COMPUTING WITH PLYMOUTH UNIVERSITY

School of Computing and Mathematics

PRCO303

Final Stage Computing Project

BSc (Hons) in Software Engineering

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Real time bus route and road recognize system

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Abstract

This report describes a project undertaken as a final year project for a BSc (Hons) Software Engineering degree, which delivered an Android app as a real life solution.. The system includes a Android Studio, database as well as a API, which provide the Android app with updated data. In recent years, many closed development platforms have seen a rise in popularity such as iOS, Android and Windows Mobile. These platforms helped highlight the type of functionality endusers wanted to have within their applications.

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1.0.Introduction

1.1 Project motivation and background

This application is mainly focus for passengers who are going on bus to recognize the bus

station.

Normally passengers are increasingly using smartphones, tablets.Application will let users to set a location based alarm on their phone that will go off when they get close to the preselected bus stop. application can be easily used with the support from GPS. Any person who select the path can use this application and set the alarm for the desired bus stop.and alarm will be ring before 15min.

I think this application is novel because it really emphasizes the advantage of using public transportation will be helpful so far. With this application, a user who is taking the bus to an unfamiliar place, can go with

confidence that they will get off at the correct place even if they don't know exactly when the stop is approaching. Using the application allows people to efficiently utilize time on the bus without the constant worry of missing their bus stop destination. If user's phone or device will be become battery low or signal strength law there is a tracking system and will give message how far you will go to the destination.

The mobile apps we use every day have changed the way we conduct business, the way we

communicate and consume entertainment, the way learn things about the world. coolest job

industries of the momentThis application Development task is to develop Android Development

skills. The Android application industry is a billion dollar industry, and the iOS App Store now earns 75 percent more revenue than the Google Play Store. This is an increase over the 70 percent difference recorded during 2014.A platform is one where the user controls a character and moves the character to achieve a specific goal or objective.
This gave work on lower end systems, furthermore it will give me a good understanding of programming concepts and design principles.

And also this project is done in order to satisfy the requirements of the PROCO303SL module.

1.2 Project Objectives

The core objectives for this project is as following:

- The user should be able to find his own location on map or area.
- The project should make it more convenient for user to view a map of area.
- The project should make it more convenient for user to view the shedules of bus route.
- The user should be able to view on bus route at a time on the map.
- To research Android apps and the technology used in depth.
- Identify and understand the factors that would enable a reduction time waste.
- To analyse user needs and outline functional requirements beyond the initial idea.
- To thoroughly test and develop the application to ensure that it meets a good standard of quality.
- Upload to google play store as a success application.

1.3 Method of approach

Figure.1 incremental method

Incremental development And, and IDE Android Studio,Emulator- Android Nexus 5API 21 *84

The **incremental** build model is a method of software **development** where the product is designed, implemented and tested**incrementally** (a little more is added each time) until the product is finished. It involves both **development** and maintenance.

In incremental model the complete demand is split into numerous builds. Multiple development cycles happen here, creating the life cycle a "multi-waterfall" cycle. Cycles area unit shared out into smaller, additional simply managed modules. every module passes through the wants, design, implementation and testing phases. A operating version of code is made throughout the primary module, thus you have got operating code timely throughout the code life cycle. every resultant unharness of the module adds perform to the previous unharness. the method continues until the whole system is achieved.

In the diagram on top of we have a tendency work incrementally we area unit adding piece by piece however expect that every piece is absolutely finished. therefore continue adding the items till it's complete. As within the image on top of someone has thought of the appliance. Then he started building it and within the 1st iteration the primary module of the appliance or product is completely prepared and may be demoed to the shoppers. Likewise within the second iteration the opposite module is prepared and integrated with the primary module. Similarly, within the third iteration the complete product is prepared and integrated. Hence, the merchandise got prepared step by step.

Advantages of incremental model:

- Generates operating code quickly and early throughout the code life cycle.
- This model is additional versatile – more cost effective to vary scope and needs.
- It is simpler to check and rectify throughout a smaller iteration.
- In this model client will answer every designed.
- Lowers initial delivery price.
- Easier to manage risk as a result of risky items area unit known and handled throughout it'd iteration.

Disadvantages of incremental model:

•Needs sensible designing and style.

•Needs a transparent and complete definition of the complete system before it will be diminished and designed incrementally.

•Total price is on top of body of water.

•When to use the progressive model:

•This model will be used once the wants of the whole system area unit clearly outlined and understood.

•Major needs should be defined; but, some details will evolve with time.

•There may be a ought to get a product to the market early.

•A new technology is getting used

•Resources with required talent set aren't on the market

•There area unit some high risk options and goals.

1.4 Software deliverables

This project will aim to build an application that users can use to support their travelling and food GPS base activities. Based on the project goals, the project will deliver a mobile application with an appropriate API .

1.5 Report structure

Chapter 2 explains the method of approach, while chapter 3 contains a rough evaluation of available technologies, and explains reasons behind choosing the technologies used. Chapter 4 describes the initial as well as revised scope, and lists the various deliverable requirements. The mobile application GUI design choices are explained in chapter 5, which talks about the visual elements and the logic behind them. Chapter 6 clarifies the underlying code and object architecture of the deliverables. This is followed by chapter 7, which describes the development stages and implementation. Chapter 8 explains the testing methods employed, while chapter 9 covers licensing and legal matters. Chapter 10 contains the end-project report and project post-

mortem. Finally, chapter 11 contains the report conclusions, followed by references (chapter 12) and appendices (chapter 13).

2.Literature review

2.1Comparison of different Applications and their features

There are many navigation based applications developed. Though many apps are available handful of those apps can be effectively used in Sri Lanka. Many applications are based on European and American countries and states. And they are only tested on the said areas. Among them most of the apps are offline apps that maps are needed to be downloaded. But my navigational app is an online based app, the app is quite smaller than offline applications so the memory requirement is low. This is specially designed to Sri Lanka as there are very few apps working on Sri Lanka.

As some good applications in this application the bus routes can be viewed, and the bus halts can be displayed to the users. Notification alarms can be programmed easily. Notifications are displayed on the bus stops (destination) of the user and also before about 5 minutes to the bus stop or the previous bus stop. This is important as the traveller will be able to collect himself before getting down (if the user is sleep prior).

One more special feature is that app monitors your battery level closely. If the battery level is very low the application will automatically send a summer to the user with a battery low alert. It will send the number of stops for your bus stop, the estimated time that will take place and etc. I can reasonably say that this application is quite unique to other navigational applications.

2.2 Applications Teachnical comparision

Wake Up GPS application also the GPS based and the same application.

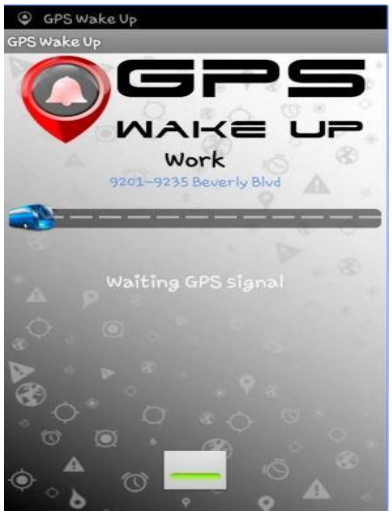

Figure.2 Wake Up GPS application

- Wake Up GPS is an alarm by GPS location.
- A application to bus users that don't want to loose bus stop.
- For greater efficiency, in addition to GPS, the application uses the network when needed, and a lot of calculations.
    - Features:
      List of favorites destinations;
      Radius alert;
      Ringtone definition;
      Low battery consumption;
      Low battery alert;
      Google Maps visualization;
      Customized progress to quickly view distance;

Bus Stop Alarm also the same app but it's GUI design not efficient than tha wake up application.

Figure.3 Bus Stop Alarm

- It Works with both network location and GPS. GPS can drain the battery. Next Release should optimize battery usage. But it has not Google Maps visualization Radious alert.

Road Rooster is a location based alarming system.

Figure.4 Road Rooster

- Rather it makes use of Google's fused location API to create a geofence around the destination.
- The radius provided as perimeter is the lowest bound for triggering an alarm.
- Whenever the devices comes within the range, Google's location service informs the same to the app.
- On receiving, the app triggers an alarm - letting you know that you have reached your destination.

It hasn't good interface than wakup Gps application .Although the app has yielded good efficiency for smaller perimeters, it is suggested that the perimeters should be kept at higher value for expected outcomes. Because location updates are gps driven and how clear the reception will be, cannot be predicted for a journey. For the roosters to work correctly, you are requested to keep your location services turned on during the transit session. The app leaves no background services and hence does not eat up your battery. But tracking location itself is a battery effective procedure and hence can drain a little more juice out of r box.

Location Alarm Set some destinations, and this alarm will remind you when you approach them. can set notification in status bar, vibrate the phone, and choose an alarm sound you

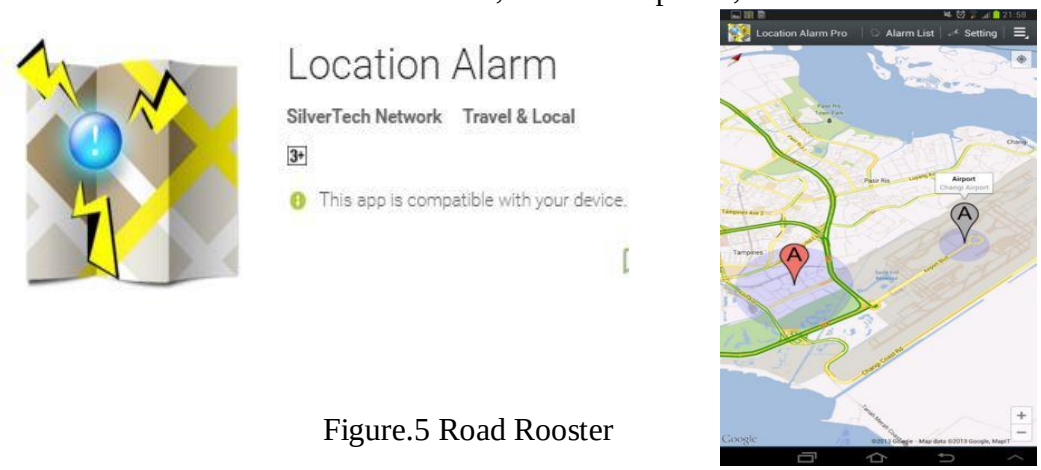

Figure.5 Road Rooster

This app additionally added voice reminder and this feature haven't of above applications.

- Satellite view of the map.
- Traffic information on the map.
- Center the map with your current location.
- Show alarm range in map.

- Drag marker to edit alarm.
- Auto Start after Reboot.
- Bring Map to Front When Triggered. (Only in Pro version)
- Notification in status bar.
- Notification with pop-up text.
- Vibration of the alarm.
- Sound of the alarm. (MP3 file support in Pro version)
- Sound volume.
- Alarm repeat
- Alarm enabled time slot
- Voice of the alarm.
- Choice of different alarm sounds.
- Send SMS for notification.
- Distance to destination to trigger the alarm. (Separate for each alarm in Pro version.)
- Days to repeat the alarm.
- Power option. (Automatic mode in Pro version)
- Alarm list import and export.(Only in Pro version)

GPS Route Finder is your personal application through which can easily track all the locations have visited. And it also have basica function like above applications.Its a simple app that helps you to track our own locations on date wise.

Figure.6 Route Finder

Find easiest and fastest route for destinationGPS Route Finder helping to save your precious time. It helps you not to waste your time in long route.

Just Give the time intervals to record the location and save it to the database, and Start the Mobile Location Tracker. By the end of the day you can check where you roamed with locations saved on google maps.

- Find easiest and fastest route for your destination.
- Easily track all the locations you have visited.
- Share your current location with one click.
- Find Address of any area in map.
- Supports different maps types : Normal, Satellite, Terrain maps.
- Find Driving Route.
- Find Walking Route.
- Easily delete your complete phone location history just by one click.
- Best GPS Route Finder app for android.
- GPS Route Finder is completely free to download.

GPS Maps FullFunction application can most easy way to know where we now.because it has powerful 3D GUI and locations but it has not alarm,power options such that features

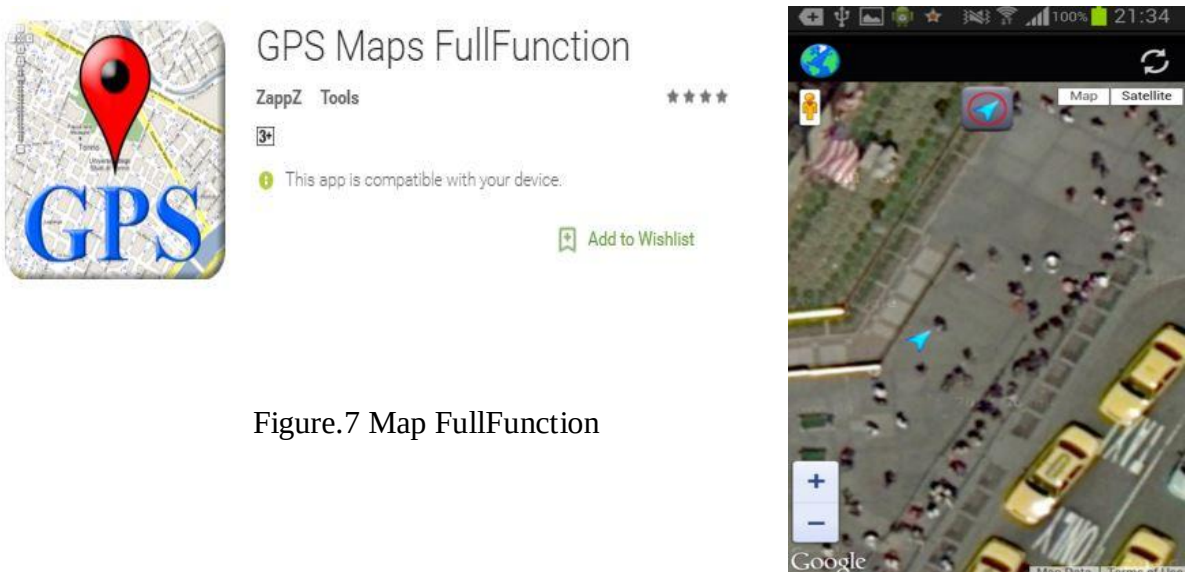

Figure.7 Map FullFunction

Navigation Navigator app will help all users to open popular GPS Navigation with Maps fast.

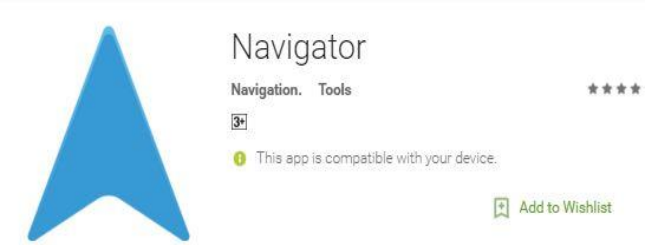

Figure.8 Navigator

- Navigation Navigator is here for those, who miss original Navigator icon for easy navigation. This Navigator
- app simply opens Navigation in one click.
- Any issues regarding location, Maps crashing or internet use do not have anything to do with this app and there is no alarm feature and power solutions.

Offline maps & Navigation

Figure.9 Offline maps & Navigation

- offline maps
- free map updates

- multi-language voice navigation (33 languages supported)
- GPS / Glonass ready
- speed limit warnings
- fixed speed camera warnings (available in selected countries only)
- 3D buildings
- lane guidance
- large POI database
- pedestrian, car, or even bee-line navigation
- night mode based on local sunset time
- track recording

GPS Map is free access to maps, navigation & traffic. GPS Map opens Maps for Android phones and tablets with free navigation and maps. will have access to accurate maps in 220 countries and territories, voice guided GPS navigation for driving, biking and walking. GPS Map provides maps and navigation with live traffic conditions, incident report and finds best driving route.

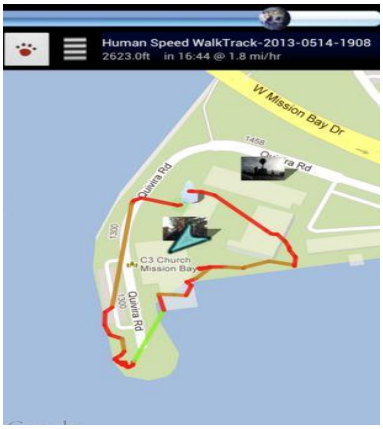

Figure.10 GPS Map

features

• Maps of 220 countries and territories.
• Voice-guided GPS navigation.
• Real time traffic with live update.
• Incident reports and automatic rerouting .
• Detailed information on more than 100 million places.

