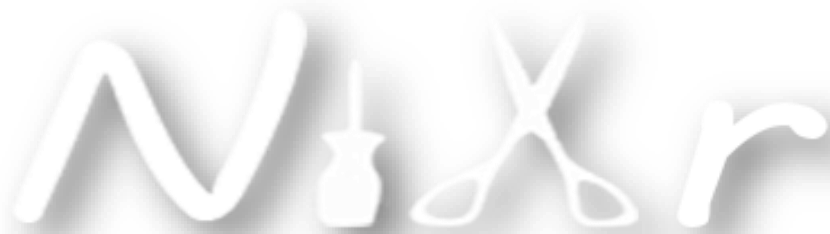


National College of Ireland
BSc in Computing
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Networking and Mobile Technologies



Nixr

Technical Report



Declaration Cover Sheet for Project Submission

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SECTION 2 Confirmation of Authorship

The acceptance of your work is subject to your signature on the following declaration:

I confirm that I have read the College statement on plagiarism (summarised overleaf and printed in full in the Student Handbook) and that the work I have submitted for assessment is entirely my own work.

Signature: James Cosgrave

Date: 07/05/17

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Executive Summary

In today society a vast majority of people are attaining qualifications in the beauty industry. However there are a limited number of jobs available in salons and beauty bars. This trend sees many professionals creating their own business start up's, either working from home or doing group callouts. This has become a huge trend on social media as newly graduates or unemployed professionals don't charge half as much as a salon or beauty bar.

As a result of this there is a large demand for these professionals in regular and last minute/emergency bookings. Facebook is a great way to advertise and showcase your work in this industry. Although it isn't practical or sufficient when it comes to scheduling appointments, contacting a professional or simply just seen who is available around your location to accept you're booking. By the end of 2016 there will be 4.7 billion mobile users and yet there are currently no apps on the market to manage all of these issues in one place. Currently social media, web sites, salons and word of mouth are currently the only way you can arrange an appointment for one of these professions.

For my final year project I have developed a program that I have called "Nixer" which will allow both professionals and customers to access services in a quick and effective. Nixer allows users to open the app and instantly see the available professionals within their location, request an immediate or future booking. I designed my application using Android Xml files to create the UI layout, and Java as my programming language. Nixer uses an SQL database hosted online to store and retrieves any user data, this is used to retrieve all information provided by users. My application connects to the database using PHP scripts to define the methods for retrieving data. I started of testing my application using androids emulator but as I progressed certain features became a task in itself to run on the emulator, I then switched to a physical device.

1 Introduction

The purpose of this document is to give the reader a clear technical understanding of what Nixer is and what it can do.

1.1 Background

As an entrepreneur I strive to find resolutions to problem based issues. I identified that there was a gap in the market for an application such as Nixer. I have previously thought of Nixer as a solution for people seeking tradesman work. However I looked at current trends and in the last couple of years my direction as leaned towards the style industry due to a market increase in demand for such services.

On my social network account I noticed that I had over 3500 friends, many of which are female. I noticed that my current updated social media news feeds had a common thread many of which read as: “Any free MAU for an appointment” “Need my nails done last minute, is there anybody available?” “Does anybody know any hairdressers available for tomorrow?” now to some people this can be very annoying, to me it seemed like an opportunity as I knew there was nothing like this available to cater for this. This was the catalyst behind my decision to focus on Nixer.

So I instantly decided to go with a hailing service app as it’s the latest technology and works perfectly for taxi companies. For the first phase of Nixer I decided to carry out the development for Android devices, I myself use Android and a lot of my friends do too. The main reason behind this decision is that I specialised in Mobile Application Development and all of my mobile modules used Android Studio, this gave me some advantage over using any other platform.

1.2 Aims

The overall purpose of my application is to provide an additional and practical method for customers to book trades and employ people. Nixer would have an easy to use interface and a sleek design.

Professionals would create a specifically targeted account and be categorised in that profession section. A user (customer) would create a standard account and feel free to choose any profession they would like to request.

- The app would provide the location details of both users and the contact details of all the professional accounts.
- As well as displaying the Professionals location, the directions and live navigation option is provided on the map need a customer have to find their way to the Pro's show or home.
- A user should be able to click the Pro's contact information and be directed to the phone to ring them or click the email address to send a pre-defined email to book an appointment, should the customer need to contact a Professional there is a "chat now" option which provides an in app chat client.
- Online users will be displayed on the map as a green marker and offline as a red marker, inside the Pro's details will also display if they are online or not.

1.3 Technologies

The application was developed using Android Studio; Android Studio provides the largest choice of supporting libraries to choose from. The IDE has a huge selection of widgets such as Buttons, Text Views, Scroll Views and Tab Views all using a drag and drop functionality. The GUI for Nixr was created using Layout files, these layout files are developed using XML and control the style of each Activity or Fragment. I found Android XML was a little tricky when it came to moving a lot of items around a page, it was important to set your layout correctly.

The majority of the time I used Relative Layout as it gave me more freedom when moving some widgets around the page. I decided to use JAVA as the main language as it has core functionality in developing many Android applications. I was comfortable with this program as it was the main programming language that underpinned my studies throughout college.

A main element of my app function is based on location using Google Maps I needed to install the Google Maps V2 API. This provided the necessary libraries needed to start coding my functions to manipulate the map. Databases were created to store user information and locations in SQL; I have previously used SQL in some of my college modules so I had some knowledge using the language.

PHP scripts were used to connect my application to an online host and allow communication between the database and the app. I then created a cloud host using Bitnami and Amazon Web Services, this allowed me to install Xampp on my cloud and communicate with my application of any network.

2. System

This section will provide a detailed description of the technical report, requirements, Design and Architecture of the System and methods used for testing. I will also describe in detail the Graphical User Interface.

2.1 Requirements

The requirements specification is the first section to be carried out in the software development lifecycle. In order to gather my requirements I assessed what was been done and what was needed to do it, I thought about it as if I was a customer using the application, this helped me to underline the requirements needed to complete the development process.

2.1.1 Functional Requirements

This section will focus on the functional requirements; a functional requirement indicates what the system must do.

- **Registration:** When opening the application the user will be given the option to register a new professional or standard account, all information provided here will be stored in the database.
- **Login:** After registering the user will be prompted to login to their account using their username and password.
- **Professional Selection:** When logged in the user will be asked “what are you looking for” there will be a number of tradesmen options displayed to choose from.

- **Maps:** Users must authorise location permissions and the location must be activated on their mobile device to display the map; once the location is on all active professional users will be displayed on the map.
- **Rating:** When a professional is clicked the option to rate them out of 5 is available, this rating system is an average calculation. Once a user has rated a specific professional they cannot rate them again, this will eliminate false figures.
- **List View:** All active professionals will be displayed under the map view in order of the highest rating, each item in the list is clickable to another activity.
- **Navigation:** When clicked on a Pro's marker the option to get live navigation to their location is available, the user will be directed to Google navigation app with the route added and ready to navigate.
- **Email:** When a Professionals email address is clicked in their profile a hard-coded booking email template is sent directly to their inbox and the date and time is added to their Google Calendar.
- **Chat:** Within each professional's profile there is a "Chat Now" option, the user can send a Professional an instant message through the app, Professional will get a push notification.

This section will describe the data requirements, which are essential to implementing some of the functions outlined above.

- **SQL Requirements:** The application will retrieve and store all data on a cloud server hosting my SQL database. This data is accessed by the use of PHP script files which are hosted on the cloud server and are designed to access different tables contained within the database.

2.1.3 User Requirements

User requirements are requirements that a user must have in order to run the application.

- **Android Device:** The user must possess an android device with Android 4.0 as a minimum requirement.
- **API:** The minimum API level for this application is an android device with API level 9, the preferred option for the user is an android device with API level 23.
- **Google Play Store:** The user must have access to the Android PlayStore in order to download the application and have play services up to date.
- **Internet Access:** In order for this application to display the user's information on the map, Internet Access is a needed requirement.

2.1.4 Environmental Requirements

Environmental requirements are necessary requirements during the development process of the application.

- **Computer:** This application was developed on a Toshiba Ultrabook laptop running windows 10 with Android Studio as the development IDE.
- **Android Mobile Device:** An android mobile device was required during the running and testing of my application in the development stages.
- **Internet Access:** Internet access was required to test some functions in my application and connecting to database when I was out on the go.
- **Photoshop:** Photoshop was used to create the Nixr logo and all backgrounds.

2.1.5 Usability Requirements

This section will highlight usability requirements. These will provide concrete objectives during the interface and design process. These usability requirements evolved from the initial meetings I had with target users as described above.

