & Priority

- The 'Food Finder' feature will heavily rely on two API calls, Google Maps & Yelp. These will take the users location and display near restaurants and takeaways for the user.

Requirement Activation

- These API's will activate when 'Food Finder' is clicked from the home screen.

Technical Issues

- If one API is down for maintenance or has a technical issues, this feature will not work.

Use Case

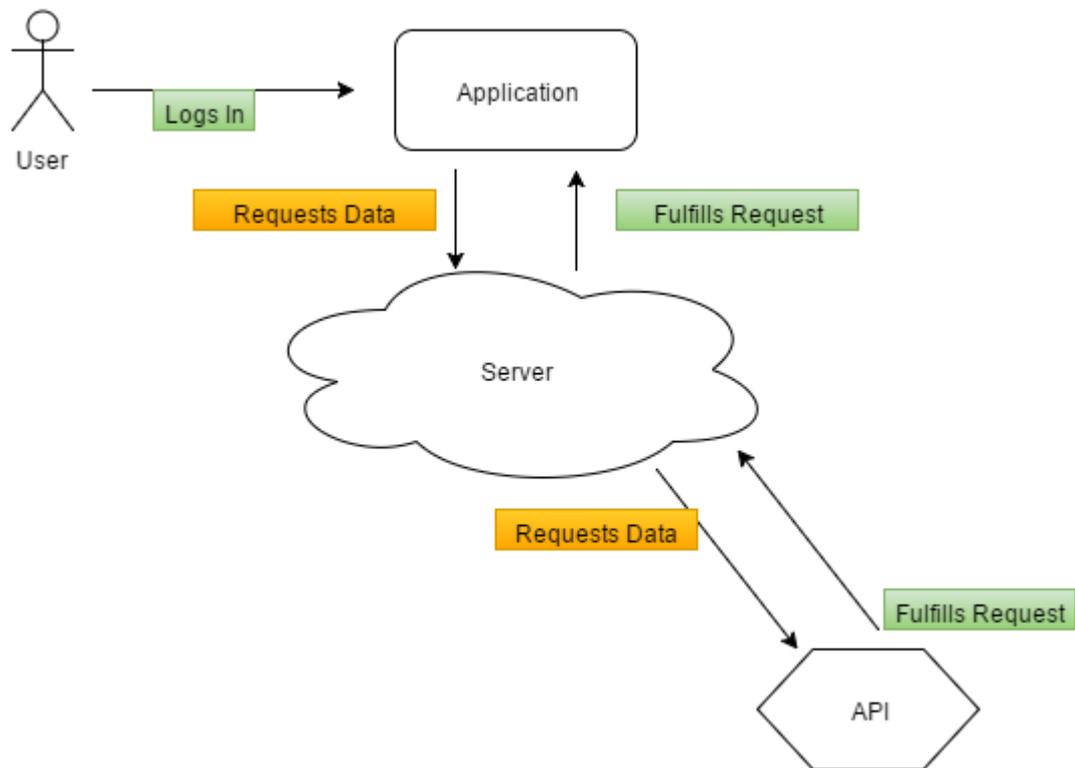
Scope

The scope of this use case is to connect to the API

Description

This use case describes the connection to an API from any individual user

Use Case Diagram



Flow Description

Precondition

The system is in initialisation mode

Activation

This use case starts when the user clicks on Food Finder

Main flow

- The system identifies the user location and calls the API's
- The API's reads the location and returns data
- The system displays returned data

- The user is shown a map containing their location and food outlets nearby

Alternate flow

- The system identifies the user location and calls the API's
- API call failed by one or both resources
- User returned connection error

Exceptional flow

Does not apply to this use case.

Termination

The system presents the home page

Post condition

The system goes into a wait state

- **Non-Functional Requirements**

- **Performance/Response time requirement**

Response time of the application must be instant. A certain amount of leeway can be given for the API call, but it cannot be so slow that it hampers the overall experience of navigating the application.

- **Availability requirement**

The application must be available for any user with a sustainable internet connection.

- **Robustness requirement**

For the success of the application, robustness is a huge requirement.

The system will take a few precautionary measures to avoid confusion amongst users. All ingredients when inputted into the database, will be assigned a tag and this tag alone will be what the user will call when they wish to cook with a certain ingredient.