GPS Location alarm will alert you for your stop by Alarm. GPS Location Alarm allow you to sleep or reading or doing any other activity and not to look at road or sign boards for your stop every-time.

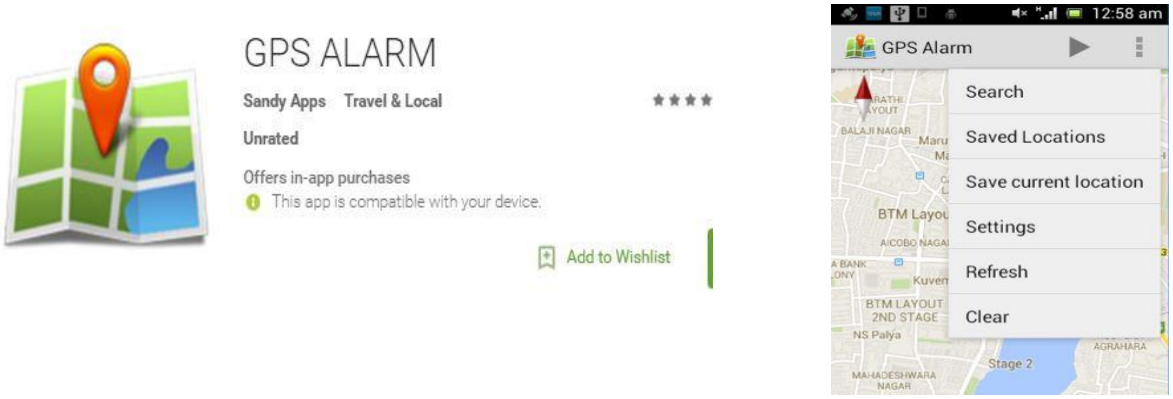

Figure.11 GPS Location alarm

Features:

- User Friendly interface
- Simple and attractive Graphics
- Add multiple locations and enable/disable
- View your save locations
- Delete your saved location by long press

Mobile Location Tracker reliable then other sources of location provider.

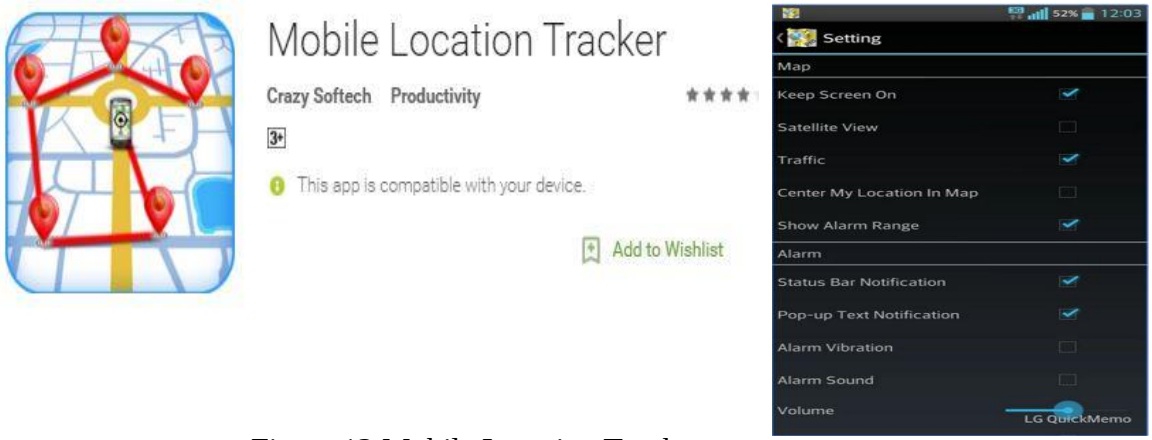

Figure.12 Mobile Location Tracker

Features

- GPS Location Base.
- Highlight mobile Locations on Google Map, have travel through.
- Helps in new places, to find track have traveled.
- Best reliable app when travelling too far.give you exact path have travel through.

3 .Method of approach

3.1 Research

The research for this project consisted of testing other similar apps and testing the features they offer. Few apps that have some of the same features to this project are the GPS root finder, Wake up GPS , which gives the user to search data records and more functions

3.2 Usability analysis

The project was started by analysing user desires and receiving feedback on usability. the first epitome was presented provide potential users a thought of what it'd appear as if, and feedback was then noted to produce grounds for development of extra options. These enclosed like having the ability to store favorite recipes, that was already a planned piece of practicality.

3.3 Project management

At the start of the project, a PID was created to put some grounds for the project expectations and development needs, that provided the project with outlined tips. Most of the functionalities printed are developed, however some deviations were created owing to a modification of perspective that emerged throughout the event method.

Two interim reports were written to document the present progress and revise the event schedule wherever necessary. This was a neighborhood of the specified documentation for

the project, however the management method failed to perceptibly get pleasure from this. Throughout the project, management began to lean a lot of and a lot of against the agile methodology, about to stay versatile and develop options as they were required. Project management techniques weren't utilized to any massive degree, however it gave the impression to work well for this project as there's only 1 developer to manage and not many.

3.4 Development approach

The PID stated that the project would follow an incremental approach, which was generally followed throughout the project, although there was no particular focus on following a set approach due to it being a one-person project. Each piece of functionality was fully developed and tested before attempting to add more just like the PID describes, and this has ensured that the app and system stays stable throughout the development process.

This was however not used to any large extent, as no product-breaking errors occurred that could not quickly be changed without having to roll back.

This approach appeared to work well for the project, as the current app has been tested and appears to run without any obvious errors or faults. Progress was measured by working software, which is more of an agile view, but ultimately the goal of the project was to have a working product and it was deemed an appropriate measurement. In the future I'll add some of the additional features. Settings,Dash board such that functions.

4. Choice of technologies

4.1 Mobile application OS

Android is the world's most popular operating system for mobile devices and tablets. It is an open source operating system, created by Google, and available to all kinds of developers with various expertise levels, ranging

From a developer's perspective, Android is a Linux-based operating system for smartphones and tablets. It includes a touch screen user interface, widgets, camera, network data monitoring and all the other features that enable a cell phone to be called a smartphone. Android is a platform that supports various applications, available through the Android Play Store. The Android platform also allows end users to develop, install and use their own applications on top of the Android framework. The Android framework is licensed under the Apache License, with Android application developers holding the right to distribute their applications under their customized license.

Android has the biggest put in base of all operative systems of any kind. mechanical man has been the simplest mercantilism OS on tablets since 2013, and on smartphones it's dominant by any metric.

Initially developed by mechanical man, Inc., that Google bought in 2005, mechanical man was disclosed in 2007, along side the start of the Open French telephone Alliance – a syndicate of hardware, software, and telecommunication firms dedicated to advancing open standards for mobile devices. As of Gregorian calendar month 2013, the Google Play store has had over a meg mechanical man applications ("apps") printed, and over fifty billion applications downloaded. associate April–May 2013 survey of mobile application developers found that seventy one of developers produce applications for mechanical man,and a 2015 survey found that four-hundredth of full-time skilled developers see mechanical man as their priority target platform, that is equivalent to Apple's iOSon thirty seventh with each platforms way on top of others.At Google I/O 2014, the corporate discovered that there have been over one billion active monthly mechanical man users, up from 538 million in June 2013.

Android's ASCII text file is free by Google underneath open supply licenses, though most mechanical man devices ultimately ship with a mixture of open supply and proprietary software package, as well as proprietary software package needed for accessing Google services. mechanical man is fashionable technology firms that need a ready-made, low-priced and customizable software system for sophisticated devices. Its open nature has inspired an oversized community of developers and enthusiasts to use the ASCII text file code as a foundation for community-driven comes, that add new options for advanced users or bring mechanical man to devices originally shipped with alternative operative systems. At a similar time, as mechanical man has no centralised update system most mechanical man devices fail to receive security updates: analysis in 2015 over that nearly ninetieth of mechanical man phones in use had acknowledged however unpatched security vulnerabilities attributable to lack of updates and support. The success of mechanical man has created it a target for patent legal proceeding as a part of the supposed "smartphone wars" between technology firms.

4.1.1 IDE

There area unit currently many IDE choices for mechanical man development. Android Studio is that the official mechanical man development IDE, however they solely free the primary stable version in December 2014, thus this might still be viewed as a piece current (Android Studio unleash notes, 2015). Unity offers a “build once, deploy everywhere” practicality, however is preponderantly meant for games, albeit regular applications are created with it too. Eclipse is understood to be fastidious and bobbing up with all styles of random errors, however sites like stackoverflow area unit overflowing with ways that to unravel these, and previous expertise with it created it an honest selection.

Using Eclipse meant that the app would be native, that has its execs and cons. Deploying on different operative systems like iOS or maybe websites would need a whole rewrite, however developers have additional management with native apps. because the native mechanical man Dalvik Java language may be a modification of the wide used Java language, plenty of code are often reused for a desktop Java application, which may run cross-platform, if any development ought to need it. it's conjointly detected within the OS section on top of that users like native apps for varied reasons.

Android Studio is that the official IDE for android app development, supported IntelliJ plan. On high of IntelliJ's powerful code editor and developer tools, android Studio offers even additional options that enhance your productivity once building android apps, such as:

- A flexible Gradle-based build system
- Code templates to assist you build common app options
- A rich layout editor with support for drag and drop theme writing
- Built-in support for Google Cloud Platform, creating it simple to integrate Google Cloud electronic messaging and App Engine

Each project in android Studio contains one or additional modules with source code files and resource files. differing kinds of modules include:

- Android app modules
- Test modules
- Library modules
- App Engine modules

All the build files area unit visible at the highest level underneath Gradle Scripts and every app module contains the subsequent 3 elements:

- manifests: Manifest files.
- java: source code files.
- res: Resource files.

Customize, configure, and extend the build method.

Reuse code and resources across supply sets.

The flexibility of Gradle allows you to realize all of this while not modifying app's core supply files. to create an android Studio project, see Building and Running from android Studio.

Debug

Android Studio assists you in debugging and up the performance of code.

Inline debugging

Inline debug data includes:

- Inline variable values
- Referring objects that reference a specific object
- Method come back values
- Lambda and operator expressions
- Tool tip values

Memory and computer hardware monitor

Android Studio provides a memory and cpu monitor read simply monitor app's performance and memory usage to trace computer hardware usage, notice deallocated objects, find memory leaks, and track the quantity of memory the connected device is using.

4.2 Database

Android provides several options for we to save persistent application data. The solution choose depends on our specific needs, such as whether the data should be private to application or accessible to other applications (and the user) and how much space your data requires.

Basically I identified data storage options are the following:

- Shared Preferences
- Store private primitive data in key-value pairs.
- Internal Storage
- Store private data on the device memory.
- External Storage
- Store public data on the shared external storage.
- SQLite Databases
- Store structured data in a private database.

- Network Connection
- Store data on the web with your own network server.

Android provides a way for you to expose even your private data to other applications with a content provider. A content provider is an optional component that exposes read/write access to application data, subject to whatever restrictions we want to impose. For more information about using content providers, see the Content Providers documentation.

- SQLite is Android specific database available by default in Android phones. SQLite is a lightweight and powerful database engine, and can be used in any type of application development so I willing to use SQLite.
- Storing and retrieving locations in SQLite from Google Maps Android API V2
- On taping a location in the Google Map, a marker will be drawn at the taped location and the corresponding coordinates with Google Map zoom level will be saved in SQLite database. On restarting the application, the saved locations are retrieved from the SQLite database and redrawn in the Google Maps.

SQLite Database in Android

Every mobile application might be handling data which have to be permanently stored and retrieved at a later instance of time. In android, SQLite is a lightweight database which is embedded into the platform by default. Most of the common database operations can be done using methods available in SQLite. The syntax is very similar to SQL syntax.SQLite is a lightweight database which does not require any configuration. As the memory space required is minimal, it is suitable for mobile applications.

Android SDK provides two classes, which can be used by developers in order to use SQLite.

SQLiteOpenHelper- This class helps in creating the database and controlling version changes

SQLiteDatabase- This class helps in performing basic database operations.

4.3.Google API

Google APIs are a set of JavaScript APIs developed by Google that allows interaction with Google Services and integration of rich, multimedia, search or feed-based Internet content into web applications. They extensively use AJAX scripting and can be easily loaded using Google Loader.

Google Maps

Google Maps has a wide array of APIs that lets us to embed the robust functionality and everyday usefulness of Google Maps into our own applications, and overlay our own data on top of them. Google introduced a Java application called Google Maps for Mobile, intended to run on any Java-based phone or mobile device. An internet connection is required to get maps and related information from Google Maps.

The Global position system (GPS) mounted as part of the Vehicle Mounted Unit in the bus will receive the longitude and latitude coordinates from the Satellite. This information is then sent across to the Central Control station through the wireless communication link such as GSM / GPRS. The application at the Central control station on receiving the position inputs will update the display boards at the bus shelters and at the bus terminal platform display pineland the general display panel at the related bus terminals. They have used the following display boards for providing information to the users.

User command to obtain his current position by pressing the “View Google Map” button. As soon as the system gets the command from the user to obtain the current position Then system activates its GPS system and obtains the current latitude and longitude for user which is then used to display the current position of the user on Google map.

4.4 XML

Extensible markup language (XML) could be a language that defines a group of rules for encryption documents in a very format that's each human-readable and machine-readable.XML is employed for the creation of UI layouts in humanoid. humanoid provides an easy XML vocabulary that corresponds to the read categories and subclasses, like those for widgets and layouts.UI descriptions square measure external to the applying code, which implies that the user will modify or adapt it while not having to switch the source code and recompile. as an example, XML layouts are often created for various screen orientations, totally different device screen sizes, and totally different languages. to boot, declaring the layout in XML makes it easier to see the structure of the UI, therefore it's easier to right issues

4.4.1Parse XML Data in a Android APP

There are multiple ways in Android.If we can create an XMLParser. The first way to do it is using the Xml class as shown below:

```
xmlparser parser = Xml.newParser();
```

You have to just call newPullParser which will return you a reference to the XMLparser. Or you can get a reference from the XmlParserFactory as shown below.

```
XmlParserFactory ParserFactory;

                try {

                        ParserFactory = XmlParserFactory.newInstance();

                        PullParser parser = ParserFactory.newarser();

                } catch (XmlParserException e) {



                        e.printStackTrace();

                }
```

5. Requirements

5.1 Initial scope

The project will aim to provide functional software, but not fully develop every aspect of it, as security and encryption are not deemed essential at this stage. It would however have to be included in further development if this system is to be published. The aim of the project is to develop good level.

5.2 Current scope

The only obvious deviation from the initial scope is the lack of a web client, but as a result, the Android application's some levels complex.

5.3 User requirements

- User Friendly interface.
- Simple and attractive Graphics.
- Vibration of the alarm.
- Sound of the alarm.
- Low battery alert;
- Google Maps visualization.

- Customized progress to quickly view distance.

5.4 System requirements

5.4.1 For app users

Table 2: Android application minimum requirements

Android application minimum requirements	
OS	Android 4.2 JELLY BEAN
Device	Smart phone with HD Screen
Storage	10-15MB Of free space
Internet	At least when whishing to update

Table 3: Android application recommended requirements

Android application minimum requirements	
OS	Android 4.4 KITKAT
Device	Smart phone with HD Screen
Storage	10-15MB Of free space
Internet	on every start-up to load latest data

5.4Functional requirements

5.4.1 Business rules

5.4.1.1 Database

1) Recipes

a) every formula has just one and it's straightforward to use the applying

i) Id, name, time, serving, cuisine, meal type, difficulty, directions

b) every formula might have many Ratings, accessed through the link table

4.5 Non-functional requirements

5.5.1 android app

1) The app should answer input quickly

2) The app should offer the user a sleek interaction expertise

3) The app ought to supply the way to load among a number of seconds.

a) If the API decision is taking too long, users ought to be ready to favor to run the last used information.

4) The app mustn't crash unexpectedly

5) The app ought to show ingredients and recipes as well as search leads to constant order each time, unless the information received associate degree update.

6) The app ought to offer a uniform, unified style throughout the complete app.