- **Understandable:** The user interface will be easy to understand and follow using the English language.
- **Operable:** The actions should be consistent and free flowing, should an error occur the user will be prompted to report it.
- **Ease of Use:** The system should be easy to use; users should not be trying to figure out how to use it, they should be able to perform an action in two simple steps.
- **Attractiveness:** The layout of the application should be designed in a fashion that catches the user's eye, the colour scheme must be attractive and widgets should be aligned and synchronized throughout each activity

3.1 Design & Architecture

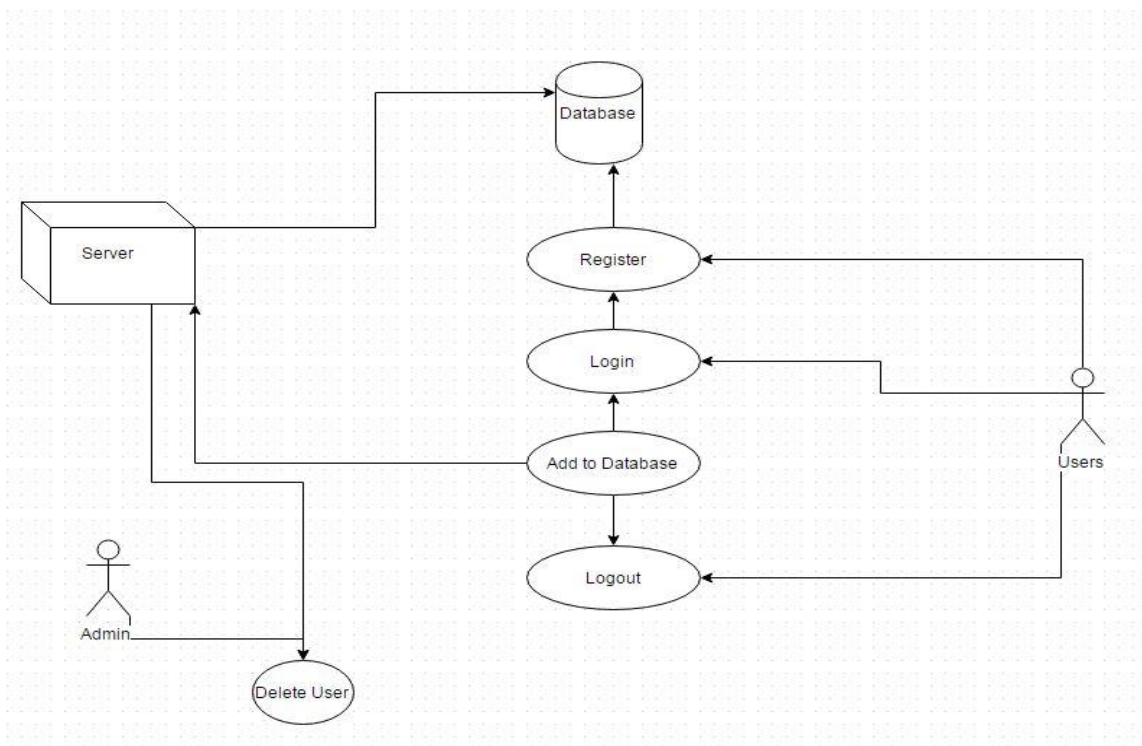
Given the number of libraries and functions needed to access a database using PHP and SQL, JAVA was considered the best option to develop Nixr. The primary building foundation of Nixr was XML and JAVA, I had considered other languages at the start but after weighing out the advantages and disadvantages I decided to go with JAVA. The

design of Nixr was consistent among all of the pages including all buttons the same size and colour. During the XML development, I considered using Fragments instead of activities as they can look slicker when navigating through the application, unfortunately adding navigation fragments at a later stage would lead to redeveloping the whole application from the ground up so I had to go with the traditional activity layout.

3.1.1 Case Diagrams

This diagram illustrates the process of user Registration and user Login. Firstly the user interacts with the application which gives the two options of Registration or Logging in to an existing account. If the user selects registration then they are brought to the registration page where they will enter the necessary details to register for either a Professional or Standard Nixr account. Once registered, the users details are then stored in the SQL database where their account details can be retrieved. If the user selects the Login option, they are then brought to the Nixr login screen where they will input their username and password.

After logging in the application connects to the database to retrieve the required information, once this process is completed and the login authorization is confirmed, the user is then logged in and brought to the selection page.



3.1.2 Flow Description

a) Precondition

The system is in initialisation mode.

b) Activation

This use case starts when the application is opened and the User registers and logs in.

c) Main flow

1. The system identifies the user.
2. The user makes a request to register their details with the application.
3. The system completes the request and grants access to the database.
4. M

d) Alternate flow

A1: Entered invalid email

1. The system prompt user to enter correct email address.
2. The User re-enters the correct email address.
3. The use case continues at position 1 of the main flow

e) Exceptional flow

E1: Entered incorrect login details

1. The User is not logged in.
2. The System prompts user to re-enter correct details.
3. The use case continues at position 2 of the main flow

f) Termination

The system allows the user to save and create new account and login or exit.

g) Post condition: The system goes into a wait state.

3.1.3 Requirement 2, Request Pro

a) Description & Priority

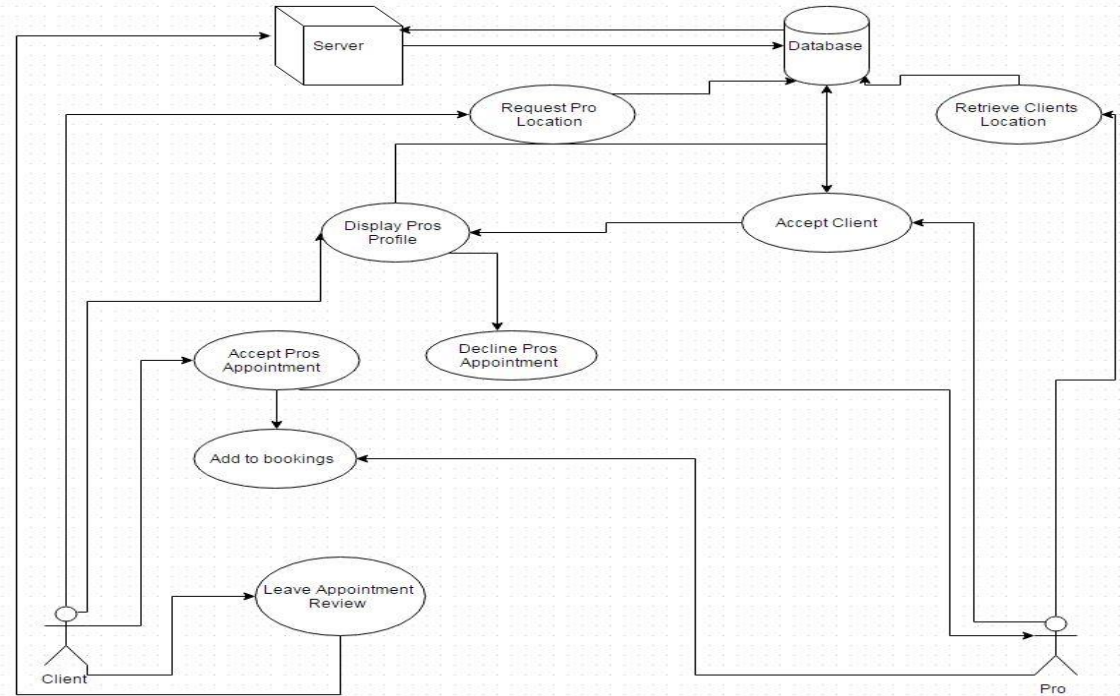
This requirement is the main functionality to the app and holds all the possible process that the application. There would be no application if it wasn't for this process so it is as equally important as the user information and accounts.

b) Use Case

Scope: The scope of this use case is to show each step to how a client requests a Pros location and a Pro receives a client location, how a client accepts a pro appointment and how a Client leaves a review after their appointment.

Description: This use case describes the main functionality of how the Pros and Clients interact with each other.

Case Diagram



3.1.4 Flow Description

Precondition

The system is in displaying location mode.

Activation

This use case starts when a user logs in and requests a Pros appointment.

Main flow

5. The system identifies the Clients request.
6. The Client requests a Pro Appointment.
7. The system sends request to Pros.
8. The Client displays location.
9. The Pro receives location.
10. The Client accepts Appointment.
11. The Client leaves a review for Pro.

Alternate flow

A1: Client Rejects Appointment

4. The system cancels request
5. The Client goes back online for another appointment
6. The use case continues at position 3 of the main flow

Exceptional flow

E1: The Client wants to cancel an appointment

7. The Client cancels
8. The system sends request
9. The Pro cancels appointment.
10. The use case continues at position 3 of the main flow