- **Security requirement**

The security requirements of the application will be a login system, protected by an email address with password.

- **Reliability requirement**

The application will be a very reliant system. A high percentage of the system will be dependent on the server. My aim is to use a server that is capable of withstanding the demand of the app with ease.

- **Maintainability requirement**

If an unseen bug slips through the test environment, my initial timeline of fixing a bug will be within 6 hours. If it's a potential bug that could crash the system, then that will be tackled as soon as possible.

- **Portability requirement**

The application will be available anywhere with an internet connection because of its mobile exclusivity.

- **Reusability requirement**

The application will reuse individual pieces of information that will come together to make different recipes. This is one of the biggest selling points of the application

- **Resource utilization requirement**

The application will make use of two resources; the Google maps API & the Yelp API. It may make use of a database too, but this venture is currently on going.

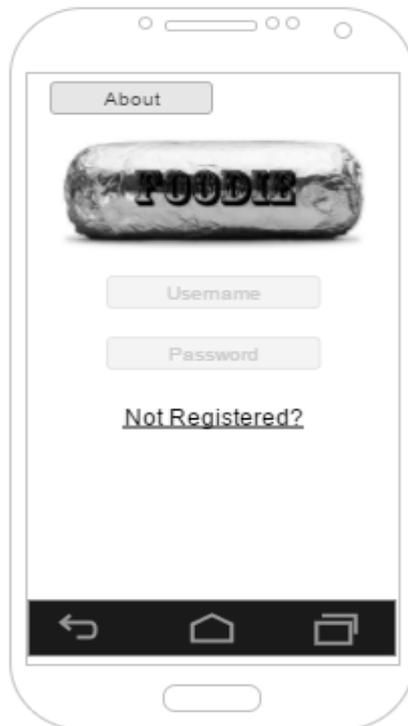
- **Interface requirements**

- Have a graphical user interface (GUI)
- Accept commands via touch
- Maneuverability of the application must be very user friendly
- The user will be able to input information
- The system will be able to read it
- The system will display information from the database that will be relevant to the inputted data

- **GUI**

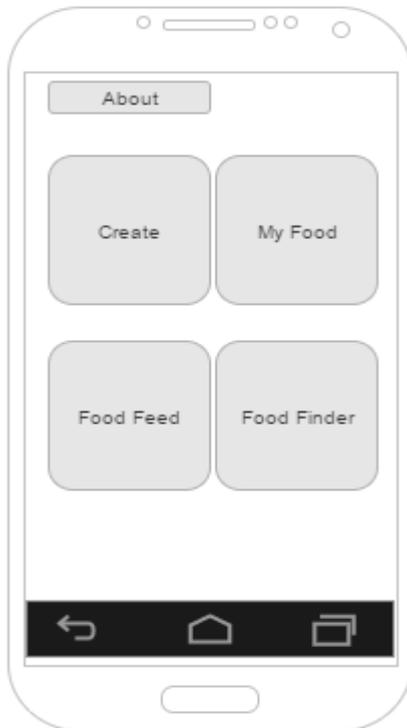
- **Login**

This is the login screen, the user will be prompted with a space to enter their username and password or an option to make an account.



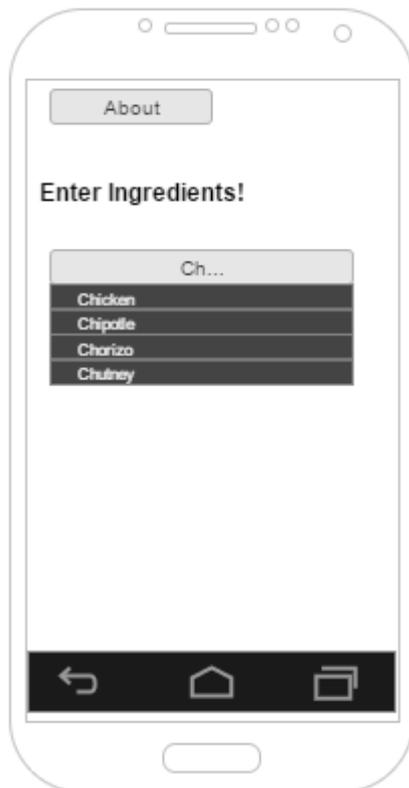
- **Home Screen**

This is the home page, it gives the user the list of features to be accessed with the click of a button.