6 Design

6.1 Android app

GUI Designs screen shots

Figure.13 Splash Screen

Figure.14 Loading Splash

Figure.15 Tital bar

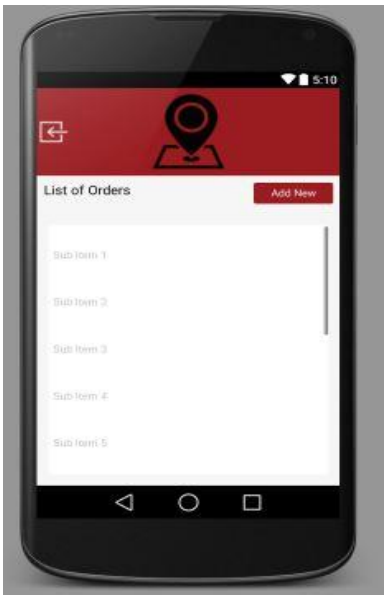

Figure.16 Add, and List view

6.1.1 Colour choice

The color theme is predicated around a monochromatic color scheme with its complement colour. the colors ar supported the palette offered by the https://www.google.com/design/spec/style/color.html# web site , when provision it with the bottom red color. colors. ’ve been designed to figure harmoniously with one another.The color palette starts with primary colours and fills within the spectrum to make an entire and usable palette for automaton, Web, and iOS. Google suggests mistreatment the five hundred colours because the primary colours in your app and therefore the alternative colours as accents colours.

Figure.17 Using the fabric style color palette

Apps that don't have existing color schemes might choose colours from the fabric style color palette. Limit your choice of colours to 3 hues from the first palette and one accent color from the secondary palette.

Secondary color

Palettes with a secondary color might use this color to point a connected action or info.

The secondary color is also a darker or lighter variation of the first color.

Accent color

The accent ought to be used for the floating action button and interactive components, such as:

- Text fields and cursors
- Text choice
- Progress bars
- Selection controls, buttons, and sliders

- Links

6.1.1.1 the main Dark red: #9a1c20

There was a want to settle on a recent and optimistic color to base the look on. white is commonly related to any user friendly application, however red clothed to be pleasing to the attention also as typically being delineated by positive and happy words once doing an exploration for its symbolism. Thus, it had been deemed satisfactory for the needs of this app.

6.1.1.2 the main White : #f6f6f6

That is why bound parts square measure colored white, to supply some distinction while not incompatible with the theme. this can be amongst alternative places used for the slide-up menu that seems once the user selects ingredients, to draw attention to the addition introduced to this setting. A neutral combination with a pop of color (white) encompasses a terribly stylish and stylish feel – acceptable for a rich mobile cake workplace. A tokenish combination will still produce distinction and provides a singular, impactful visual impression.

Effective Visual Communication for Graphical User Interfaces

Effective communication for Graphical User Interfaces

The use of typography, symbols, colour, and different static and dynamic graphics are wont to convey facts, ideas and emotions. This makes up an information-oriented, systematic graphic style that helps individuals perceive complicated data. fortunate communication through information-oriented, systematic graphic style depends on some key principles of graphic style.

Design concerns

There are 3 factors that ought to be thought of for the look of a fortunate user interface; development factors, visibility factors and acceptance factors.

Development factors facilitate by rising communication. These include: platform constraints, tool kits and part libraries, support for speedy prototyping, and customizability.

Visibility factors take into consideration human factors and specific a powerful visual identity. These include: human talents, product identity, clear abstract model, and multiple representations.

Included as acceptance factors are Associate in Nursing put in base, company politics, international markets, and documentation and coaching.

Visible Language

Visible language refers to all or any of the graphical techniques wont to communicate the message or context. These include:

•Layout: formats, proportions, and grids; 2-D and three-D organization

•Typography: choice of typefaces and typesetting, together with variable dimension and stuck dimension

•Color and Texture: color, texture and light-weight that convey complicated data and pictoral reality

•Imagery: signs, icons and symbols, from the photographically real to the abstract

•Animation: a dynamic or kinetic display; vital for video-related imagination

•Sequencing: the general approach to visual storytelling

•Sound: abstract, vocal, concrete, or musical cues

•Visual identity: the extra, distinctive rules that lend overall consistency to a computer programme. the general choices on however the corporation or the merchandise line expresses itself in visible language.

Principles of computer programme style

There are 3 basic principles concerned within the use of the visible language.

•Organize: give the user with a transparent and consistent abstract structure

•Economize: do the foremost with quantity} amount of cues

•Communicate: match the presentation to the capabilities of the user.

Organize

Consistency, screen layout, relationships and navigability are important concepts of organization

6.1.2 Orientation

The app solely displays in portrait mode, that was forced for many reasons. Firstly, it's a famous bug that automaton apps reload this activity once ever-changing orientation, that may be a common supply for app errors and bugs. Secondly, the planning displays extremely nicely in portrait mode, and lots of effort would have to be compelled to be place in to form it operate as swimmingly in landscape mode, that wasn't within the scope for this project.

6.1.3 App flow

There are main activities. About Activity, AddCompetitorActivity , AddnewOrderActivity,DashboardActivity, DealerInfoActivity, DealerSearchActivity, DealerVisitActivity, EvevnntActivity,HomeActivity,LocationMapActivity, SplashScreenActivity, ViewOrderActivity etc.

The flow of the app is quite simple as it only consists of four different content screens. The MainActivity is the first screen after loading, and can after that SplashScreenActivity load. The app is designed to move forward from here, as the rest of the activities have a circular relationship..

Android Advantages:

- High level language
- SDK Not operating system dependant
- Free SDK
- Uses simple XML styling for forms
- Uses Java, a well know programming language

Android Disadvantages:

Can be unstable if code is not clean

.Robustness was extremely important within the development process. Each application needed to communicate with the MySQL server via sockets, thus synchronization of this communication was important. Each socket communication was if fact a bespoke

communications protocol with the client/server challenge response mechanisms; an example of the issues with this protocol synchronization could be, if part way through communication the user closed the application, the server would still be at a certain state, and waiting for user input, yet when the user restarts the application the user login protocol is expected. This kind of issue was addressed by allowing the application to restart the process by sending a reset variable to the server when the application was started or exited.

Security was extremely important to the project. Security relied on a combination of a bespoke communications protocol, and hiding the protocol from a potential attacker by SSL, thus an attacker would need to know what to send and in what order to send data to the server, and be able to encrypt this data using the correct CA certificate to use the system.

6.2 Android Design Principles (HCI)

The aim of the HCI considerations is to conform to Google's Android Design The application has been developed with these in mind, and many of the user interface elements are designed with this in mind.

6.2.1 Human Computer Interaction - brief intro

Human-computer interaction (HCI) is a section of analysis and follow that emerged within the early Eighties, ab initio as a specialty space in applied science grasp scientific discipline and human factors engineering. HCI has dilated apace and steady for 3 decades, attracting professionals from several alternative disciplines and incorporating numerous ideas and approaches. To a substantial extent, HCI currently aggregates a set of semi-autonomous fields of analysis and follow in human-centered information science. However, the continued synthesis of disparate conceptions and approaches to science and follow in HCI has made a dramatic example of however totally different epistemologies and paradigms may be reconciled and integrated in an exceedingly vivacious and productive intellectual project.Where HCI came from

Until the late Seventies, the sole humans World Health Organization interacted with computers were data technology professionals and dedicated hobbyists. This modified disruptively with the emergence of non-public computing within the later Seventies. Personal computing, as well as each personal software system (productivity applications, like text editors and spreadsheets, and interactive laptop games) and private laptop platforms (operating systems, programming languages, and hardware), created everybody within the

world a possible somebody, and vividly highlighted the deficiencies of computers with reference to usability for people who needed to use computers as tools.

The challenge of non-public computing became manifest at Associate in Nursing opportune time. The broad project of scientific discipline, that incorporated psychology, computing, linguistics, psychological feature social science, and also the philosophy of mind, had fashioned at the top of the Seventies. a part of the programme of scientific discipline was to articulate systematic and scientifically familiar applications to be referred to as "cognitive engineering". Thus, at simply the purpose once personal computing conferred the sensible would like for HCI, scientific discipline conferred individuals, concepts, skills, Associate in Nursing a vision for addressing such wants through an bold synthesis of science and engineering. HCI was one amongst the primary samples of psychological feature engineering.

This was expedited by analogous developments in engineering and style areas adjacent to HCI, and actually usually overlapping HCI, notably human factors engineering and documentation development. Human factors had developed empirical and task-analytic techniques for evaluating human-system interactions in domains like aviation and producing, and was moving to handle interactive system contexts during which human operators often exerted bigger problem-solving discretion. Documentation development was moving on the far side its ancient role of manufacturing systematic technical descriptions toward a psychological feature approach incorporating theories of writing, reading, and media, with empirical user testing. Documents and alternative data required to be usable additionally.

Other traditionally fortuitous developments contributed to the institution of HCI. software system engineering, encumbered in unmanageable software system quality within the Seventies (the “software crisis”), was setting out to specialize in nonfunctional necessities, as well as usability and maintainability, and on empirical software system development processes that relied heavily on reiterative prototyping and empirical testing. Lighting tricks and knowledge retrieval had emerged within the Seventies, and apace came to acknowledge that interactive systems were the key to progressing on the far side early achievements. of these threads of development in applied science pointed to an equivalent conclusion: The method forward for computing entailed understanding and higher empowering users. These numerous forces of would like and chance converged around 1980, focusing a large burst of human energy, and making a extremely visible knowledge domain project.

6.2.1 Getting Battery Information on Android

The battery-life impact of acting application updates depends on the battery level and charging state of the device. The impact of acting updates whereas the device is charging over AC is negligible, Conversely, if the device is discharging, reducing update rate helps prolong the battery life.

Determine the present Charging State.

Start by crucial the present charge standing. The BatteryManager broadcasts all battery and charging details in a very sticky Intent that features the charging standing.

you may pass in associate degree actual BroadcastReceiver object here, however we'll be handling updates in a very later section therefore it isn't necessary.

Determine the present Charging State Start by crucial the present charge standing. The BatteryManager broadcasts all battery and charging details in a very sticky Intent that features the charging standing.

Because it is a sticky intent, you do not ought to register a BroadcastReceiver by merely vocation registerReceiver passing in null because the receiver as shown within the next snip, the present battery standing intent is came back. you may pass in associate degree actual BroadcastReceiver object here, however we'll be handling updates in a very later section therefore it isn't necessary.

Getting the Battery info in automaton while not Apps like AnyCut, Power Manager or System Monitor is one among the toughest task. you'll be able to strive those if you have got associate automaton phone, anyway here is a way to get the Battery info

Table4: Way to get the batry info

```
public class Main extends Activity {

 private TextView contentTxt;

 private BroadcastReceiver mBatInfoReceiver = new BroadcastReceiver(){

  @Override

  public void onReceive(Context arg0, Intent intent) {

   // TODO Auto-generated method stub

   int level = intent.getIntExtra("level", 0);

   contentTxt.setText(String.valueOf(level) + "%");

  }

 };


 @Override

 public void onCreate(Bundle icicle) {

  super.onCreate(icicle);

  setContentView(R.layout.main);

  contentTxt = (TextView) this.findViewById(R.id.monospaceTxt);

  this.registerReceiver(this.mBatInfoReceiver,

  new IntentFilter(Intent.ACTION_BATTERY_CHANGED));

 }

}
```

Monitor important Changes in Battery Level

can't simply frequently monitor the battery state, however you do not have to be compelled to.

Generally speaking, the impact of regularly observation the battery level includes a bigger impact on the battery than your app's traditional behavior, thus it's sensible apply to solely monitor important changes in battery level—specifically once the device enters or exits a coffee battery state.

The manifest snip below is extracted from the intent filter component among a broadcast receiver.

Table5: Monitor important Changes in Battery Level

```
&lt;receiver android:name=".BatteryLevelReceiver"&gt;
&lt;intent-filter&gt;
  &lt;action android:name="android.intent.action.ACTION_BATTERY_LOW"/&gt;
  &lt;action android:name="android.intent.action.ACTION_BATTERY_OKAY"/&gt;
  &lt;/intent-filter&gt;
&lt;/receiver&gt;
```

It is usually sensible apply to disable all of your background updates once the battery is critically low. It does not matter however recent your information is that if the phone turns itself off before you'll create use of it.

In several cases, the act of charging a tool is coincident with golf shot it into a dock. succeeding lesson shows you the way to see this dock state and monitor for changes in device tying up.

6.2.1.1 Further implementation

The most recently used the Settings of some used recipes. So user can choose mere usable functions and features.

7. Architecture

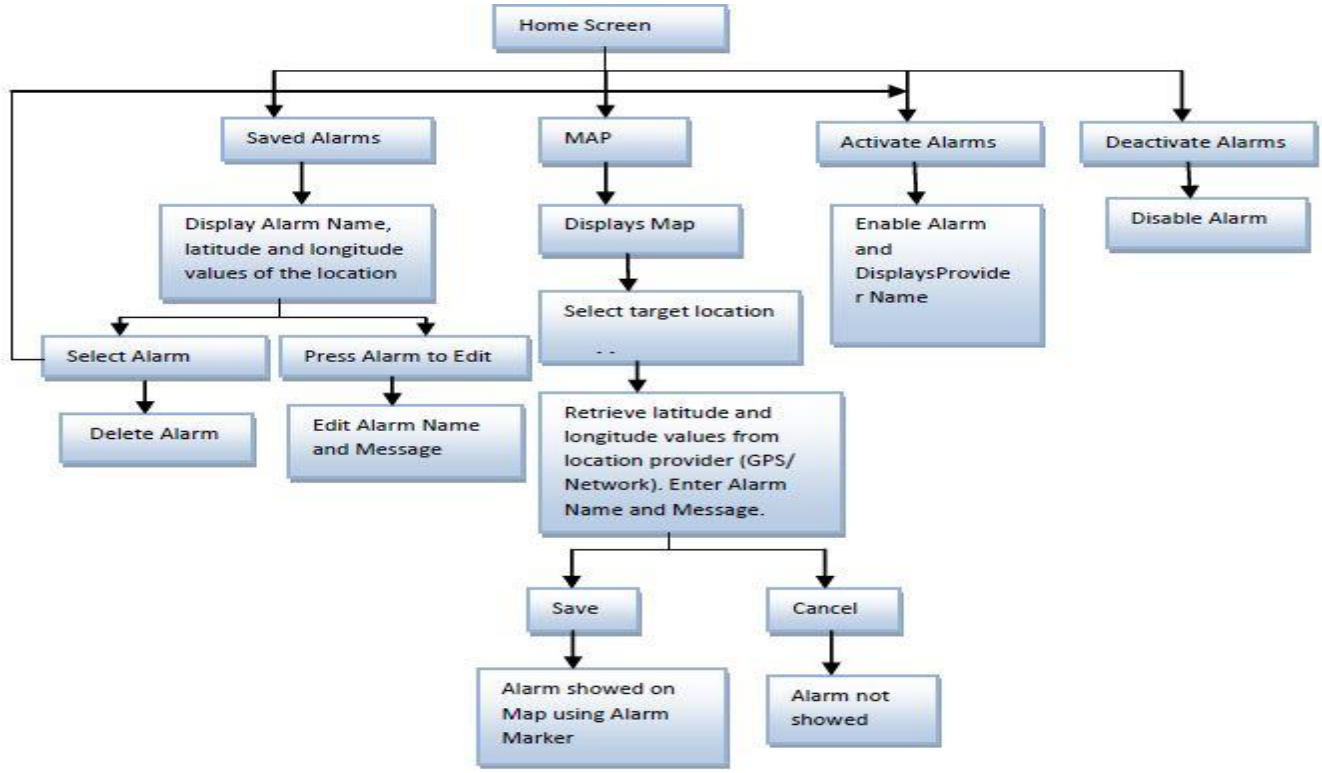

Figure.18 Architecture of this system

shows the planed overall design of this location primarily based device. It shows the actions that a user might moderately expect to be ready to perform from the mobile device user software system. Home screen provides some options: Saved Alarms, Map, Activate alarm and Deactivate Alarm. “Saved Alarms” displays the alarm name in conjunction with its line of longitude and latitude values and special alerts. Basicaly this screen provides choices to “Delete” and “Edit” alarms. Delete and edit because it name implies wont to delete and edit the alarm name and message. Map button is employed to show the map wherever the user will choose the target location that retrieves latitude and line of longitude values from location supplier (GPS/ Network) and prompt user to enter the alarm name and message. These details area unit then saved within the info. Activate Alarms is employed to activate the alarm that allows the alarm and displays the supplier name (GPS/Network) within the screen. Deactivate Alarms area unit wont to disable the alarms

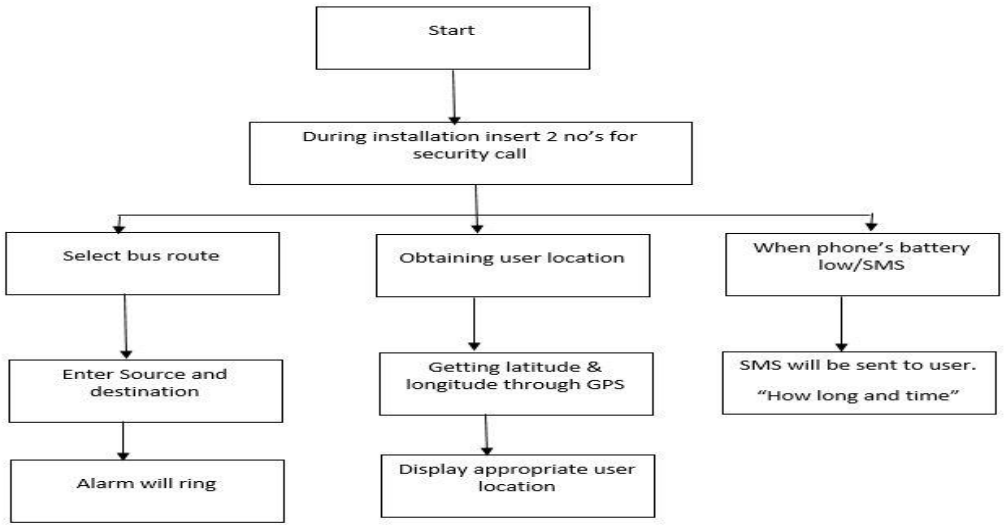

Figure.19 Flaw of the Application

App is employed by somebody going by bus, and that i wish to alert them some time in advance of them arriving at their chosen stop.