Termination: The Client leaves review and terminates app

Post condition: The system goes into a wait state

3.1.3 Requirement 3, Chat

c) Description & Priority

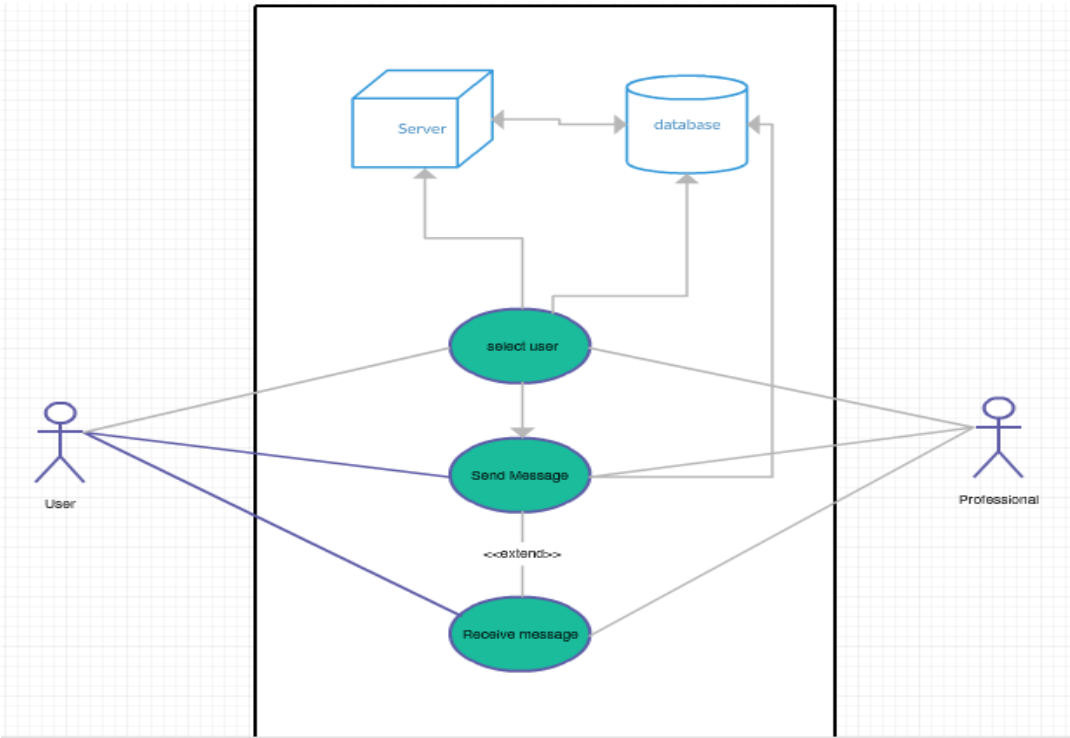
This requirement is the main point of communication between both accounts, it allows internal instant messaging with notifications, as this is one of the apps main feature the priority is high.

d) Use Case

Scope: The scope of this use case is to show each step of how a client messages a Pro and Pro receives a notification with message attached.

Description: This use case describes the main functionality of how the Pros and Clients interact with each other.

Case Diagram



3.1.4 Flow Description

Precondition

The system is in displaying List of users.

Activation

This use case starts when a user logs in and selects a profession i.e. programming, makeup artist or plumber.

Main flow

1. The system identifies the Users request.
2. The User requests a Professionals Profile.
3. The system sends request to Database.
4. The Professionals profile displays information and chat button.
5. The user sends a message.
6. The Professional receives message.

Alternate flow

A1: User selects wrong professional account

1. The system cancels request
2. The User goes back to select another Professional
3. The use case continues at position 3 of the main flow

Exceptional flow

E1: The User wants to cancel session

1. The User cancels
2. The system sends request
3. The User closes app

Termination: The Client sends message and terminates app

Post condition: The system goes into a wait state

3.2 Implementation

In this section I will discuss the technologies used in the implementation of my application, I will provide some code snippets to give an understanding of the functions.

3.2.1 Google Maps

As Google Maps is the main functionality to Nixr it was going to be the most difficult section to implement. The map section is created to display the location of all the professional accounts for a standard user to view, each active user will display with a green marker, inactive users are displayed with a purple marker and the standard user's location is red. The following snippet shows the code that creates the markers based on the user activity, as you can see in the if statement, if the user login is equalled to yes (y) then display a green marker, else display magenta. This also displays the name and profession on top of the marker.

```
if(loginvalue.trim().equals("y")) //if user is active then pin will be painted HUE_GREEN
{
    mMap.addMarker(new MarkerOptions()
        .position(new LatLng(Double.parseDouble(userlatitute), Double.parseDouble(userlongitute)))
        .title(" " + cn + ". " + name1 + " " + profession)
        .icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN)));
}else
{
    mMap.addMarker(new MarkerOptions()
        .position(new LatLng(Double.parseDouble(userlatitute), Double.parseDouble(userlongitute)))
        .title(" " + cn + ". " + name1 + " " + profession)
        .icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_MAGENTA)));
}
    cn++;
    countp++;
```

I ran into a lot of issues when using the Google maps API, a lot of which were depreciated tags, I would then have to find an alternative method.

3.2.2 Storing Information

The user information, location and ratings are all stored in a database stored on a cloud server using Amazon Web Services; in the bellow snippet you can see the table that has the rows to store all of the information.

```
CREATE TABLE `user` (  
  `uid` int(11) NOT NULL,  
  `name` varchar(30) NOT NULL,  
  `password` varchar(30) NOT NULL,  
  `account_type` varchar(30) DEFAULT NULL,  
  `profession` varchar(30) DEFAULT NULL,  
  `phoneno` varchar(30) DEFAULT NULL,  
  `emailid` varchar(30) DEFAULT NULL,  
  `userlatitute` varchar(30) DEFAULT NULL,  
  `userlongitute` varchar(30) DEFAULT NULL,  
  `login` varchar(30) DEFAULT NULL,  
  `avgrating` varchar(2) DEFAULT NULL  
) ENGINE=MyISAM DEFAULT CHARSET=latin1;  
  
--  
-- Dumping data for table `user`  
--  
  
INSERT INTO `user` (`uid`, `name`, `password`, `account_type`, `profession`, `phoneno`, `emailid`, `userlatitute`, `userlongitute`, `login`, `avgratin`  
(1, 'a', 'a', 'standard', '', '', '', '', '', 'n', 0),
```

As you can see in the image above when the table is created there is this line:

```
“INSERT INTO `user` (`uid`, `name`, `password`, `account_type`, `profession`,  
`phoneno`, `emailid`, `userlatitute`, `userlongitute`, `login`, `avgrating`) VALUES”
```

When a new professional account is created the following information is retrieved and displayed inside their profile.

3.2.3 Retrieving information

```
<?php
define('HOST','localhost:3306');
define('USER','root');
define('PASS','');
define('DB','nixerdb');

$con = mysqli_connect(HOST,USER,PASS,DB);

$name = $_POST['name'];
$avgrating= $_POST['avgrating'];

$sql = "UPDATE user set avgrating='$avgrating' where name='$name'";
if(mysqli_query($con,$sql)){
    echo 'success';
}
else{
    echo 'failure';
}
mysqli_close($con);
?>
```

3.2.4 Sending Message

```
private void insertToDatabase(final String touser, final String fromuser, final String messagetext) {
    class SendPostReqAsyncTask extends AsyncTask<String, Void, String> {
        @Override
        protected String doInBackground(String... params) {

            List<NameValuePair> nameValuePairs = new ArrayList<>();
            nameValuePairs.add(new BasicNameValuePair("touser", touser));
            nameValuePairs.add(new BasicNameValuePair("fromuser", fromuser));
            nameValuePairs.add(new BasicNameValuePair("messagetext", messagetext));

            try {
                HttpClient httpClient = new DefaultHttpClient();
                HttpPost httpPost = new HttpPost("https://nixer.000webhostapp.com/insertmessage.php");
                httpPost.setEntity(new UrlEncodedFormEntity(nameValuePairs));

                HttpResponse response = httpClient.execute(httpPost);

                HttpEntity entity = response.getEntity();

            } catch (ClientProtocolException e) {
            } catch (Exception e) {
            }

            return "success";
        }
    }
}
```

The message system uses a POST method to send the message to the database and GET method when receiving a message from the database, the message scripts are PHP.

3.2.4 Testing

Testing is vital in the software development life cycle, I spent a lot of time testing my application some of the testing carried out are as follows.

3.2.5 Unit Testing

During the beginning of the software development process I used an Android Virtual Device to carry out my testing, this was a slow and unstable method of testing as it used a lot of resources to run and as I added more complex functionality additional plug-in's and software needed to be installed on the AVD. As I started to implement Google Maps I knew the AVD was not stable enough to carry out the necessary tests.

I began to look into using my own personal Android, In order to allow your Android device to be used for testing you must enable the developer options, this wasn't as simple as enabling a switch as these features were hidden, in order to access these settings I had to go to the Baseband number of my phone inside the about device settings and tap on it seven times, this was a strange method but enabled my device for testing, inside the developer options I enabled USB Debugging and Mock locations as I was using Google Maps.

Using my personal device was much more efficient than the AVD; it also gave me a perfect view of what the app looked like on different size screens. When I added a new function to the app I would need run it each time to ensure no problems arose, while adding new markers and information to the maps I got several errors which would make the app force close, most of the time it was a "cannot find symbol" error which was just an issue with one of the layout files, this style of testing made it simple to pin point any error and allow me to see any changes been made.

As the development went on and a chat feature was added I then started to use multiple devices to test the notifications and the response time for the messaging system. Using several different devices allowed me to see how the application reacted to previous versions of Android operating systems and older models of mobile phones. During this process of testing I learned that using a Samsung Galaxy S6 Edge was way more responsive than using a Samsung J3, with that I increased the amount of RAM that the app uses to run smoothly on devices with lower processing power and specifications.