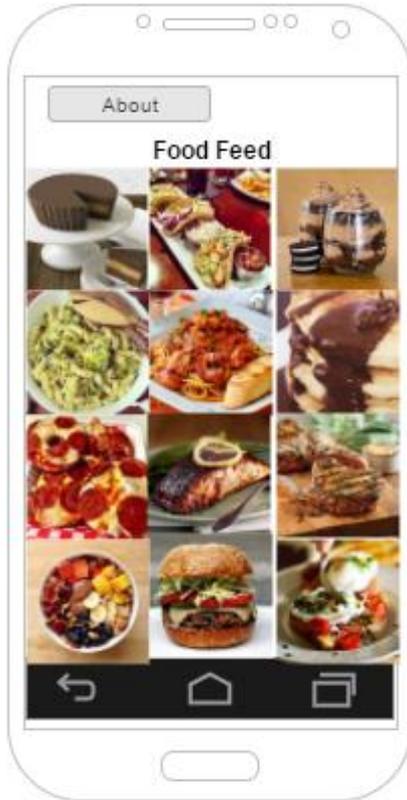
- **Create**

This is the create page, the user will insert their desired ingredients and available options will appear for them to click, thus speeding up the process. As we can see in this example, the user has typed in 'Ch' and the available ingredients in the database have appeared in alphabetical order to the user.



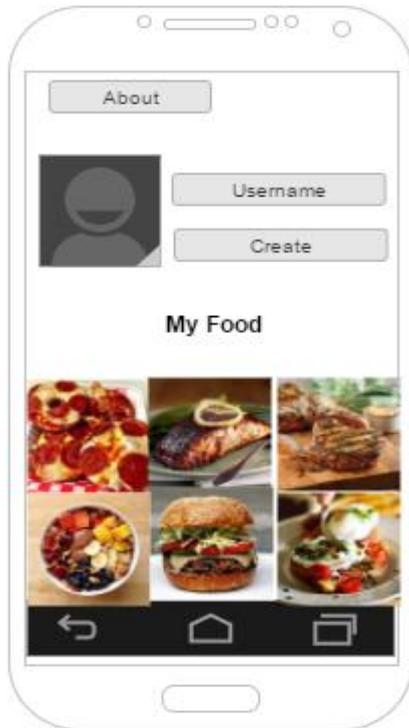
- **Food Feed**

This is the food feed, when clicked on, the user is shown a list of food submitted by the community.



- **My Food**

The My Food page displays a little about the user and shows their uploaded posts



- **Food Finder**

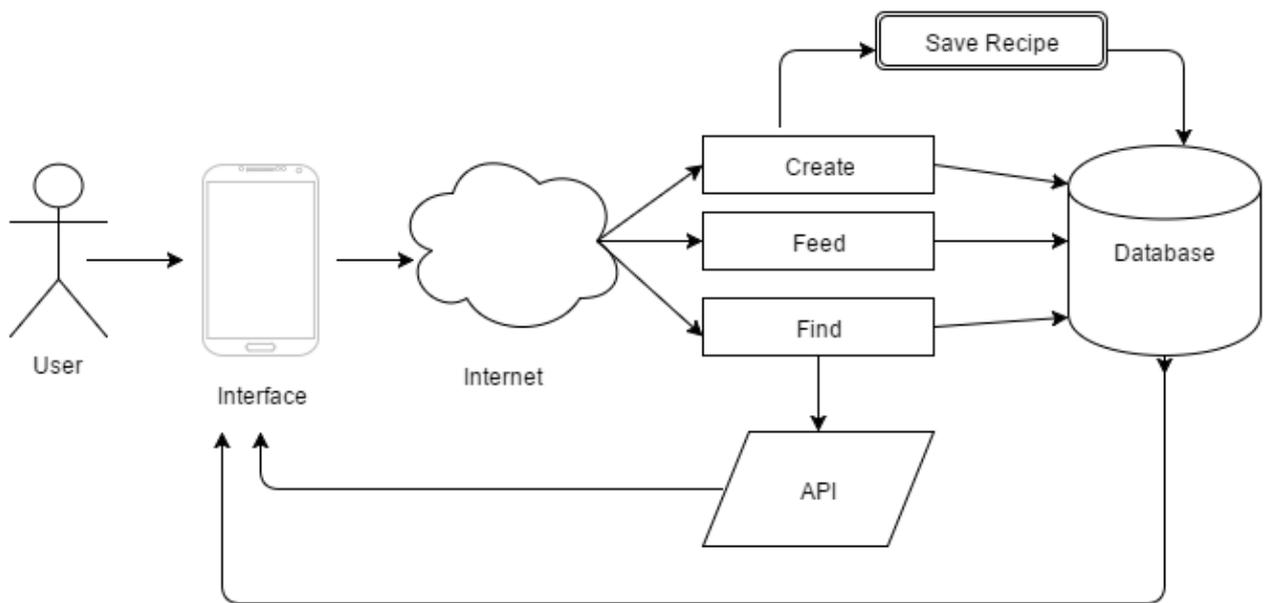
The food finder page takes the users location and returns nearby restaurants and takeaways. In this example we can see the user highlighted by the black marker and the available eateries by the green pins.