If know the stops on the route (which i will get for many cities using the GTFS data.

•If the stops are too approximate, then could alert on the 2nd stop before the requested one.

•Some one can know once pass a stop comparison the bus location (from the user's location) and location of the stop.

•If the distance is less than say, 30 meters, then assume about to, or just passed the stop.

•Basically I consider time and distance details for this application.

7.1 Database

The API direction category and taxon structure is about up terribly just like the humanoid app structure, to alter JSON serializing and deserializing across the 2 languages. A serialized object from the API is received as a JSON format on the opposite finish.

```
if (StringUtils.equalsIgnoreCase(jsonObject.get("status").toString(), "OK")) {

   JSONArray result    = jsonObject.getJSONArray("results");

   Log.d("--lat---",result.toString());

   boolean ok  = false;

   for (int i = 0; i < result.length(); i++) {

      JSONObject object   = result.getJSONObject(i);

      String address  = object.getString("formatted_address");

      Log.d("--lat---",address +"====="+mEditTextDCity.getText().toString());

      if (StringUtils.containsIgnoreCase(address,
mEditTextDCity.getText().toString())) {

         JSONArray addresC   = object.getJSONArray("address_components");

         for (int x =0; x < addresC.length(); x++) {

            JSONObject cop  = addresC.getJSONObject(x);

            String longName = cop.getString("long_name");

            Log.d("--coun---",longName+" =====
"+mSpinnerDCoutry.getSelectedItem().toString());

            if
(StringUtils.equalsIgnoreCase(longName,mSpinnerDCoutry.getSelectedItem().toStri
ng())){

               JSONObject objGeometry  = object.getJSONObject("geometry");

               JSONObject objectLoc    = objGeometry.getJSONObject("location");

               Log.d("--lat---",objectLoc.optDouble("lat")+"");
```

```
            ok  = true;

            saveUserData(objectLoc.optDouble("lat"), objectLoc.optDouble("lng"));

            mTextView.setText(address);

          }

        }

    }

}
```

Table6: Json format

8 Implementation and development stages

8.1 Plan modifications

The development stages delineate within the PID were followed to an explicit degree, however some changes were created. They describe however the app are developed before the info and API, however a call was created to develop these nearer along to quickly answer doubtless needed changes.

The core app practicality was developed in Stage one, so Stage two and three were combined into developing the back-end and at the same time creating the app work seamlessly with it. a replacement Stage three was value-added for extra app practicality.

8.2 Development stage 1

CORE APP FUNCTIONALITY

This stage is based on the core functionality of the app. They can be summarized in a few points:

1. Loading data.

2. Displaying Splash Screen.

3. Choosing items and viewing list.

8.2.1 Displaying items.

8.2.1.1 Loading data

The model of the app loaded information from XML files within the assets folder, that was enough at Stage one considering the main focus of this stage.

8.2.1.2 Activities and adapters

To support the current design, several custom adapters have been made. They allow the developer to customise items in for example GridViews and ListViews, which is what they have been used for in this app. The basic design was already there from the prototype.

I used AreaTypeAdapter, CementTypeAdapter,CompetitorAdapter,DealerDistributorAdapter, DealerListAdapter, EventTypeAdapter, FutureListAdapter , ListOfOrderAdapter , OrderListAdapter , RouteTypeAdapter.

The HomeActivity displays the items, and is made up by several GridViews.and use activity_home.xml to display list items. nested layouts and various TextViews and ImageViews to provide the current design. LocationMapActivity helps to find locations.

8.3 Development stage 2

8.3.1 Building the database

Forward engineering database models in SQLite was the main means of building the database, allowing for the many additions and changes that happened. Some of the tables and relationships

were obvious from looking at how the class structure was in the app, but several fields were added at this stage..

8.3.2 Building an API

I used google API and that allows interaction with Google Services and integration of richGoogle Maps. Google map API key used to connect the google map

Table7: Google map API key used.

Google API key

```
<resources>

    <string name="google_maps_key" translatable="false"
templateMergeStrategy="preserve">

    AIzaSyCgkMawhVRAT34xbMOqjUj9MJvXI5VerhU

  </string>

</resources>
```

8.4 Future development.

I'll add some features as future developmetns. I'll add Settings and have to develop the database because I need to create efficiency application and I'll hope to change interface and hope to spread the application in the Srilanka. Thease development apply to the next versions

9.Testing

9.1 App

The system was tested totally when the addition of every feature, through deploying it to many totally different phones and observant the behaviour. This resulted in many bugs being found and glued before getting down to implement the following options. The system was incessantly tested as a full, to make sure that new practicality failed to break any antecedently enforced options.

For example, battery law possibility, testing discovered that the info files that were prepacked with the APK weren't documented properly. This was mounted by surfing the code and fixing the invalid path.

which reloads this activity. This was resolved by forcing portrait mode for the complete app, as this can be however the graphical user interface presently performs and appears best. this can be modified within the future.

10. Licensing and legal matters

10.1 Images

A factor that needs to be accounted for if the app is to be free, is that the image copyrights. The developer claims no rights to any of the photos presently used for ingredients or recipes. a number of the present pictures area unit liberated to distribute, however because it is presently solely a piece current that's not free to the general public, this has not been a main concern at this time of your time.

11. End-project report and post-mortem

11.1 Objectives

The main objectives were met and used as a suggestion throughout the whole project. The scope was changed and narrowed slightly, removing the online consumer and specializing in developing an android app of higher quality. the wants mentioned area unit all met also, and have ensured that this app provides all the very important functionalities.

As this project has delivered a totally functioning application that runs swimmingly, and tried grounds for several documented potential options, this project is deemed winning. The app has all the fundamental practicality needed to create it usable, and lots of further options will simply be enforced. this can be supported by the personalized views, thorough style and well-planned core structure.

11.2 Project management

Projects in Controlled Environments (PRINCE2) was suggested from the point in time.

PRINCE2 may be a method based mostly technique for project management which will be employed in each

public and personal sectors. The notable options behind the methodology are:

● specialize in business justification

● outlined organization structure for the project management team

● Product based

planning approach

● stress on dividing the project into manageable and manageable stages

● Flexibility which will be applied at level acceptable to the project.

The product basedand stage coming up with options of PRINCE2 are notable options of thismethodology that resonated with the merchandise and development groups. PRINCE2 wasn'tchosen for managing as a result of the project is of a small-scaleand the quantity of documents,logs, registers and lists that are generated from this system would have meant less timespent on the repetitious development and testing of the merchandise. As this can be a product built for searching analysis and not for a business want, the wants and technical implementation are possible to alter based mostly upon the analysis and data garnered throughout the development. As such, it's necessary that a project management approach that enables for development of needs is chosen. Kanban presents a a lot of appropriate model for management because of the continual flow of labor, lack of expressly needed roles and aim to have tiny tasks which will flow through the pipeline quickly. The philosophy behind Kanban is that “change will happen at any time” (Radigan, n.d.), this resonated with the fact-finding nature of this project. Kanban conjointly has the notion of a prioritized and frequently

groomed backlog. The backlog for this project was never in depth full as a result of the investigatory nature of the tasks, the results gathered from completion of a task would feed into whether or not the things within the backlog required to be rearranged, changed or invalid.Another advantage of exploitation Kanban because the methodology to management the project is that the plan of continuously delivering a product to retrieve feedback for a feature or modification as early as possible.

11.3 Overall success

The project commenced to provide an android app as well as a web shopper, running with a database . it's delivered. This has resulted in an exceedinglyn app that runs swimmingly and offers the specified practicality wrapped in a easy interface. it's intuitive to use, and may undoubtedly be thought of to be a productive deliverable

My previous information of O languages and principles created the jump to golem slightly sander than if I had had a totally fresh start, however I still notice that Java surprises me and therefore then every now and then and the learning curve has typically been steep once resolving altogether the back-end technologies concerned during this project. Throughout this development method,

If I might mate once more, i might have spent even longer on the android app as I even have discovered and planned an outsized variety of extra options, that don't seem to be enclosed within the current version. i might prefer to end the planned enhancements and deploy it on the Google Play Store, that I even have already got wind of an account.

12. Conclusion

Mobile development is a high demand industry, whether it is Android, iOS or Windows platforms.Initially the first step is taken towards the mobile developments from conducting this project. Anandroid mobile application is developed in the project/ it is an application that is used to detect thedifferent bus routes that the user is travelling. The potential bus route can be viewed with bus haltshighlighted. The main feature is that an alert (notification) is produced when the user come closer tothe destination. This will be in the method of an alarm with a remainder. Unfamiliar routes withunfamiliar bus halts will be able to be distinguished by the user, as he will have to input the destinationin the app. If the traveler falls asleep and use this application the alarm will awake the traveler. So thisis an incredible android mobile

application that will be a service to many people who are traveling. My previous knowledge of 0 languages and principles made the jump to Android a bit smoother than if I had had a completely fresh start If I could do it again, I would have spent even more time on the Android app as I have discovered and planned a large number of additional features, which are not included in the current version. I would like to finish the planned improvements and deploy it on the Google Play Store, for which I have already set up an account.

13. References

13.1 Web Resources

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14 Appendices

Appendix 1: User guide

User guide

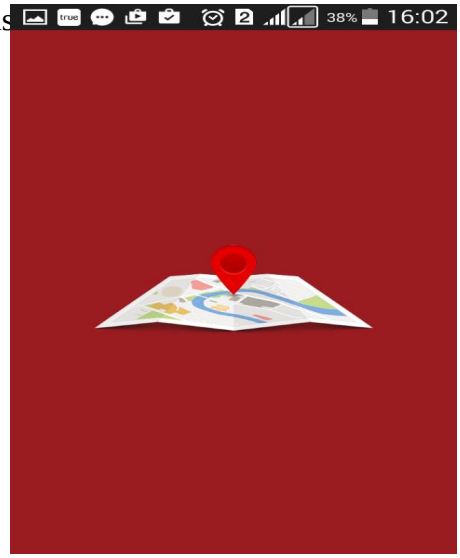
Installation

To install this application, the user currently has to open its respective .apk file. The Android operating system will go through the installation. The app will then appear in the app drawer, ready for use.

Using the application

Loading

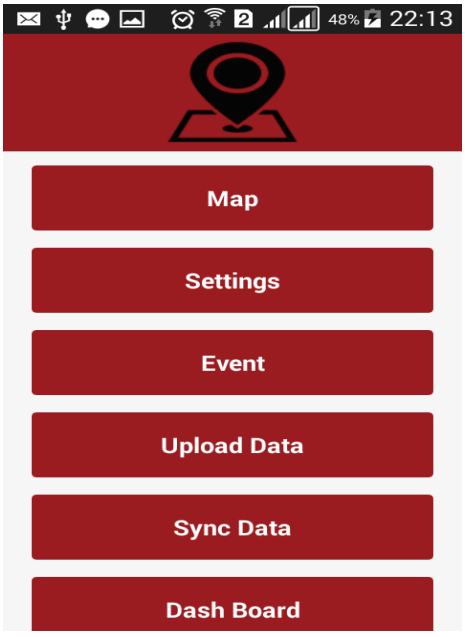
The first time the app is loading as the splash screen .after loading the splash screen load the list items and you can use the google map and you can select the locations and destinations



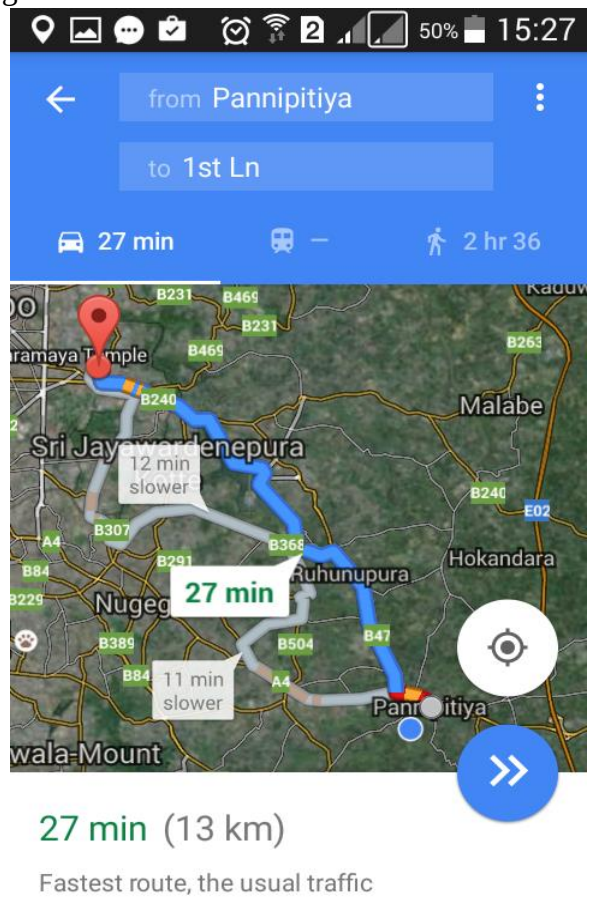
The List Items

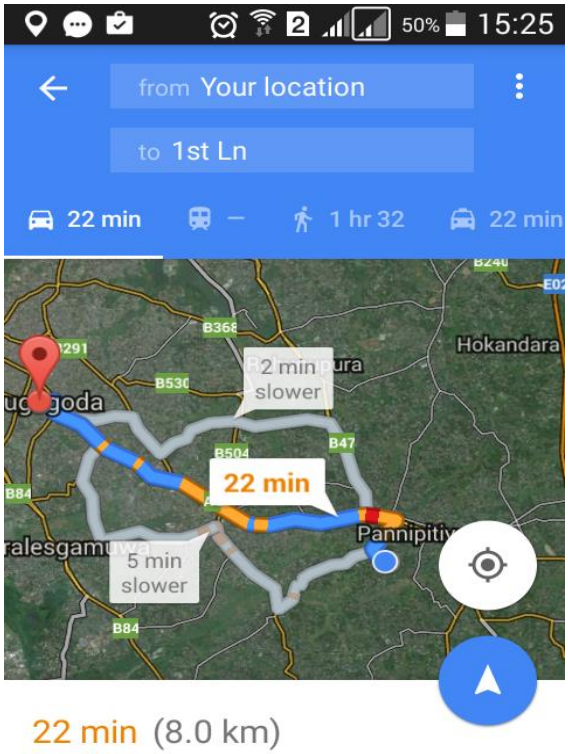
The recipe list information about each individual items.