Registration

Test Scenario				
User Registraion				
0				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Click sign up button	Registration page should open	As Expected	Pass
2	Add details to form	Credential can be entered	As Expected	Pass
3	Click Submit	Cutomer is registerd	As Expected	Pass

Login

Test Scenario				
User Login				
0				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Add email and password	allow input to text fields	As Expected	Pass
2	Click login button	successful login	As Expected	Pass

Select Professional

Test Scenario				
Select Professional				
0				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Click Makeup button	Open makeup artists list	As Expected	Pass
2	Click Plumber button	Open plumbers list	As Expected	Pass
3	Click programer button	Open programers list	As Expected	Pass

Profile Functions

Test Scenario	Proife functions									
				0						
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended						
1	Click list item	Open Professionals profile	As Expected	Pass						
2	Click email address	Open gmail with draft mail	As Expected	Pass						
3	Rate out of 5 stars	change colour of stars	As Expected	Pass						
4	Click submit rating	rating avarage submitted	As Expected	Pass						
5	Click Chat Now button	Open private message	As Expected	Pass						
6	Add message to field	Text enetred into message	As Expected	Pass						
7	Click send button	Message to send and	As Expected	Pass						

3.2.6 Human Testing

Human testing was the final stages of my testing process, for this type of application it was very important, I had sent my APK file to some friends, one in particular in a testing role for SQS, the feedback was good.

A. SQS Software Tester: Calvin O'Brien, Age 22:

“I was given instructions to test the functionality from Registration/Login to all other aspects within the app. When I first heard about this app I was intrigued as it sounded pretty cool, unfortunately James was not able to carry out some of the functionality he intended to but I have no doubt he will in the future”

Application

Developer Company Name:	Nixr
Application Name	Nixr
Application Version Tested:	Beta version 1.0

Targeted SW Platforms:	Android 5,0, Android 6.0
Targeted Devices:	Samsung Galaxy Range, HTC Range.
Required Bearer:	None
Required Memory (ROM/RAM):	450KB/1MB

Testing

Accountable Tester:	Calvin O'Brien
Tested on Terminal:	Samsung Galaxy s5, Android 5.0
No. of Test cases:	12
No. of Tests passed:	11
No. of tests failed:	1
No. of tests that are not applicable:	0
No. of Waivers requested:	0

SQS

SQS contact:	SQS Graduate Tester
--------------	---------------------

City: Dublin, Date 05/08/16

Signature: Calvin O'Brien

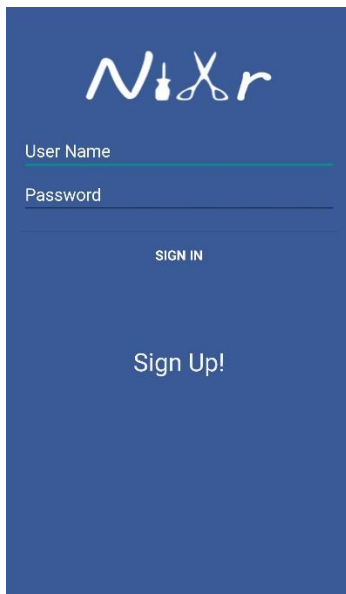
B. Jason Clarke: Plumber, Age 26:

“Personally, I am not good with new technologies but I found this app easy to use, there wasn't much involved into setting up, I was asked to sign up and login to see if my location was on the map, all of my details were there and it seemed perfect to me”

4 Graphic User Interface (GUI) Layout

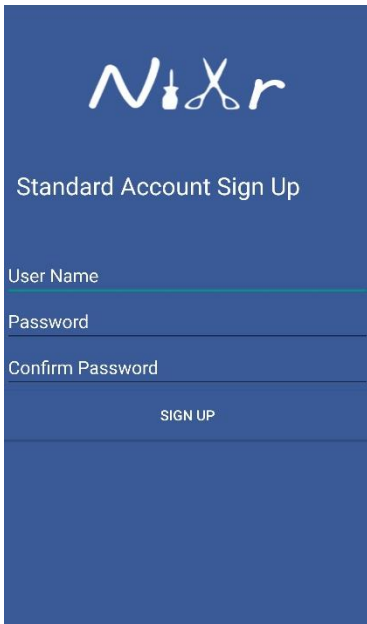
The GUI was designed to be as simple to use as possible with the intention of a three click process to navigate through the app.

The following screen shots illustrate when the application is opened, the image on the left is the launcher activity which is a login screen, when clicked on the “Sign Up!” option the user is directed to the select account type activity (The image on the right).

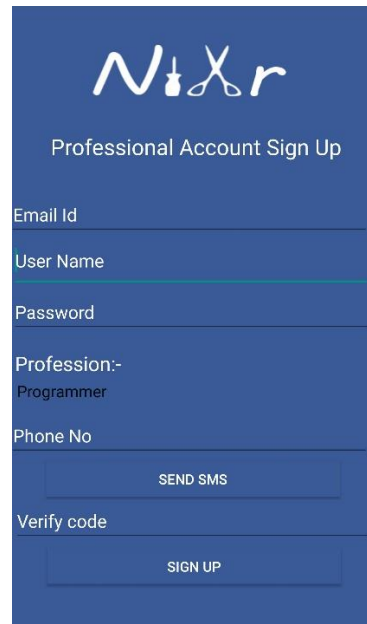


The following screen shots illustrate when a user selects one of the two account types, as you can see with the right image there is no personal information required for a standard account other than a username and password.

In the image on the left there is personal information required in order to set up the profiles and allow the standard user to contact them, once all fields are complete and the user clicks the Sign up button they are directed back to the login screen where they can login to the app.

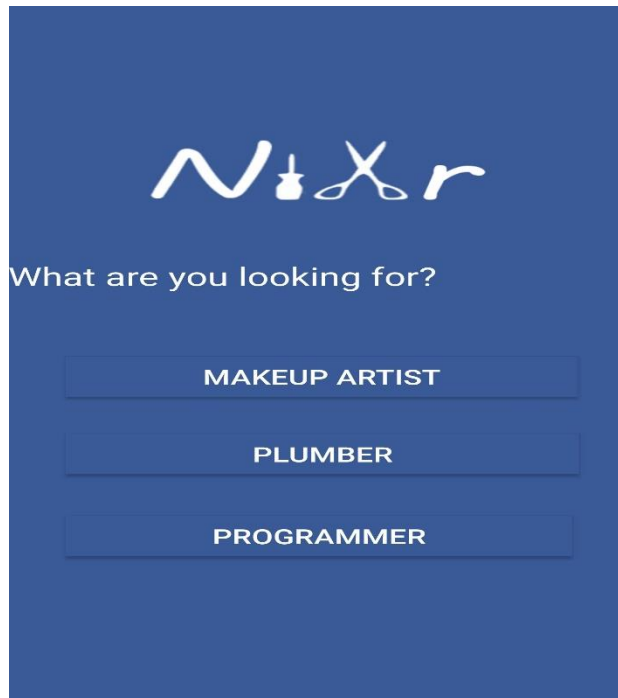


The image shows a dark blue sign-up form for a standard account. At the top is the 'Nixr' logo in white. Below the logo is the title 'Standard Account Sign Up'. The form contains four input fields: 'User Name', 'Password', and 'Confirm Password'. A 'SIGN UP' button is located at the bottom of the form.



The image shows a dark blue sign-up form for a professional account. At the top is the 'Nixr' logo in white. Below the logo is the title 'Professional Account Sign Up'. The form contains five input fields: 'Email Id', 'User Name', 'Password', 'Profession:- Programmer', and 'Phone No'. A 'SEND SMS' button is located below the 'Phone No' field. A 'Verify code' field is located below the 'SEND SMS' button. A 'SIGN UP' button is located at the bottom of the form.

The bellow image displays a standard account after they login, as you can see there is three options from the menu, each one of these options will bring them the user to a maps page where the Professionals will be listed and displayed on a map.

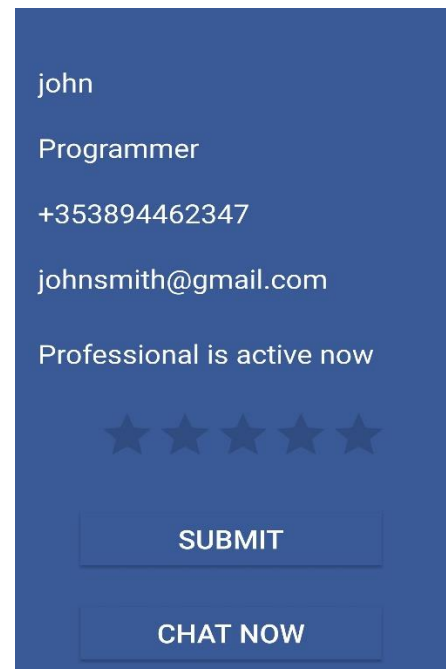
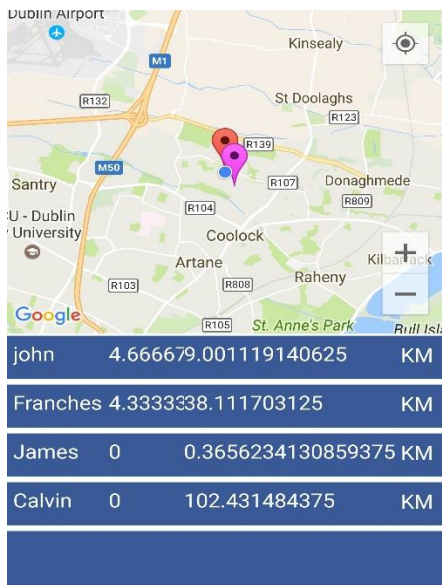


The image shows a dark blue page with the 'Nixr' logo at the top. Below the logo is the text 'What are you looking for?'. There are three buttons stacked vertically: 'MAKEUP ARTIST', 'PLUMBER', and 'PROGRAMMER'.