- **Application Programming Interfaces (API)**

Google maps and Yelp will be used in my application to provide a list of nearby restaurants and takeaways that are in the vicinity of the user when they open the feature.

- **System Architecture**



This will be the architecture I will be using for my application. Everything is laid out simply. The reason I have a save recipe aside from the create function is because not everyone is going to want to go through the process of saving their new made recipe. This will benefit people who are only looking to make something new and log off.

- **System Evolution**

This system could evolve over time into a fun interactive way of creating recipes. A drag and drop way of making a dish rather than typing in your desired ingredient could be a possible future venture.

7.3 Monthly Log Book

September

Student name: Liam Barkley x12762875

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I was able to brainstorm ideas for my project. I think I have a pretty good idea. I'm thinking it might be a little short technically in terms of a fourth year project, but in terms of an application that's attractive and convenient, then I'm sure this is great idea provided I can execute it as planned

My contributions to the projects included drawing simple maps, wireframes, how my data base should work into my notepad. Basic small steps.

My Reflection

I felt, it worked well to set aside time to my project and sit down to concentrate on planning what has to be done with it.

However, I was not successful in making time for this,

I found it too easy to procrastinate and find reasons not to put in sufficient research into different ideas and variations of projects. At the minute I'm unsure if my project is sufficient for a software stream student. I'm thinking it may be more suited to a Networking and Mobile student. But as I do not get assigned a supervisor until I submit a proposal, I will have to just submit and seek guidance from that person.

Intended Changes

Next month, I will try to definitely do more work. I don't think I've realised this is fourth year and it's a little bit of a big deal yet. I've had a few small assignments to do in other subjects in the first couple of weeks and I've been taking the wrong approach to going about them. I've been doing them in the afternoon and then submitting and putting my feet up for the evening. I'm slowly starting to realise that I may start to rue wasting all this excess time. Hopefully this will be my last journal entry of this nature and I can become significantly more efficient in future.

Supervisor Meetings

Date of Meeting: N/A

Items discussed: N/A

Action Items:

October

Student name: Liam Barkley x12762875

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I was able to put time and thought into my requirements specification. From this, I now have a strong understanding of how my architecture should work and how I should go out building it. I also had my first supervisor meeting and brought out some new perspectives from it which I included in my requirements spec.

My contributions to the projects included extensive planning. Requirements spec containing GUI diagrams, system architecture, functional/non-functional requirements, use cases etc.

My Reflection

I felt like this month I was really pushed for time to focus on my project. I had an essay due for a different module along with a project proposal and a coding assignment for another.

However, my whole month wasn't filled with things to complain about. I did make space for my project which I am happy about. I am happy I got my requirement specifications done to what I believe to be a pretty good standard.

Intended Changes

Next month, I intend on getting the basics of my projects done. I need to get something of substance together so I actually have something to work with.

The requirements spec being due at this early stage has forced me to put time and thought into the architecture of the application which is a very good thing for me. I have one more CA due for a separate module on 10/11/15, once this is over I will have a significant amount of more available time for application work

Supervisor Meetings

Date of Meeting: 13/10/2015

Items discussed: We discussed the proposal of the project and its relevance to my selected stream. We also discussed the requirements of certain sections of the application that could be tweaked slightly from the proposal. For example, Damien suggested that the create section should be a more interactive for the user. We came to an idea that the user should be presented with clickable tags of available ingredients in the database.