It is scrollable, and displays all the current information stored about the list.



Google location search and select the destination





Appendix 2**: PID**

1.Introduction

Any person who select the path can use this application and set the alarm for the desired bus stop.and alarm will be ring before 15min.

I think this application is novel because it really emphasizes the advantage of using public transportation will be helpful so far.

With this application, a user who is taking the bus to an unfamiliar place, can go with confidence that they will get off at the correct place even if they don't know exactly when the stop is approaching. Using the application allows people to efficiently utilize time on the bus without the constant worry of missing their bus stop destination.

If user's phone or device will be become battery low or signal strength law there is a tracking system and will give message how far you will go to the destination.

Backgroud and motivation.

The mobile apps we use every day have changed the way we conduct business, the way we communicate and consume entertainment, the way learn things about the world. coolest job industries of the momentThis application Development task is to develop Android Development skills.

And also this project is done in order to satisfy the requirements of the PROCO303SL module.

3.Project Objectives

Objective of this application, a user who is taking the bus to an unfamiliar place, can go with confidence that they will get off at the correct place even if they don't know exactly when the stop is approaching. Using the application allows people to efficiently utilize time on the bus without the constant worry of missing their bus stop destination.

Objectives

1.The user should be able to find his own location on map or area.

2.The project should make it more convenient for user to view a map of area

3.The project should make it more convenient for user to view the schedules of bus route

4.The user should be able to view one bus route at a time on the map.

3.1 Personal objectives and Outputs

There are several personal objectives for this project. The goal of the project is to learn the various elements of Android development . There for this would achive a greater understanding of how Android application produce in industry.

Project initiation Document

4.Initial Scope

1. This application will let users to set a location based alarm on their phone that will go off when they get close to the preselected bus stop.

2. application can be easily used with the support from GPS and internet already on the Android phones.

3. The idea is very innovative in that it is the first android application to incorporate publicly available bus information and GPS in an innovate bus stop alarm system.

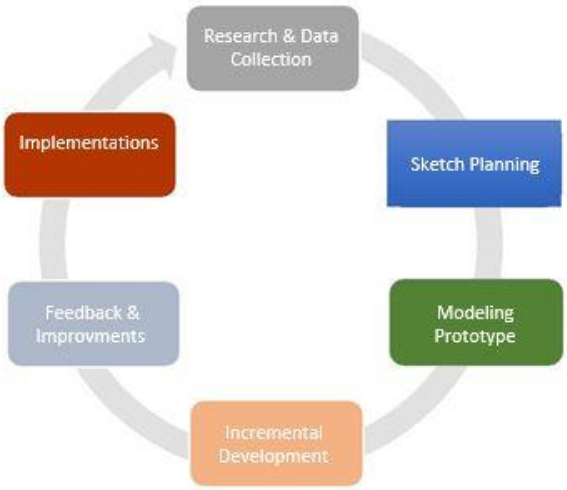
4. a user who is taking the bus to an unfamiliar place, can go with confidence that they will get off at the correct place even if they don't know exactly when the stop is approaching.

5. There is much business potential in this application by incorporating suggested business locations (such as restaurants, shopping places, etc).

5.Method of approach

Incremental development And, and IDE id Android Studio

The incremental build model is a method of software development where the product is designed, implemented and testedincrementally (a little more is added each time) until the product is finished. It involves both development and maintenance



6.Project Plan

Stage	Deadline	Products/Deliverables/Out come
1. Initiation	20/11	PID
2. Research and requirements	6/12	Researching for the materials needed and Evaluation of possible development technologies.
3. High level design	15/12	Design documents (Architecture, GUI style guide; …)
4. Increment1	12/1	Designing the application and development.
5. Increment2	4/2	Detect the route
6. Increment3	4/3	Finalizing the above increments and doing modifications for testing.
7. Application testing	12/3	Final application. Final testing
8. Assemble and complete	31/3	PRCO303SL Report

7.Initial risk list

Risk	Management strategy
Schedule overrun	Contingency has been introduced into the project plan. Highlight reports will provide a regular monitoring of schedule. An exception plan will be developed, and approved by the project supervisor, in the event of more than 1 week's slippage
Difficulty learning/using the development technologies	A very simple system prototype will be developed during Stage 2 (Investigation and requirements).
Requirements breakdown (i.e., the stakeholders cannot agree on the requirements)	The prototype noted above may be extended to illustrate the contentious features. The conflict can ultimately be referred to the hotel owners for resolution.
Technology failure	The system will be deployed using standard technologies, and system backups will be taken daily

8.Initial quality plan

Quality check	Strategy
Requirements	Requirements will be checked (within Stage 2) to ensure that they are correct, relevant (i.e., traceable to the business objectives), complete, achievable and demonstratable. Prototyping, user interviews and walkthrough will be employed.
Design validation	The design will be checked (within Stage 3) against requirements compliance, HCI guideline compliance, screen-design acceptance, DB normalisation and software design principles (e.g., cohesion, coupling)
Sub-system usability and validation	To be conducted at the end of each increment
System validation and user acceptance	To be conducted within Stage 7

Appendix 3**: Interim reports**

Appendix 3.A First interim report

First interim report

1. Introduction and Motivation

1.1.Introduction

This project is done in order to design Android studio IDE, that runs on the Android OS, I will go through the SDLC(Software development life cycle) to create this.
This will be work on lower end systems, furthermore it will give me a good understanding of programming concepts and design principles.
Android studio SDK, Google API and java are used.

1.2.Motivation

The Android application industry is a billion dollar industry, and the iOS App Store now earns 75 percent more revenue than the Google Play Store. This is an increase over the 70 percent difference recorded during 2014.
A platform is one where the user controls a character and moves the character to achieve a specific goal or objective.

2. Project Objectives

2.1.Project Aims and Objectives

1.The user should be able to find his own location on map or area.

2.The project should make it more convenient for user to view a map of area.

3.The project should make it more convenient for user to view the shedules of bus route.

4.The user should be able to view on bus route at a time on the map.

5. To research Android apps and the technology used in depth.

3. Plan of Action

3.1.Work accomplished to Date

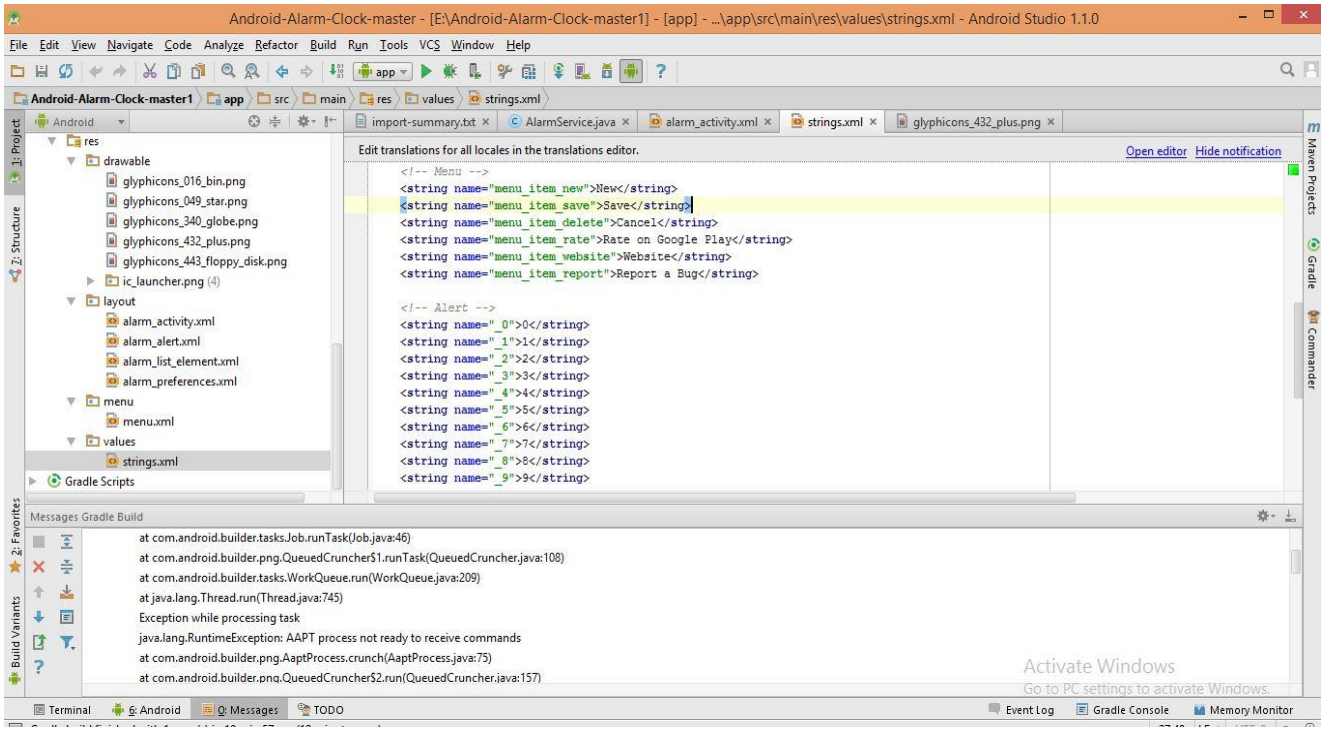
To date, the vast majority of the work that I have completed has been Research-based.

However, I have also been going through various examples, and looking at tutorials. All this has been done, while communicating with my supervisor.

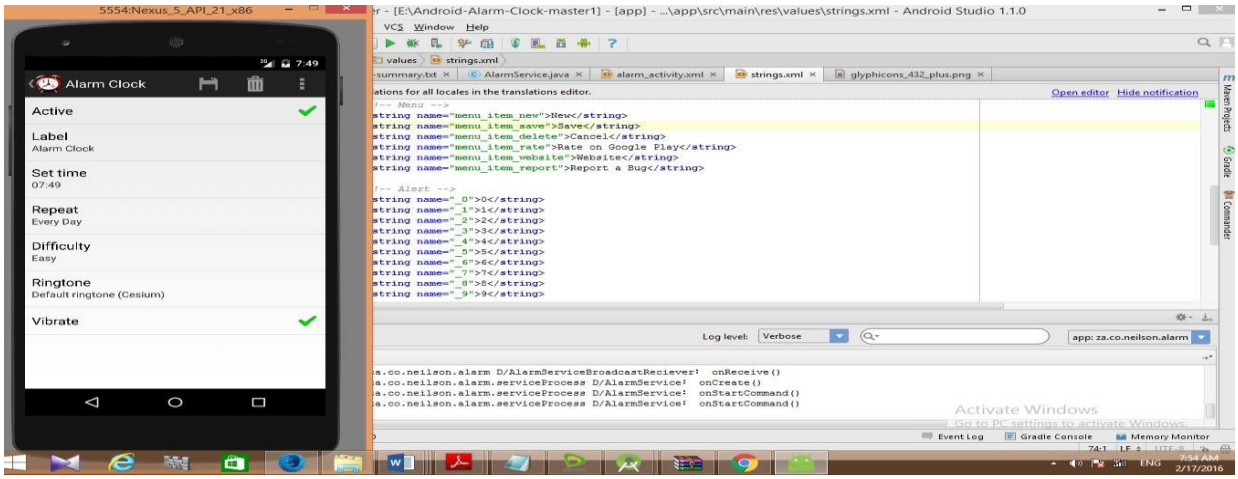
So far, the work that I have done will be discussed below

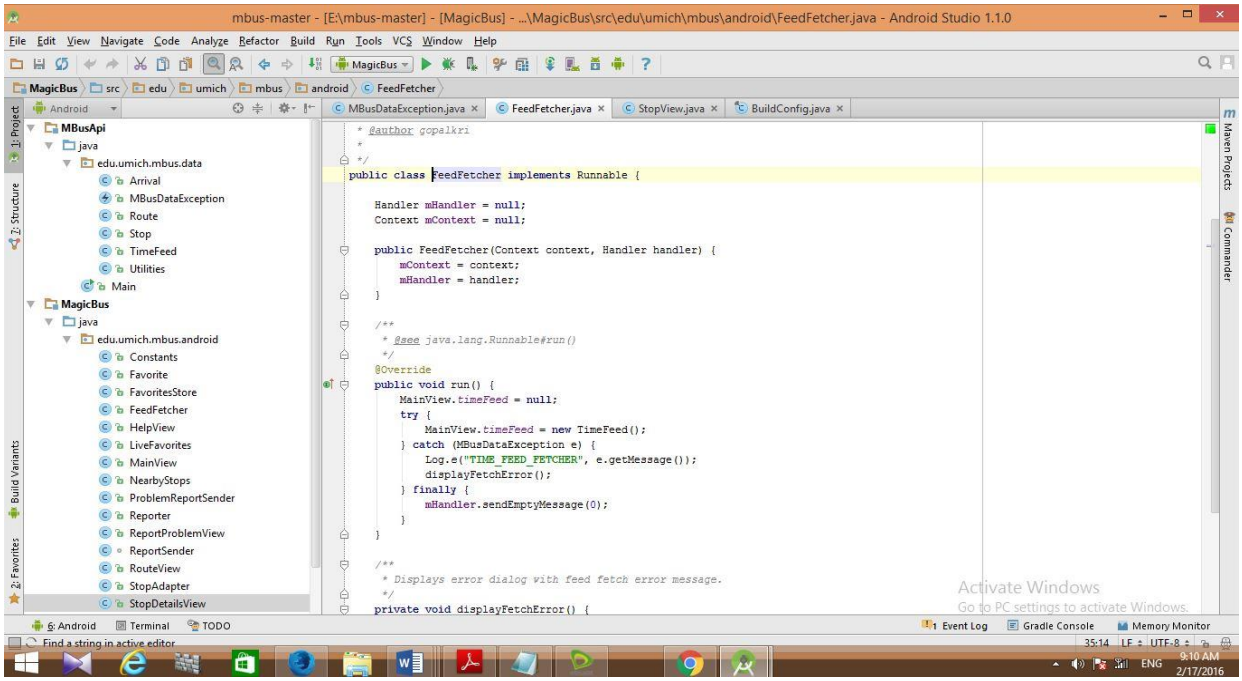
1. Studying examples of some bus route recognize apps.

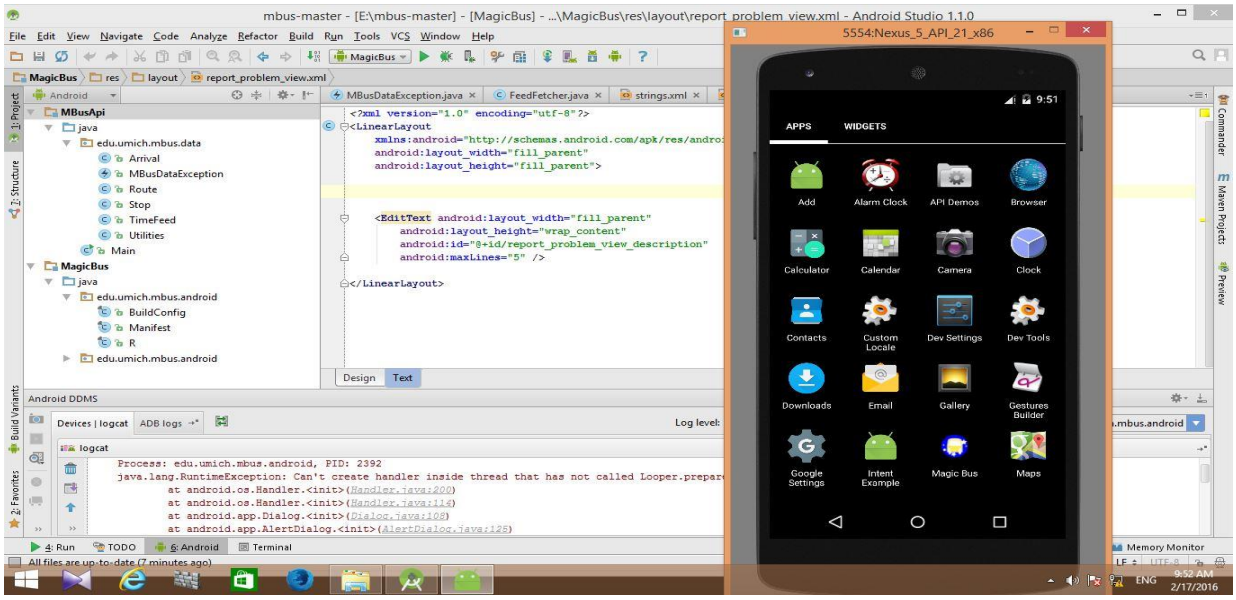
2. Learning of the Android Programming Language.
3. Following some tutorials and implementing a project sample.
4. Learning of Android development techniques.