The following images are after the standard user clicks on the Programming option, the image on the right is the screen they are showing straight away, and in this case, we have a few Professional Programmers registered, as you can see in the image he is located on the map with a purple marker, this indicates that Jason is offline, when the marker is clicked the navigation option is showing to get live directions to the location. The blue list below the map is a list of all the plumbers registered, in this case its only one for now, the order of the list goes by the highest rating, the information inside the list is, Name, Rating, LatLang and distance in KM.

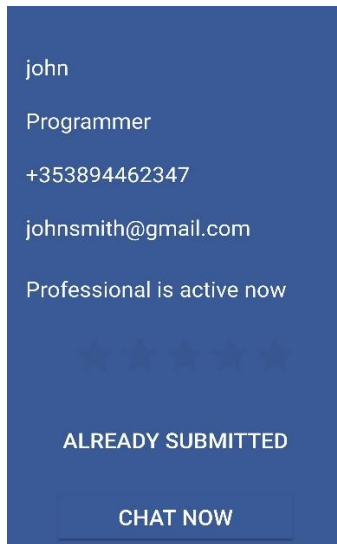
When a user clicks on the list option they are directed to the image on the right, this is the professional profile which has all their contact information and the option to rate them out of 5.

If you click on the Mobile number it will automatically call the professional, as well as the email address if you click that an auto generated email will be sent to the recipient asking about booking an appointment.



The bellow images show when a user rating has been submitted and when the chat now button is clicked. Once a user submits a review to a professional it cannot review the same person more than once.

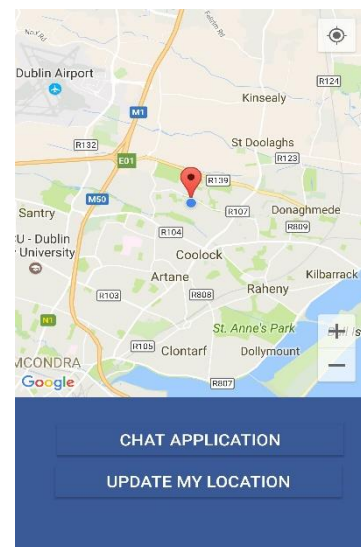
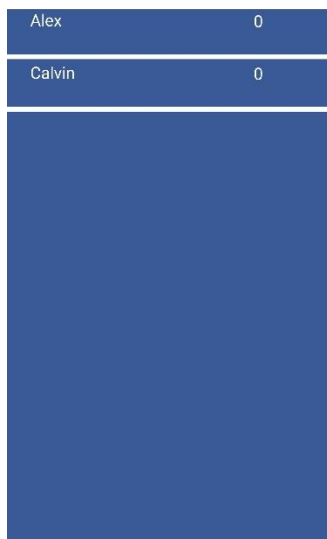
The chat now option opens a direct instant message to the professional.



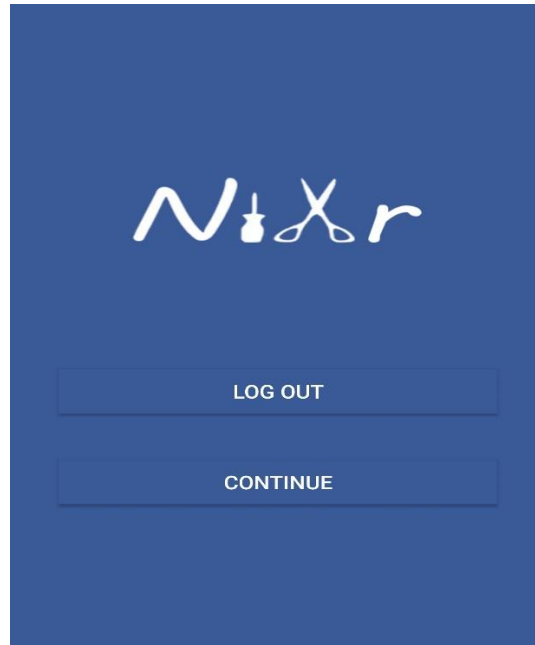
Hi John,
My name is James
are you avail



The image bellow illustrates when a Professional account is logged in, as you can see there is a minimum GUI for this account type as the sole purpose is to display their location and information on the standard account, there is an update location button to manually update their location. The Chat Application button opens the inbox of the Professional and a list of messages is showed from different users.



When the app is closed the user currently has an option to continue or logout.



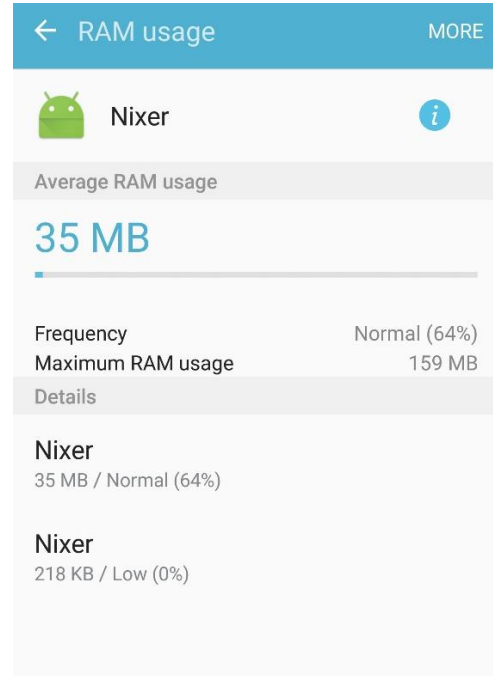
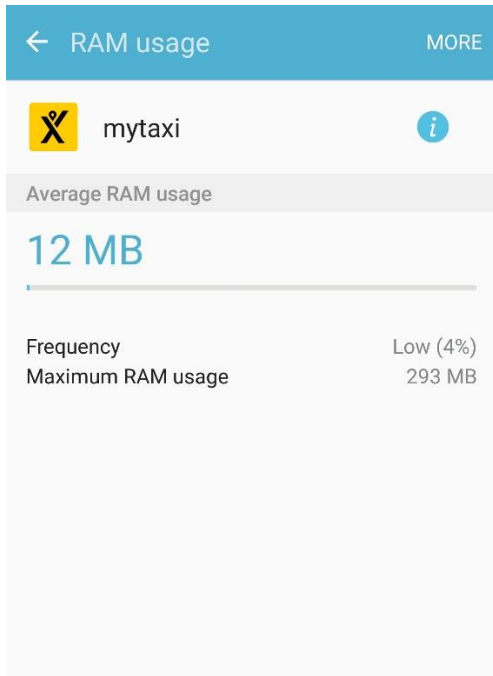
5. Evaluation

During the final testing of my application I monitored the usage and battery consumption in the bellow images



As you can see in the images above the usage is very minimum.

Compared to a more sophisticated application with similar functions Nixr seems to use a lot more RAM, this is based on one hour of usage testing each function on both the My Taxi and Nixr application.



6. Conclusions

During the development of Nixr I faced many difficulties. My initial planned approach I relation to how users would request a professional services altered. Unfortunately I could not overcome these issues and I had to settle for a more basic way to complete some of my tasks. I put so much time into trying to complete my vision that I barley had enough time to complete an alternative.

Given that, the purpose of my application was always to communicate with Tradesmen and arrange for their services through a mobile application; even my alternative version does what I set out to do just not in the style I wanted too. I did gain some extra practical skills in networking throughout the project as I had many issues getting it up and running on a server, I look at errors as learning curves and a way to test your brain. I am happy enough with the outcome although I would take a different approach to how I dedicate my time the next time.

7. Further Development

I intend to add all of the initial functionality I planned to, mainly the hailing service to request a professional directly to your location similar to how the Hailo taxi app works. As I had failed implementing the model I visualised I would like to try to implement the navigation drawer, user profiles with more information. I still feel that there is a huge market for this idea although I need to develop a lot more and include the latest technology regarding live GPS tracking in real-time.

Project Proposal

niXr

James Cosgrave

x12763301

jamescosgrave1234@gmail.com

BSc (Hons) in Computing 4
Networking and Mobile Technologies

7/10/16

Objectives

The objective of my mobile application NiXr is to enable freelance Make-up artists, Hairdressers, Barbers, Beauticians , Electricians, Plumbers, etc. connect to a network where clients are looking for emergency business. The app will allow professionals to create a profile inside their current field, example make-up artist, and allow their location to be visible on the map in the Make-up artist section, once a user opens the app clarify that they are looking for a Make-up artist all of the online make-up artists within a reasonable location will be displayed.

The user would click the request Make-up artist button and the nearest professionals would be notified of the appointment, once the appointment is accepted the professional becomes online and attend to the appointment. The idea of the app uses a Hailo like approach to find the closest professional of your choice and allow them to go to your location where you need them. I will be focusing on, Make-up artists, Hairdressers, Barbers and Beauticians for the purpose of this project, the other professions is for expansion and future plans. I also plan to implement an easy to use management system for professional to manage their clients and bookings as I am aware some of the professionals will find long term customers and feel the need to stop using my application. There will also be a rating system set in place to distinguish who has the highest rating and has done the most jobs.