Action Items:

November

Student name: Liam Barkley x12762875

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I put a great deal of effort into making real headway with java using android studio. I found it extremely difficult to get anything working and I found myself constantly trawling through internet forums to find solutions for seemingly easy to fix problems. I made the decision to find an alternative method of development. I have decided to build the application in a language I know well enough (PHP). I will implement this web language onto mobile with a cross platform framework called ionic.

My Reflection

I felt like this month was a big learning curve for me. I think that I may have been a little bit too ambitious when I initially thought I could learn java and build a project at the same time. However, I am happy that I've come to a decision on what direction my project is going to go in. I am now one month behind my intended progress but I am hoping that with my experience of PHP, I should be able to catch up.

Intended Changes

Next month, I intend on catching up on where I'm supposed to be in my project plan. My schedule is free after this week as I have the last of this semesters assignments due on Friday.

December

Student name: Liam Barkley

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I was able to find a new IDE to use in the development of my project. The IDE is called cloud9 and it also acts as a free hosting platform for the application.

My contributions to the projects included creating a login and register system that creates a session with email activation (still buggy). I have also tried to implement a few extra security features such as protecting pages against those who aren't logged in. I will come back to these after I tackle bigger problems.

My Reflection

I felt, it worked well to go back to the technology I know best. It is with great hindsight I can say I never should have attempted working with java in android studio.

However, I was not successful in getting everything I attempted to implement working. My pages are messy but I feel there will be time for tidying later.

Intended Changes

Next month, I will try to get at least one of the main features implemented on the test site.

I realised that I need to spend days at a time on problematic areas. Not just hours.

January

Student name: Liam Barkley

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I was able to gain access to an Api that I had applied for months ago. The Yummly Api gives me access to a fully functional database of food ingredients along with thousands of recipes.

My contributions to the projects included getting started with the Discover Feature, I haven't quite got it perfected but I am sure that before long I will have this feature done and dusted.

My Reflection

I felt, it worked well to tackle what I feel would be the most comfortable of all the features (In terms of developing) first. I feel like I want to have little else on my mind when I get to the unknown such as creating social media styled features such as photo sharing and like features etc.

However, starting with what I know was not as beneficial as I'd thought. I'm still having a little problem getting the pins to drop on the map correctly.

Intended Changes

Next month, I will try to speed up. I can feel the pressure mounting and increasingly I am finding that I am becoming more productive.

February

Student name: Liam Barkley

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I had success in implementing my Discover feature. I can now find the users location by using geolocation services and output nearby restaurants and takeaways to them from data in the google places API. I also have made good progress in implementing a drag and drop feature for uploading pictures.

My Reflection

I'm very happy I've chosen to tackle the easier of the features first. Initially I thought it may have been a gamble as I could have wasted quite a lot of time if something wasn't to work for me. I am happy with how progress is going and I am confident that I should get all my features finished in time to start testing with a nice bit of time left.

Intended Changes

Next month, I will move on to the main parts of my project and work overtime to try get them done as required in good time before my exams.

Supervisor Meetings

Date of Meeting: 19/02/2016

Items discussed: General progress, issues about making the application more user friendly

March

Student name: Liam Barkley

Programme (e.g., BSc in Computing): BSHC

My Achievements

This month, I had success in implementing the image upload feature. The user can now drag an image into a JavaScript box which then renames the file and stores the filename in the database. I have also started into creating the main create feature. I have reached the stage of being able to return decoded JSON data. I now need to pick out what data I need to take from the array.

My Reflection

I am happy with how progress is going but I still think I'm wasting too much time on small things. I tried for too long to manually send the GET request to the Yummly API to no avail. I'm happy I saw the light and used a third party http client called Guzzle.

Intended Changes

Next month, I will be working on my exams but I intend on using any spare time to work on turning all of these processes into an attractive environment. I have the data being inputted and processed through the backend, my next step will be to use it and really make the site come to life.

Supervisor Meetings

Date of Meeting: 23/03/2016

Items discussed: Best ways to test the application efficiently.