The above example shows a sample of a GPS Alarm that was included in Android studio. I have used it to study and understand the code and how it works with Android studio.




mbus-master - [E:\mbus-master] - [MagicBus] - ...\MagicBus\src\edu\umich\mbus\android\FeedFetcher.java - Android Studio 1.1.0
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
MagicBus src edu umich mbus android FeedFetcher
MBusDataException.java
FeedFetcher.java
StopView.java
BuildConfig.java
MBusApi
java
edu.umich.mbus.data
Arrival
MBusDataException
Route
Stop
TimeFeed
Utilities
Main
MagicBus
java
edu.umich.mbus.android
Constants
Favorite
FavoritesStore
FeedFetcher
HelpView
LiveFavorites
MainView
NearbyStops
ProblemReportSender
Reporter
ReportProblemView
ReportSender
RouteView
StopAdapter
StopDetailsView
* @author gopalkri
*
*/
public class FeedFetcher implements Runnable {
Handler mHandler = null;
Context mContext = null;
public FeedFetcher(Context context, Handler handler) {
mContext = context;
mHandler = handler;
}
/**
* @see java.lang.Runnable#run()
*/
@Override
public void run() {
MainView.timeFeed = null;
try {
MainView.timeFeed = new TimeFeed();
} catch (MBusDataException e) {
Log.e("TIME_FEED_FETCHER", e.getMessage());
displayFetchError();
} finally {
mHandler.sendEmptyMessage(0);
}
}
/**
* Displays error dialog with feed fetch error message.
*/
private void displayFetchError() {
Activate Windows
Go to PC settings to activate Windows.
6: Android
Terminal
TODO
Event Log
Gradle Console
Memory Monitor
Find a string in active editor
35:14 LF UTF-8
ENG
9:10 AM
2/17/2016


mbus-master - [E:\mbus-master] - [MagicBus] - ...\MagicBus\res\layout\report_problem_view.xml - Android Studio 1.1.0
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
MagicBus res layout report_problem_view.xml
MBusDataException.java
FeedFetcher.java
strings.xml
MBusApi
java
edu.umich.mbus.data
Arrival
MBusDataException
Route
Stop
TimeFeed
Utilities
Main
MagicBus
java
edu.umich.mbus.android
BuildConfig
Manifest
R
edu.umich.mbus.android
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/andro
android:layout_width="fill_parent"
android:layout_height="fill_parent">
<EditText android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:id="@+id/report_problem_view_description"
android:maxLines="5" />
</LinearLayout>
Design
Text
Android DDMS
Devices | logcat
ADB logs
Log level:
logcat
Process: edu.umich.mbus.android, PID: 2392
java.lang.RuntimeException: Can't create handler inside thread that has not called Looper.prepar
at android.os.Handler.<init>(Handler.java:200)
at android.os.Handler.<init>(Handler.java:114)
at android.app.Dialog.<init>(Dialog.java:108)
at android.app.AlertDialog.<init>(AlertDialog.java:125)
4: Run
TODO
6: Android
Terminal
Memory Monitor
All files are up-to-date (7 minutes ago)
5554:Nexus_5_API_21_x86
9:51
APPS
WIDGETS
Add
Alarm Clock
API Demos
Browser
Calculator
Calendar
Camera
Clock
Contacts
Custom Locale
Dev Settings
Dev Tools
Downloads
Email
Gallery
Gestures Builder
Google Settings
Intent Example
Magic Bus
Maps
ENG
9:52 AM
2/17/2016

4. Research

4.1. Literature Survey

The following list is a list of resources that I have studied in the research stage of my project to date.

- most of these links are from websites

Research of the Android apps industry

Mobile App Usage - Statistics & Facts | Statista . 2016. ***Mobile App Usage - Statistics & Facts | Statista*** . [ONLINE] Available at: http://www.statista.com/topics/1002/mobile-app-usage/. [Accessed 17 February 2016].

App Revenue Statistics 2015 - Business of Apps. 2016. ***App Revenue Statistics 2015 - Business of Apps***. [ONLINE] Available at: http://www.businessofapps.com/app-revenue-statistics/. [Accessed 17 February 2016].

Research on GPS Applicatons

Tutorials

How To Create a Map and GPS Application using Android Studio | ToDroid. 2016. ***How To Create a Map and GPS Application using Android Studio | ToDroid***. [ONLINE] Available at: http://www.todroid.com/how-to-create-a-google-map-application-using-android-studio/. [Accessed 17 February 2016].

Android GPS - Location Manager Tutorial. 2016. ***Android GPS - Location Manager Tutorial***. [ONLINE] Available at: http://techlovejump.com/android-gps-location-manager-tutorial/. [Accessed 17 February 2016].

thenewboston - Video Tutorials on Programming and More. 2016. ***thenewboston - Video Tutorials on Programming and More***. [ONLINE] Available at: https://thenewboston.com/. [Accessed 17 February 2016]

GUI Design

These are the research material that I have gone through to learn about design.

. 2016. . [ONLINE] Available at: http://www.lancaster.ac.uk/undergrad/tanf1/Project.pdf. [Accessed 17 February 2016].

. 2016. . [ONLINE] Available at: http://www.ebookfrenzy.com/pdf_previews/AndroidStudioEssentialsPreview.pdf. [Accessed 17 February 2016].

thenewboston - Video Tutorials on Programming and More. 2016. ***thenewboston - Video Tutorials on Programming and More***. [ONLINE] Available at: https://thenewboston.com/. [Accessed 17 February 2016]

Google API

Google Maps Android API v2 Tutorial using Android Studio | Learned Stuff. 2016. ***Google Maps Android API v2 Tutorial using Android Studio | Learned Stuff***. [ONLINE] Available at: http://learn.yancyparedes.net/2015/03/google-maps-android-api-v2-tutorial-using-android-studio/. [Accessed 17 February 2016].

Getting Started | Google Maps Android API | Google Developers. 2016. ***Getting Started | Google Maps Android API | Google Developers***. [ONLINE] Available at: https://developers.google.com/maps/documentation/android-api/start. [Accessed 17 February 2016].

http://code.tutsplus.com/tutorials/getting-started-with-google-maps-for-android-basics--cms-24635

Application Design

In this section, I referred to journals and other research material on game development practices and its relation to incremental methodology.

. 2016. . [ONLINE] Available at: http://www.tutorialspoint.com/android/android_tutorial.pdf. [Accessed 17 February 2016].

. 2016. . [ONLINE] Available at: http://www.se.uni-oldenburg.de/documents/doering-BA2013.pdf. [Accessed 17 February 2016].

4.2.Comparison of different Applications and their features

There are many navigation based applications developed. Though many apps are available handful of those apps can be effectively used in Sri Lanka. Many applications are based on

European and American countries and states. And they are only tested on the said areas. Among them most of the apps are offline apps that maps are needed to be downloaded. But my navigational app is an online based app, the app is quite smaller than offline applications so the memory requirement is low. This is specially designed to Sri Lanka as there are very few apps working on Sri Lanka.

As some good applications in this application the bus routes can be viewed, and the bus halts can be displayed to the users. Notification alarms can be programmed easily. Notifications are displayed on the bus stops (destination) of the user and also before about 5 minutes to the bus stop or the previous bus stop. This is important as the traveller will be able to collect himself before getting down (if the user is sleep prior).

One more special feature is that app monitors your battery level closely. If the battery level is very low the application will automatically send a summer to the user with a battery low alert. It will send the number of stops for your bus stop, the estimated time that will take place and etc. I can reasonably say that this application is quite unique to other navigational applications.

. 2016. . [ONLINE] Available at: https://play.google.com/store/apps/details?id=com.JamesBecwar.GPSAlarm&hl=en. [Accessed 17 February 2016].

. 2016. . [ONLINE] Available at: http://research.ijcaonline.org/mic/number1/mic1411.pdf. [Accessed 17 February 2016].

. 2016. . [ONLINE] Available at: https://play.google.com/store/apps/details?id=com.mapfactor.navigator&hl=en_GB. [Accessed 17 February 2016].

. 2016. . [ONLINE] Available at: https://play.google.com/store/apps/details?id=com.intelligentmachineaidedsystems.android.guardianangel.guideme&hl=en. [Accessed 17 February 2016].

The Best Apps for GPS Navigation on a Smartphone | CyclingAbout. 2016. ***The Best Apps for GPS Navigation on a Smartphone | CyclingAbout***. [ONLINE] Available at: http://www.cyclingabout.com/the-best-apps-for-gps-navigation-on-a-smartphone/. [Accessed 17 February 2016].

The Best Free GPS Apps for Your iPhone | PCMag.com. 2016. ***The Best Free GPS Apps for Your iPhone | PCMag.com***. [ONLINE] Available at: http://www.pcmag.com/article2/0,2817,2414409,00.asp. [Accessed 17February 2016].

Appendix 3.B Second interim report

4. Introduction and Motivation

4.1.Introduction

This project is done in order to design Android studio IDE, that runs on the Android OS, I will go through the SDLC(Software development life cycle) to create this.

This will be work on lower end systems, furthermore it will give me a good understanding of programming concepts and design principles.

Android studio SDK, Google API and java are used.

4.2 Motivation

The Android application industry is a billion dollar industry, and the iOS App Store now earns 75 percent more revenue than the Google Play Store. This is an increase over the 70 percent difference recorded during 2014.
A platform is one where the user controls a character and moves the character to achieve a specific goal or objective.

5. Project Objectives

5.1.Project Aims and Objectives

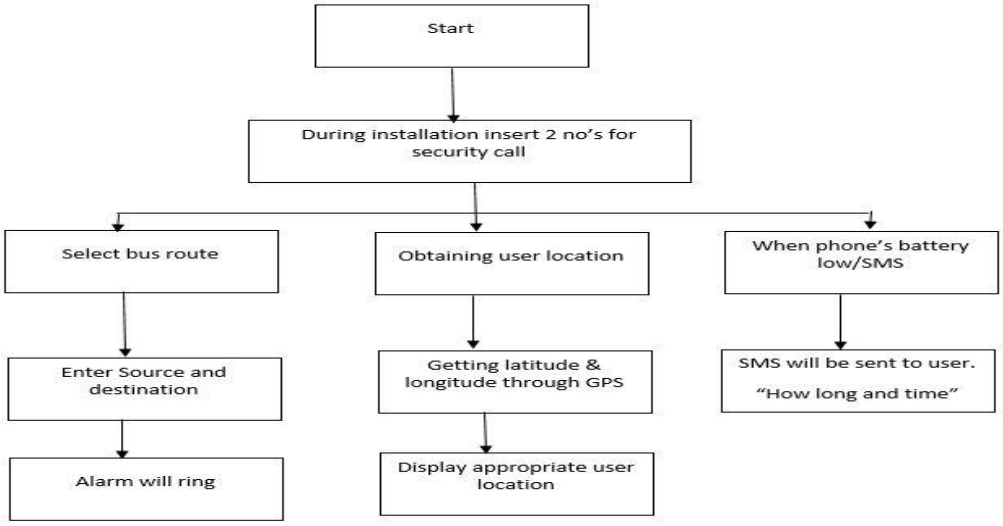


Figure.1 Flaw of the Application

- 1.The user should be able to find his own location on map or area.
- 2.The project should make it more convenient for user to view a map of area.
- 3.The project should make it more convenient for user to view the shedules of bus route.
- 4.The user should be able to view on bus route at a time on the map.
- 5. To research Android apps and the technology used in depth.
- Upload to google play store as a success application.

Assumptions

App is employed by somebody going by bus, and that i wish to alert them some time in advance of them arriving at their chosen stop.

If know the stops on the route (which i will get for many cities using the GTFS data.

- When pass the stop before the stop requested, provide an alert./Ararm.

- If the stops ar too approximate,then could alert on the 2nd stop before the requested one.

- Some one can know once pass a stop comparison the bus location (from the user's location) and location of the stop.

- If the distance is less than say, 30 meters, then assume about to, or just passed the stop.

- Basicaly I consider time and distance details for this application.

6. System Architecture

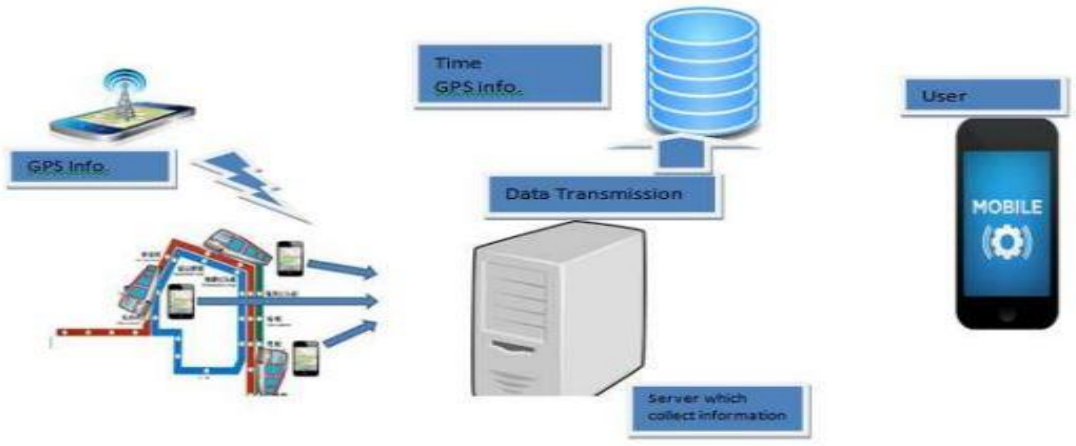


Figure.2 Architecture of this system

Figure.3 shows the planed overall architecture of this location based alarm system. It shows the actions that a user could reasonably expect to be able to perform from the mobile device user software. Home screen provides some options: Saved Alarms, Map, Activate alarm and Deactivate Alarm. "Saved Alarms" displays the alarm name along with its longitude and latitude values and special alerts. Basicaly this screen provides options to "Delete" and "Edit" alarms. Delete and edit as it name implies used to delete and edit the alarm name and message. Map button is used to display the map where the user can select the target location which retrieves latitude and longitude values from location provider (GPS/ Network) and prompt user to enter the alarm name and message. These details are then saved in the database. Activate Alarms is used to activate the alarm which enables the alarm and displays the provider name (GPS/Network) in the screen. Deactivate Alarms are used to disable the alarms

Selection of appropriate Technologies

Fig.2 working of GPS

Working of a GPS

An assisted GPS system can address these problems by using data available from a network. A-GPS feature asstated by common mobile phone devices specification today is mostly the internet network-dependent one, the one that requires to connect to internet or ISP (or CNP, in the case of CP/mobile-phone device linked to Cellular

Network Provider) data service to use the GPS-like feature. That is it is a mobile (Cell Phone/Smart Phone) device featured with A-GPS can work only when their internet link/connection to ISP/CNP - it is USELESS on areas.

Google API

Google APIs are a set of JavaScript APIs developed by Google that allows interaction with Google Services and integration of rich, multimedia, search or feed-based Internet content into web applications. They extensively use AJAX scripting and can be easily loaded using Google Loader.

Google Maps

Google Maps has a wide array of APIs that lets us to embed the robust functionality and everyday usefulness of Google Maps into our own applications, and overlay our own data on top of them. Google introduced a Java application called Google Maps for Mobile, intended

to run on any Java-based phone or mobile device. An internet connection is required to get maps and related information from Google Maps.