Background

If you are not already aware there has been a drastic increase in newly qualified Make-up artists, Barbers, Hairdressers and Beauticians in Ireland over the past three years, I personally have friends who are qualified in these fields and find it hard to gain extra work due to communication and advertising.

As I scroll through my news feed on Facebook I constantly see people putting statuses up asking, "Does anybody know any Make-up artists, Beauticians, Barbers or Hairdressers". This is where I came up with the idea of Nixr.

There is no other App on the market the does what this app intends to do, I feel both parties could strongly benefit from using the app, it allows professionals to find new clients and clients to find new professionals all within two clicks of a button. I would outline how this app differentiates itself from others but there is no app like this on the market at the moment, although I had thought of approaches to use for main point of communication between professional and client and I felt a location based app would suit best as it allows the professional to get live directions straight to the clients house to carry out the appointment. I had tried to search the best approach to add the location feature and feel that the Hailo Taxi app approach would be the best.

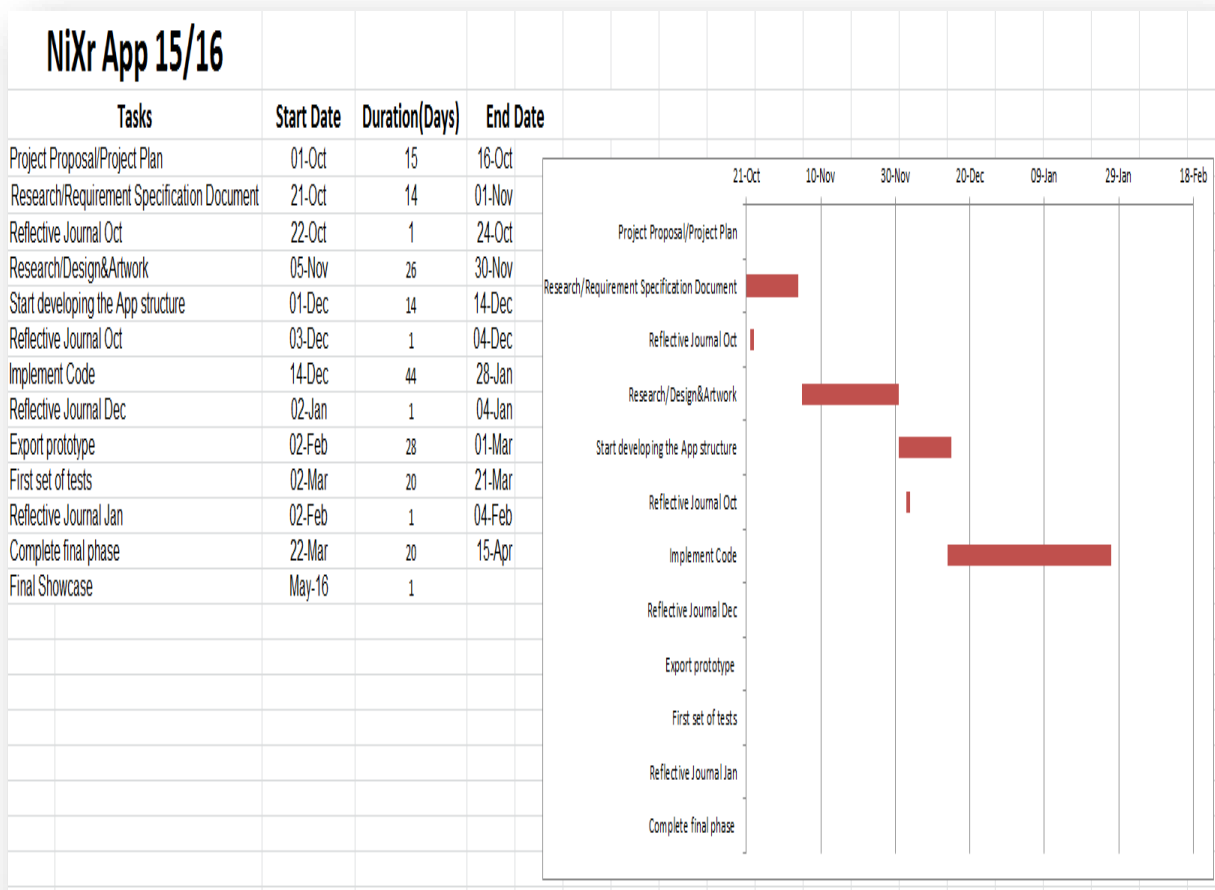
Technical Approach

Throughout my research I have found that I will populate my database using JAVA using MySQL and SQLite. I intend to develop the application using Android studio; this is a combination of JAVA and XML. I aim to have my app available to Android users on the Google Play store. I initially planned to develop niXr in C# using Microsoft Visual studio 2015 but decided to focus on Android as I needed a Mac to develop the app for Apple products. I will use Adobe Photoshop for all of the project art work etc. I have done some research on possible ways to implement my GPS tracking maps and I found a company called Pubnub that provide these solutions so I plan to try that out.

Special Resources Required

Some of the software I plan to use will be, Android Studio, SQLite, phpmyadmin, Android phone for testing the software, Adobe Photoshop and Pubnub map services.

Appendix B: Project Plan



Technical Details

The languages I will be using are Java, XML, SQL and PHP. If I encounter any major difficulties using JAVA and Android Studio to implement my idea I shall change my method of deployment, I would then revert to Visual Studio and make a web application then using PhoneGap I would create a mobile application.

Evaluation

I plan to evaluate the system by installing the latest version of the app after any major change; I will continue to test this throughout the days between upgrades. I plan to exchange the APK file between my peers so that they could test it on a wide range of mobile devices.

James Cosgrave 07/10/16

Signature of student and date

Requirements Specification

James Cosgrave Nixr

Requirements Specification (RS)

Nixr

James Cosgrave

X12763301

10/20/2016

Definitions, Acronyms, and Abbreviations

AS - Android Studio.

DB – Database.

ASAP – As soon as possible.

MUA – Makeup artist.

Bea – Beautician.

HD – Hairdresser.

Pros –Professional

Introduction

Purpose

The purpose of this document is to set out the requirements for the development of my application NiXr. The intended customers for use of this application would be any freelance worker with a trade or profession. For the purpose of this project I shall be focusing on Make-up artists, Beauticians, Barbers and Hairdressers. There will be two types of users in this app, the first user will be the services providers i.e. Make-up artists etc. The second user will be the customer seeking a make-up artist for an appointment.

Project Scope

The scope of the project is to develop an application that allows professionals in the style industry to access new clients using GPS and Mobile technology, the professionals would accept an ASAP booking or simply add a new booking to their calendar and booking management system within the app. Nixr app will also give the clients a chance to book last minute and emergency style appointments with one click of a button and leave a

review after their appointment. The project will have a Google maps interface for each profession displaying the nearest located appointment to the client. There will be a database to store the user information, user reviews and ratings.

User Requirements Definition

The sole purpose of NiXr is that it is user friendly and the desired task can be completed in three steps or less. NiXr's main interface is using Google maps, this can be slow on older devices, and the app will be using fragments which will display the Map Fragment faster on older handsets. Users should feel completely safe in regards to information that they have submitted to the database. It is also expected that the client feels reassured that the professional they are getting an appointment with is 100 percent qualified in the field they specialize in, Professional accounts would have something to display that they are qualified.

Requirements Specification

Nixr is using Androids latest Material design navigation drawer, this makes it easy to navigate through the app with almost zero knowledge in android devices. When a user firsts opens the app on the device a tutorial window shall be displayed giving a quick run through how to use NiXr, this function will disappear when complete, although if the user still has difficulties they can access this through the help window.

Functional requirements

- Professional must setup an account and profile.
- Client must register and login to NiXr.
- Maps must be loaded with location of pros and clients.
- Client onClick requests a specific Pro.
- Pro onClick accepts appointment from Client.
- Client displays Pro profile and confirms or declines appointment.

- Pro adds appointment to booking management system and calendar.
- Client leaves a review for Pro.

Use Case Diagrams

1. Description & Priority

This is the login and registration requirement, essentially the app would be non-functional without this requirement as it is based on user information and location when a user is logged into the system. This is technically the most important part of the application.

2. Use Case

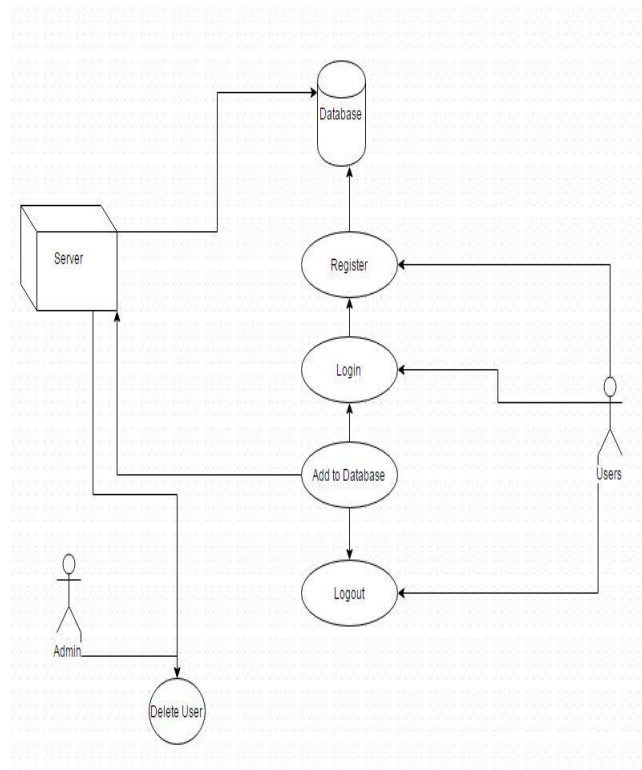
Scope

The scope of this use case is to display how a user's information would be saved to the database, it also highlights the process of login and logout, as well as the cycle of connection to the server.