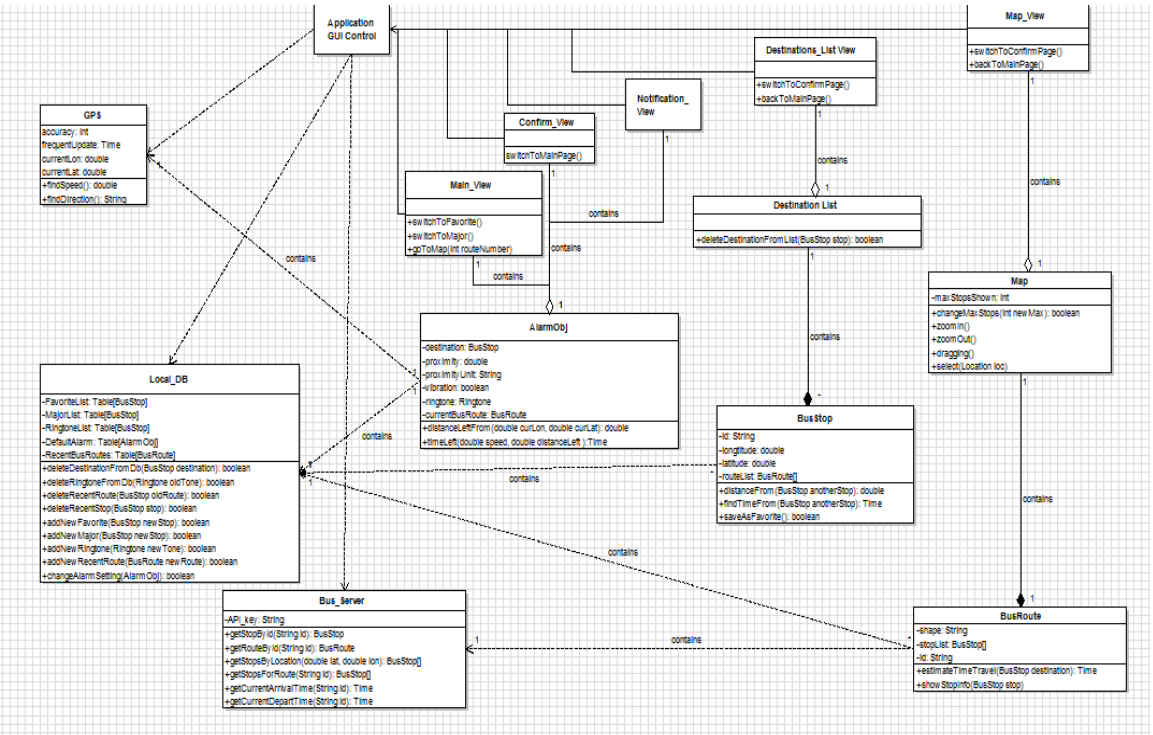
The Global position system (GPS) mounted as part of the Vehicle Mounted Unit in the bus will receive the longitude and latitude coordinates from the Satellite. This information is then sent across to the Central Control station through the wireless communication link such as GSM / GPRS. The application at the Central control station on receiving the position inputs will update the display boards at the bus shelters and at the bus terminal platform display pineland the general display panel at the related bus terminals. They have used the following display boards for providing information to the users.

User command to obtain his current position by pressing the "View Google Map" button. As soon as the system gets the command from the user to obtain the current position Then system activates its GPS system and obtains the current latitude and longitude for user which is then used to display the current position of the user on Google map.

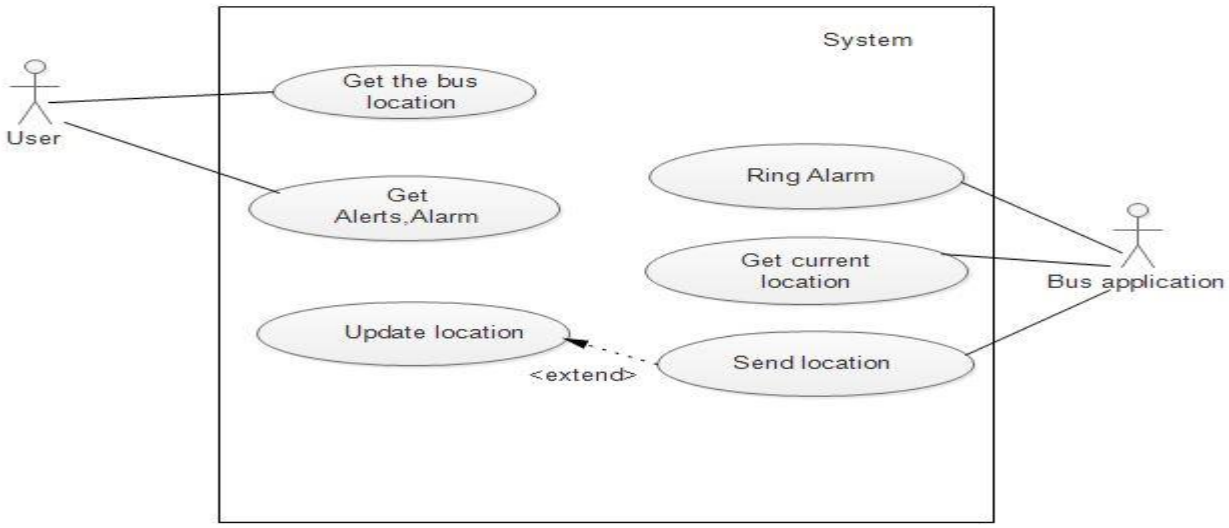
XML

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.XML is used for the creation of UI layouts in Android. Android provides a straightforward XML vocabulary that corresponds to the View classes and subclasses, such as those for widgets and layouts. The advantage to declaring UI in XML is that it enables the user to separate the presentation of the application from the code that controls its behavior. UI descriptions are external to the application code, which means that the user can modify or adapt it without having to modify the source code and recompile. For example, XML layouts can be created for different screen orientations, different device screen sizes, and different languages. Additionally, declaring the layout in XML makes it easier to visualize the structure of the UI, so it's easier to debug problems

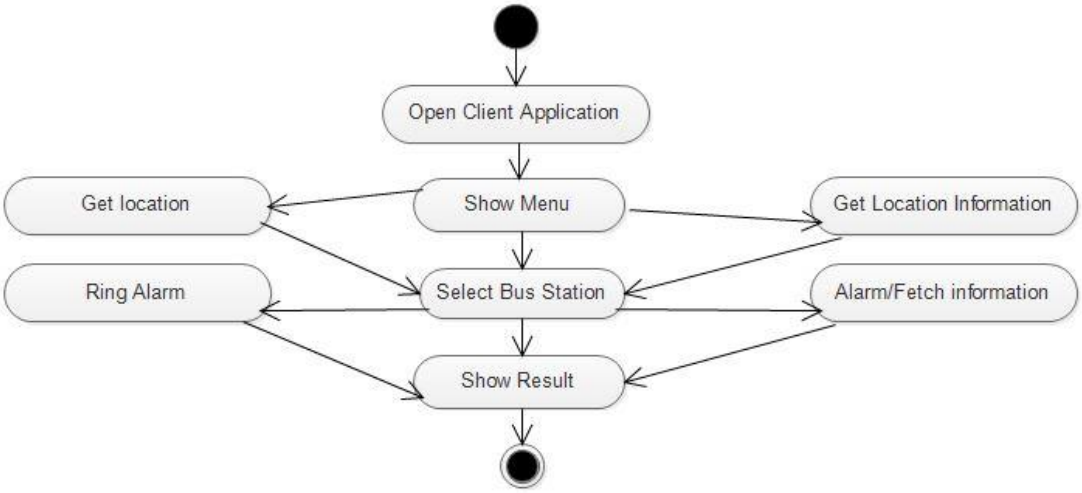
UML Class Diagram



Usecase diagram



Activity Diagram



Database

Android provides several options for we to save persistent application data. The solution choose depends on our specific needs, such as whether the data should be private to application or accessible to other applications (and the user) and how much space your data requires.

Basically I identified data storage options are the following:

Shared Preferences
Store private primitive data in key-value pairs.
Internal Storage
Store private data on the device memory.
External Storage
Store public data on the shared external storage.
SQLite Databases
Store structured data in a private database.
Network Connection
Store data on the web with your own network server.
Android provides a way for you to expose even your private data to other applications with a content provider. A content provider is an optional component that exposes read/write access to application data, subject to whatever restrictions we want to impose. For more information about using content providers, see the Content Providers documentation.

- SQLite is Android specific database available by default in Android phones. SQLite is a lightweight and powerful database engine, and can be used in any type of application development so I willing to use SQLite.
- Storing and retrieving locations in SQLite from Google Maps Android API V2

- On taping a location in the Google Map, a marker will be drawn at the taped location and the corresponding coordinates with Google Map zoom level will be saved in SQLite database. On restarting the application, the saved locations are retrieved from the SQLite database and redrawn in the Google Maps.

SQLite Database in Android

Every mobile application might be handling data which have to be permanently stored and retrieved at a later instance of time. In android, SQLite is a lightweight database which is embedded into the platform by default. Most of the common database operations can be done using methods available in SQLite. The syntax is very similar to SQL syntax.SQLite is a lightweight database which does not require any configuration. As the memory space required is minimal, it is suitable for mobile applications.
Android SDK provides two classes, which can be used by developers in order to use SQLite.
SQLiteOpenHelper- This class helps in creating the database and controlling version changes
SQLiteDatabase- This class helps in performing basic database operations.

Current Progress
I learned how to use google API, and create google map project. It's easy to identify the need location and search other places.

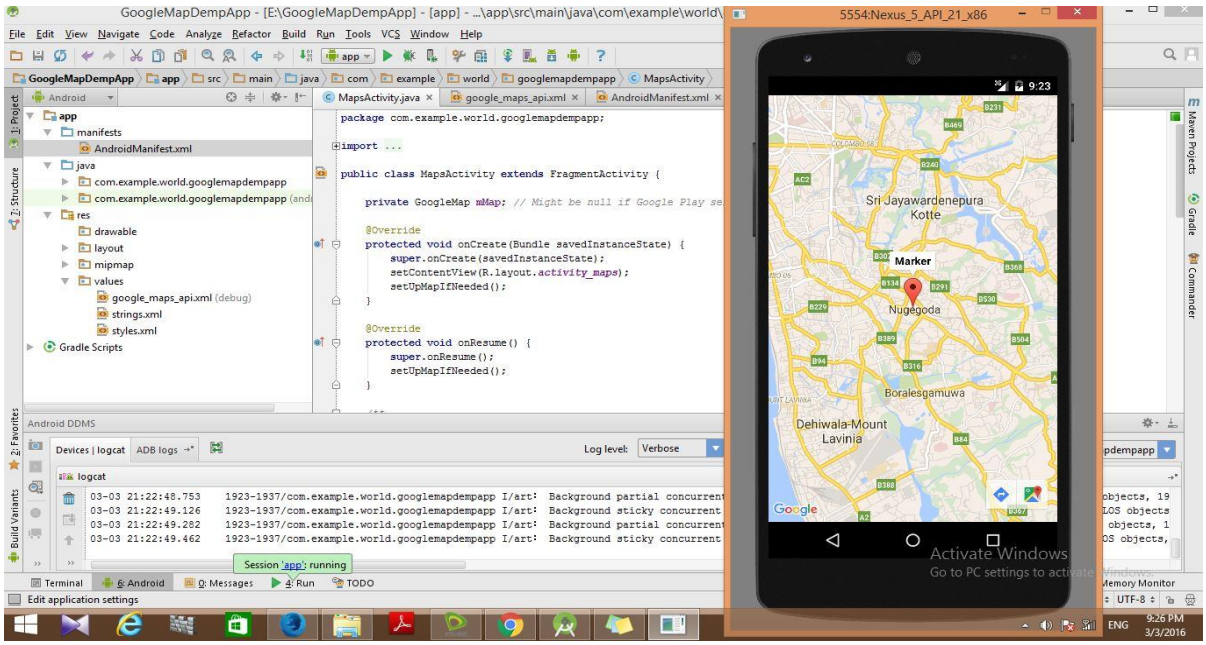


Fig.7 Create a Google Map application

Fig.7 -I created a google map project and Google API used for that. I have launched the Android studio's Emulator.

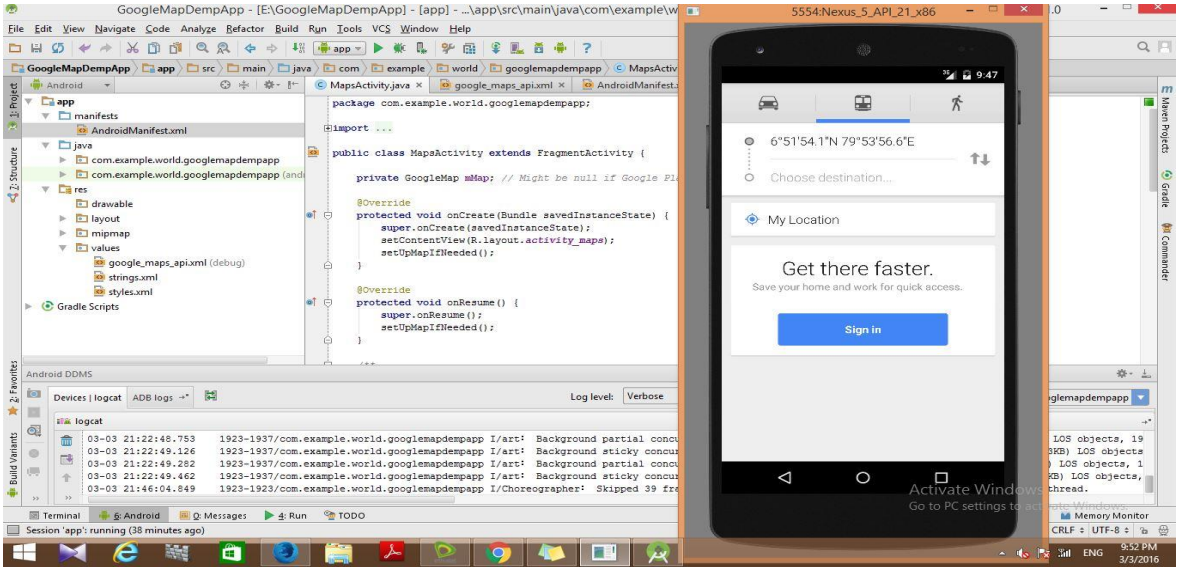


Fig.6 Google Map and locations.

Fig.6 – it's easy to identify the location and get to the current location.

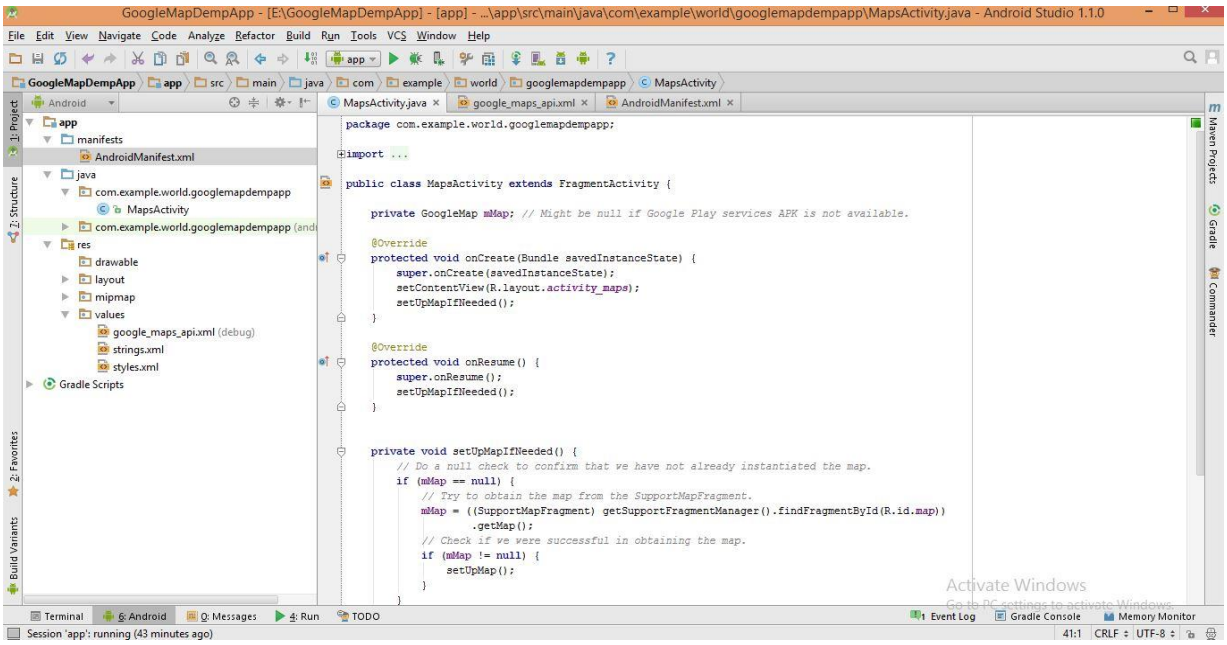


Fig.6 sample code of the MainActivity.java class.

Xml file with the google API key.