Description

The Login and Registration use case highlights the process involved in setting up a new user to the database and server.

Use Case Diagram



Flow Description

Precondition: The system is in initialisation mode.

Activation

This use case starts when the application is opened and the User registers and logs in.

Main flow

12. The system identifies the user.
13. The user makes a request to register their details with the application.
14. The system completes the request and grants access to the database.
15. The user gets the result.

Alternate flow

A1: Entered invalid email

4. The system prompt user to enter correct email address.
5. The User re-enters the correct email address.
6. The use case continues at position 1 of the main flow

Exceptional flow

E1: Entered incorrect login details

11. The User is not logged in.
12. The System prompts user to re-enter correct details.
13. The use case continues at position 2 of the main flow

Termination

The system allows the user to save and create new account and login or exit.

Post condition

The system goes into a wait state.

Requirement 2 , request Pro

3. Description & Priority

This requirement is the main functionality to the app and holds all the possible process that the application. There would be no application if it wasn't for this process so it is as equally important as the user information and accounts.

4. Use Case

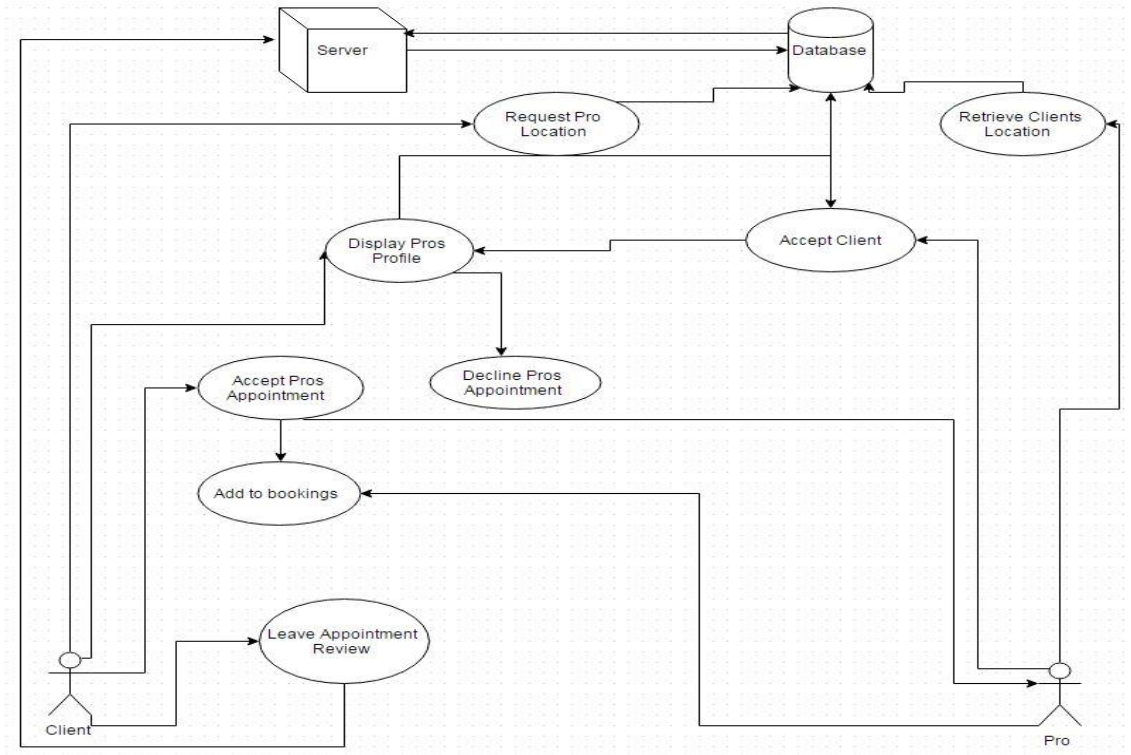
- **Scope**

The scope of this use case is to show each step to how a client requests a Pro location and a Pro receives a client location, how a client accepts a pro appointment and how a Client leaves a review after their appointment.

- **Description**

This use case describes the main functionality of how the Pros and Clients interact with each other.

Use Case Diagram



Flow Description

Precondition

The system is in displaying location mode.

Activation

This use case starts when a user logs in and requests a Pros appointment.

Main flow

16. The system identifies the Clients request.
17. The Client requests a Pro Appointment.
18. The system sends request to Pros.
19. The Client displays location.
20. The Pro receives location.
21. The Client accepts Appointment.
22. The Client leaves a review for Pro.

Alternate flow

A1: Client Rejects Appointment

14. The system cancels request

15. The Client goes back online for another appointment

16. The use case continues at position 3 of the main flow

Exceptional flow

E1: The Client wants to cancel an appointment

17. The Client cancels

18. The system sends request

19. The Pro cancels appointment.

20. The use case continues at position 3 of the main flow

Termination

The Client leaves review and terminates app

Post condition

The system goes into a wait state

3 Requirement 3, Chat

e) Description & Priority

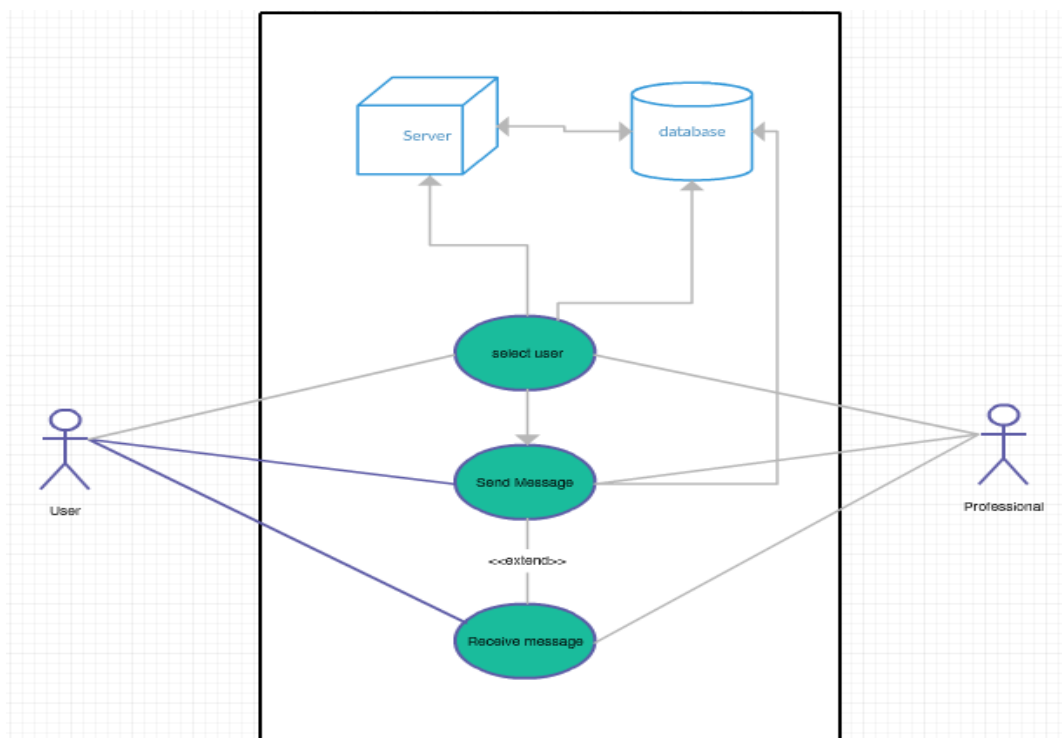
This requirement is the main point of communication between both accounts, it allows internal instant messaging with notifications, as this is one of the apps main feature the priority is high.

f) Use Case

Scope: The scope of this use case is to show each step of how a client messages a Pro and Pro receives a notification with message attached.

Description: This use case describes the main functionality of how the Pros and Clients interact with each other.

Case Diagram



3.1.4 Flow Description

Precondition

The system is in displaying List of users.

Activation

This use case starts when a user logs in and selects a profession i.e. programming, makeup artist or plumber.

Main flow

7. The system identifies the Users request.
8. The User requests a Professionals Profile.
9. The system sends request to Database.
10. The Professionals profile displays information and chat button.
11. The user sends a message.
12. The Professional receives message.

Alternate flow

A1: User selects wrong professional account

4. The system cancels request
5. The User goes back to select another Professional
6. The use case continues at position 3 of the main flow

Exceptional flow

E1: The User wants to cancel session

4. The User cancels
5. The system sends request
6. The User closes app

Termination: The Client sends message and terminates app

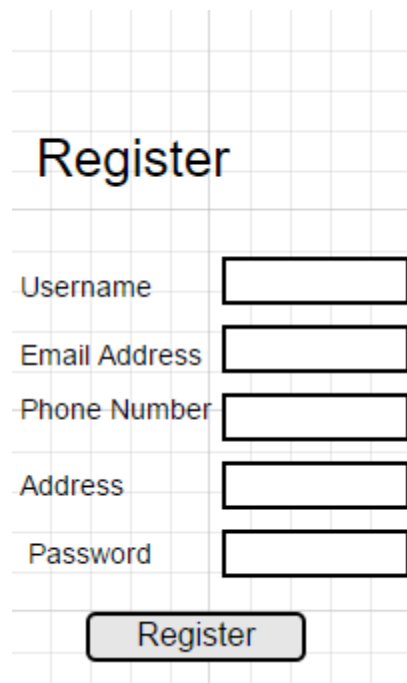
Post condition: The system goes into a wait state

Interface requirements

The only interface I plan to use for this application is Google maps API2

GUI

This mockup is for a user registration, the user enters their details and registers with the app, and the details are sent to a database and retrieved when logging in.



A user registration form mockup displayed on a grid background. The form consists of the following elements:

- The word "Register" in a large, bold, sans-serif font at the top left.
- Five input fields, each preceded by a label: "Username", "Email Address", "Phone Number", "Address", and "Password".
- A "Register" button located below the input fields, featuring a light gray background and rounded corners.

This mockup is a login screen, after the user registers they are directed to the login screen to enter their login information.

Login

Username

Password

Login

This mockup is when the user logs in and is directed to the makeup artist's map where all the makeup artists located nearby are displayed on the map.

Make-up Artist

Google Maps

▼ Username	▼ Rating	▼ Location	▼ Distance

Application Programming Interfaces (API)

This system will use Google Maps and Pay-Pal API's, and will have a well designed interface.

System Architecture

Class diagram to be added after meeting with supervisor.

System Evolution

NiXr could be involved by adding pretty much every trade there is, I plan to introduce, Electricians, Plumbers, Cleaners and many more in the near future. The application could also be introduced to other OS platforms such as IOS and Windows phone, as well as Tablets and possibly a desktop version.

Appendix 3: Monthly Journals

Reflective Journal: September 2016

Student name: James Cosgrave

Programme: BSc in Computing Mobile Technologies

Month: September 2016

My Achievements

This Month I spent most of the time trying to come up with an idea that differentiates itself from all of the other apps on the market. I started with some basic mind mapping trying to find a problem that had no solution already developed for it, this is how I decide to go with my app Nixr, an app that allows professionals in the style industry to gain new clients based on a location of the requested user.

My contributions this month have solely been focused on getting my idea perfect, innovative and unique.

My Reflection

I felt that this month I have achieved the best possible outcome as it was not easy to come up with an idea that has not already been done before. I did think to myself how could I possibly create this app as I have never worked with this technology before, I started to second guess my idea and take some stuff out.

I feel I was successful in my research and planning, I am happy with my idea and really looking forward to dive into the development side of things

Intended Changes

I don't need to make any changes as such, although next month I plan to research how I will develop my idea, what software I will use and what platform I decide to go with for developing my application.

I am leaning towards an app developed in Microsoft Visual Studio as this will enable me to develop a cross platform app and expand my potential users. I realised that I need to do a lot of research as this kind of application may take some time and effort to implement.

Supervisor Meetings

Date of Meeting: Tue Oct 20, 2016.

Items discussed: Project Proposal.

Action Items: Group discussion and planned next meeting for each individual.

Reflective Journal: October 2016

Student name: James Cosgrave

Programme: BSc in Computing Mobile Technologies

Month: October 2016

My Achievements

This month I got a good idea of what I was going to do and how I was going to do it, I decided to develop my application in Android Studio. I spent a lot of the time this month working on my requirement specification as this was very time consuming; I took some time trying to figure out all of my use cases.

My contributions this month was solely focused on my requirement specs, although I did spent some time deciding what technology to use and setting up my platforms.

My Reflection

I started this month with my requirement specification, I felt this was a little difficult as I did not know exactly how to do some of my ideas and I was unsure what I was keeping or scraping. I understand this is the way big projects are supposed to be developed although I feel it can be a little pointless at times as I plan to make changes as I go along. This month had some ups and downs in regards to how I was going to implement my idea; I had originally planned on using Visual Studio to develop a cross platform application until I realized you still needed MAC to connect to it. I decided to go with an Android app using Android Studio; I have used this software in previous projects so I felt it would be best to use it again for this app. I had started the develop process to see if what I wanted to achieve was within my skillset and knowledge.

I encountered some major issues when implementing the new material design navigation drawer, I got that stressed I planned to simplify my idea and use a different language, I went to my supervisor for some advice and I got the advice I was expecting “Don’t change your idea” it was the reassurance I needed as I would have limited myself if I chose a basic language to develop my application. I took this good advice and start looking for alternative ways to implement the Navigation drawer.

I feel I was stressed this month and got a serious look on

Intended Changes

I intend to change the approach of implementing the navigation drawer and how I am going to style my app as the functionality is the vital part.

I realised that I need to do a lot of research as this kind of application may take some time and effort to implement.

Supervisor Meetings

Date of Meeting: Mon Oct 09, 2016.

Items discussed: Requirements spec

Action Items: We discussed my requirement specification and how I would implement my idea.

Reflective Journal: November 2016

Student name: James Cosgrave

Programme BSc in Computing Mobile Technologies.

Month: November 2016.

My Achievements

This Month I was able to start coding which I was excited about, I started of drawing my screen layouts on paper to get an idea of what way I wanted the layout to be.

I was messing around with Android Studio for a little to get use to the environment as I have not used it in a while, after an hour or two of setting up my IDE, downloading all of the SDK files(time consuming) I had finally started to develop the pages .

My Reflection

I felt very positive after getting off to a great start with the design process; this has always been my favourite part in any project development, I can't really say anything went wrong this month as I have just been sampling with some tutorials online to get used to Android.

Intended Changes

Next month I plan to implement a service called Pub nub, this is a real-time service that manages all call-backs from a live map and handles incoming messages if I decide to go with an in app messaging service. I realised that I need to use my time wisely and stop focusing on practicing tutorials and make progress in my actual project.

Reflective Journal: Dec 2016

Student name: James Cosgrave

Programme BSc in Computing Mobile Technologies.

Month: Dec 2016.

My Achievements

I have made some progress in the development of the navigation through the app, I have implemented the Google Navigation Drawer, this meant I went from using Activities to using Fragments; Fragments are a freer flowing style of navigations and support swiping through tabs.

My Reflection

In this month of work I was tied between using the original Nixr app or continue developing a brand new app, I ran into more trouble than I expected.

Intended Changes

I plan to try a different method than Pubnub as I am having major difficulties implementing this feature; I plan to source another method of handling GPS live tracking.

Reflective Journal; Feb 2017

Student name: James Cosgrave

Programme BSc in Computing Mobile Technologies.

Month: Feb 2017.

My Achievements

My achievements are null this month, I am still stuck with the same issues as last month.

My Reflection

I have been continuously trying to get the GPS live tracking into the project, at this stage I am near giving up on the whole feature; I have tried Pubnub for months now and still can't seem to get it working for me. I asked a number of questions on StackOverflow and tried to implement the answers and still no luck. As I was searching for a solution I came across technology called Firebase, it's an online cloud based storage which handles user credentials and possibly location details when used with GeoFire plugin.

Intended Changes

I intend to start looking into firebase to see if I can use this as an alternative to Pubnub, I will spend one month on this, if I cannot get it to work I will need to come up with a simple way to get similar results.

Reflective Journal: March2017

Student name: James Cosgrave

Programme BSc in Computing Mobile Technologies.

Month: March 2017.

My Achievements

I have successfully added a database using SQL; I have the application communicating with the database using PHP files and JSON. When a professional creates an account, they display on a map and allow the user to click on the name and display a profile of information to contact them. After some feedback about marks I missed I decided to add in features that was missing such as constraints on the rating system, a user can now only rate each Professional once and no more, this keeps the rating system accurate. I've also added in SMS validation to ensure the professional account is safe and a repeat password on a standard account to ensure the correct password is created

My Reflection

After many failed attempts to add the GPS live tracking I had to settle for a standard map displaying all of the professional user location and allowing a standard user to select them from a list of the highest rating first and few their profile details, this is not what I wanted and it doesn't look in anyway as slick as I intended it too. I managed to find an alternative method to create my application in a less complex way, it doesn't look or work as well as I planned but it does work.

Intended Changes

The application is finished now but for future changes I will take into consideration my skill set before I try to develop such an application.

Reflective Journal: April 2017

Student name: James Cosgrave

Programme BSc in Computing Mobile Technologies.

Month: April 2017.

My Achievements

I have successfully implemented an instant messaging service within the application, most of this month was trying to get that code working and ready to submit. Another addition was notifications, so when a user sends a professional a message the professional will get a notification on their device saying they have a new message.

My Reflection

I am happy with the outcome, the whole idea of my application was to act as a main communication point between tradesmen and customers, after implementing the messaging system along with the other functions I feel that I have done exactly what I intended to do just not the way I would have liking to. As it took me a lot longer than I thought to finish this project there has been an app realised with my whole idea, my version wouldn't be up to standards as this company but it is good to know that my idea was very innovated and unique. At the time, there was nothing like Nixr available on the market.

Intended Changes

No changes needed I feel enough has been.