<resources>

<string name="google_maps_key" translatable="false" templateMergeStrategy="preserve">

```
        AIzaSyCgkMawhVRAT34xbMOqjUj9MJvXI5VerhU
    </string>
</resources>
```

4.2.Comparison of different Applications and their features

There are many navigation based applications developed. Though many apps are available handful of those apps can be effectively used in Sri Lanka. Many applications are based on European and American countries and states. And they are only tested on the said areas. Among them most of the apps are offline apps that maps are needed to be downloaded. But my navigational app is an online based app, the app is quite smaller than offline applications so the memory requirement is low. This is specially designed to Sri Lanka as there are very few apps working on Sri Lanka.

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Applications Teachnical comparision

Wake Up GPS application also the GPS based and the same application.

- Wake Up GPS is an alarm by GPS location.
- A application to bus users that don't want to loose bus stop.
- For greater efficiency, in addition to GPS, the application uses the network when needed, and a lot of calculations.
    - Features:
      List of favorites destinations;
      Radius alert;
      Ringtone definition;
      Low battery consumption;
      Low battery alert;

Google Maps visualization;
Customized progress to quickly view distance;

Bus Stop Alarm also the same app but it's GUI design not efficient than tha wake up application.

- It Works with both network location and GPS. GPS can drain the battery. Next Release should optimize battery usage. But it has not Google Maps visualization Radious alert.

Road Rooster is a location based alarming system.

- Rather it makes use of Google's fused location API to create a geofence around the destination.
- The radius provided as perimeter is the lowest bound for triggering an alarm.
- Whenever the devices comes within the range, Google's location service informs the same to the app.
- On receiving, the app triggers an alarm - letting you know that you have reached your destination.

It hasn't good interface than wakup Gps application .Although the app has yielded good efficiency for smaller perimeters, it is suggested that the perimeters should be kept at higher value for expected outcomes. Because location updates are gps driven and how clear the reception will be, cannot be predicted for a journey. For the roosters to work correctly, you are requested to keep your location services turned on during the transit session. The app leaves no background services and hence does not eat up your battery. But tracking location itself is a battery effective procedure and hence can drain a little more juice out of r box.

Location Alarm Set some destinations, and this alarm will remind you when you approach them. can set notification in status bar, vibrate the phone, and choose an alarm sound you like, or even let voice remind.

This app additionally added voice reminder and this feature haven't of above applications.

- Satellite view of the map.
- Traffic information on the map.
- Center the map with your current location.
- Show alarm range in map.
- Drag marker to edit alarm.
- Auto Start after Reboot.

- Bring Map to Front When Triggered. (Only in Pro version)
- Notification in status bar.
- Notification with pop-up text.
- Vibration of the alarm.
- Sound of the alarm. (MP3 file support in Pro version)
- Sound volume.
- Alarm repeat
- Alarm enabled time slot
- Voice of the alarm.
- Choice of different alarm sounds.
- Send SMS for notification.
- Distance to destination to trigger the alarm. (Separate for each alarm in Pro version.)
- Days to repeat the alarm.
- Power option. (Automatic mode in Pro version)
- Alarm list import and export.(Only in Pro version)

GPS Route Finder is your personal application through which can easily track all the locations have visited. And it also have basica function like above applications.Its a simple app that helps you to track our own locations on date wise.

Find easiest and fastest route for destinationGPS Route Finder helping to save your precious time. It helps you not to waste your time in long route.

Just Give the time intervals to record the location and save it to the database, and Start the Mobile Location Tracker. By the end of the day you can check where you roamed with locations saved on google maps.

- Find easiest and fastest route for your destination.
- Easily track all the locations you have visited.
- Share your current location with one click.
- Find Address of any area in map.
- Supports different maps types : Normal, Satellite, Terrain maps.
- Find Driving Route.
- Find Walking Route.
- Easily delete your complete phone location history just by one click.
- Best GPS Route Finder app for android.
- GPS Route Finder is completely free to download.

GPS Maps FullFunction application can most easy way to know where we now.because it has powerful 3D GUI and locations but it has not alarm,power options such that features

Navigation Navigator app will help all users to open popular GPS Navigation with Maps fast.

- Navigation Navigator is here for those, who miss original Navigator icon for easy navigation. This Navigator
- app simply opens Navigation in one click.
- Any issues regarding location, Maps crashing or internet use do not have anything to do with this app and there is no alarm feature and power solutions.

Offline maps & Navigation
features

- offline maps
- free map updates
- multi-language voice navigation (33 languages supported)
- GPS / Glonass ready
- speed limit warnings
- fixed speed camera warnings (available in selected countries only)
- 3D buildings
- lane guidance
- large POI database
- pedestrian, car, or even bee-line navigation
- night mode based on local sunset time
- track recording

GPS Map is free access to maps, navigation & traffic. GPS Map opens Maps for Android phones and tablets with free navigation and maps. will have access to accurate maps in 220 countries and territories, voice guided GPS navigation for driving, biking and walking. GPS Map provides maps and navigation with live traffic conditions, incident report and finds best driving route.

features
• Maps of 220 countries and territories.
• Voice-guided GPS navigation.
• Real time traffic with live update.

• Incident reports and automatic rerouting .
• Detailed information on more than 100 million places.

GPS Location alarm will alert you for your stop by Alarm. GPS Location Alarm allow you to sleep or reading or doing any other activity and not to look at road or sign boards for your stop every-time.

Features:

- User Friendly interface
- Simple and attractive Graphics
- Add multiple locations and enable/disable
- View your save locations
- Delete your saved location by long press

Mobile Location Tracker reliable then other sources of location provider.
Features

- GPS Location Base.
- Highlight mobile Locations on Google Map, have travel through.
- Helps in new places, to find track have traveled.
- Best reliable app when travelling too far.give you exact path have travel through.

GPS Route Finder This app has Normal, Satellite, Terrain maps to find driving and walking routes.
Features

- Normal, Satellite, Terrain maps.
- Find Driving Route.
- **Find Walking Route.**

5.Goals towards project completion

5.1.Complete Project Plan

Project Stage	Project Deliverable	Deadline Date
1. Investigation and Requirements	Analysis of existing applications, Evaluation of Android technology	20-12-2015
1.1.Analysis of existing application	Analysis document	20-12-2015
1.2.Requirements specification and validation	Requirements document	20-12-2015
1.3.Evaluation of development technologies	A short report on the selected technology	20-12-2015
2. Project Implementation	High level design • Design Architecture and GUI style. Design the application and development. Detect the route. Give a solution to law battery situation Finalizing the increments and doing modifications for testing.	Implementations will be shown during specified minute meetings
3. Additional Functionality	Final application, final testing and adding User-friendly, attractive things.	After core project is completed
4. System and user acceptance testing	Test cases(Report)	01-03-2016
5. Project and report submission	Final project and report submission of PRCO303 module	25-04-2016

6.Conclusion

Mobile development is a high demand industry, whether it is Android, iOS or Windows platforms. Initially the first step is taken towards the mobile developments from conducting this project. An android mobile application is developed in the project/ it is an application that is used to detect the different bus routes that the user is travelling. The potential bus route can be viewed with bus halts highlighted. The main feature is that an

alert (notification) is produced when the user come closer to the destination. This will be in the method of an alarm with a remainder. Unfamiliar routes with unfamiliar bus halts will be able to be distinguished by the user, as he will have to input the destination in the app. If the traveler falls asleep and use this application the alarm will awake the traveler. So this is an incredible android mobile application that will be a service to many people who are traveling.

7.Requirements

Software Requirements

The software project will be developed on the Windows 8 Operating system using the Android Studio IDE. The Application will be expected to be fully compatible in Windows 8 and other versions.

Hardware Requirements

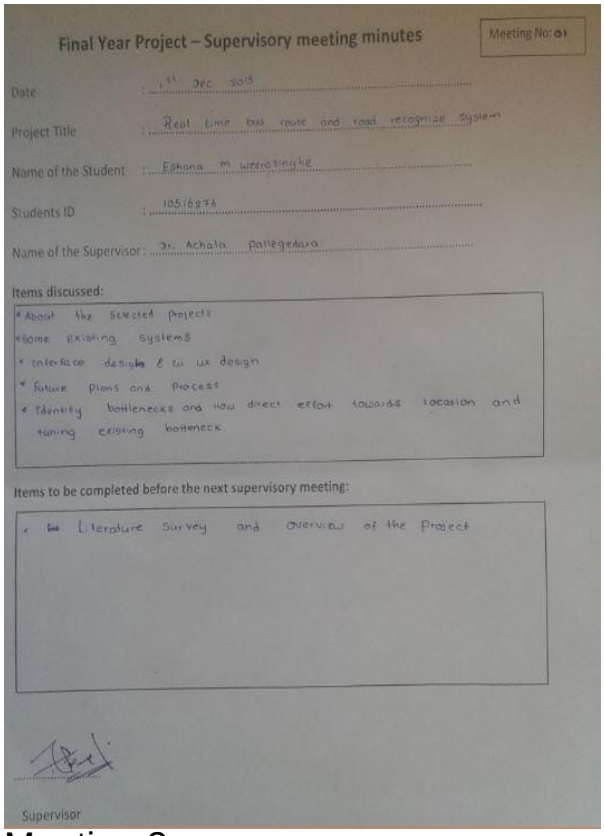
The minimum specification computer that is used is
4 GB RAM
At least 5 GB HD free space
256 MB Video card
But the final hardware requirement can only be gathered after the development of the app.

Appendix 4: Supervisor communication

Date	Summary
1)1/Dec/2015	About the selected project, Some existing systems,Interface design , future plans and process, identify bottleneck and how direct effort towards location and tuning existing bottleneck
2) 6/January/2016	Google map visualization, Low battery alert, Low battery consumption, send SMS notifications, attractive Graphics, Userfriendly interfaces.
3) 5/Feb/2016	How to manage the System issues,litreture survey, Existing route and road recognize systems, Run the simple codes.
4) 4/March/2016	About the main features, Assumptions and future plans, interim report 2 and it's content
5) 28/March/2016	User details records and database create, How to get the average speed

6) 22/April/2016	Future plans, Final report, Future Development

Meeting 1



Final Year Project – Supervisory meeting minutes

Meeting No: 01

Date : 1st Dec 2015

Project Title : Real time bus route and road recognize system

Name of the Student : Eshana M Weerasinghe

Students ID : 10516876

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

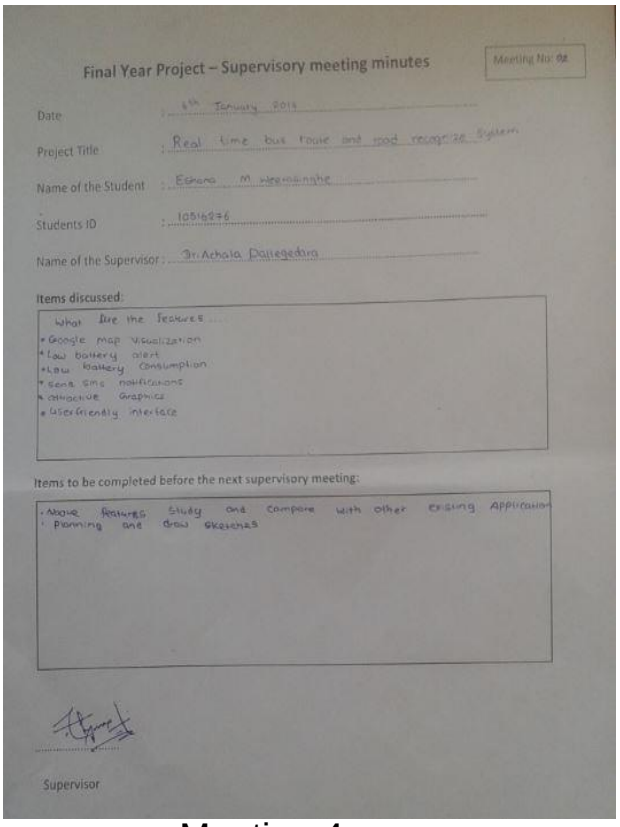
- About the selected projects
- some existing systems
- interface design & ui ux design
- future plans and process
- Identify bottlenecks and how direct effort towards location and tuning existing bottleneck

Items to be completed before the next supervisory meeting:

- Literature survey and overview of the Project

Supervisor

Meeting 2



Final Year Project – Supervisory meeting minutes

Meeting No: 02

Date : 6th January 2016

Project Title : Real time bus route and road recognize system

Name of the Student : Eshana M Weerasinghe

Students ID : 10516876

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

What are the features

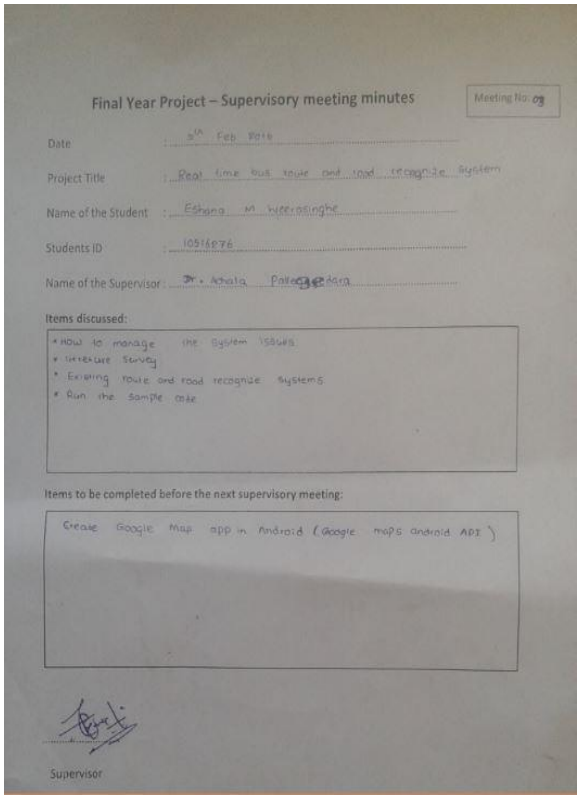
- Google map visualization
- Low battery alert
- Low battery consumption
- Send sms notifications
- attractive Graphics
- user friendly interface

Items to be completed before the next supervisory meeting:

- Above features study and compare with other existing Applications
- Planning and draw sketches

Supervisor

Meeting 3



Final Year Project – Supervisory meeting minutes

Meeting No: 03

Date : 5th Feb 2016

Project Title : Real time bus route and road recognize system

Name of the Student : Eshana M Weerasinghe

Students ID : 10516876

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

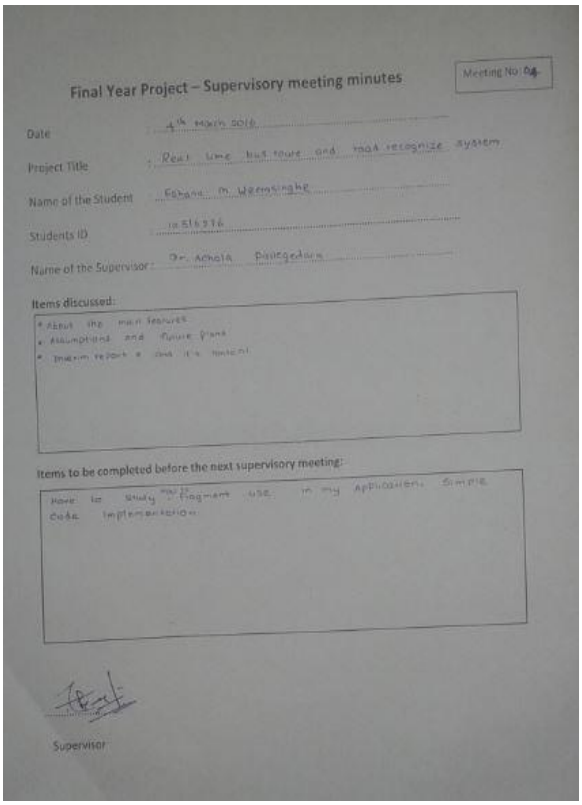
- How to manage the system issues
- Literature survey
- Existing route and road recognize systems
- Run the sample code

Items to be completed before the next supervisory meeting:

- Create Google Map app in Android (Google maps android API)

Supervisor

Meeting 4



Final Year Project – Supervisory meeting minutes

Meeting No: 04

Date : 4th March 2016

Project Title : Real time bus route and road recognize system

Name of the Student : Eshana M Weerasinghe

Students ID : 10516876

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

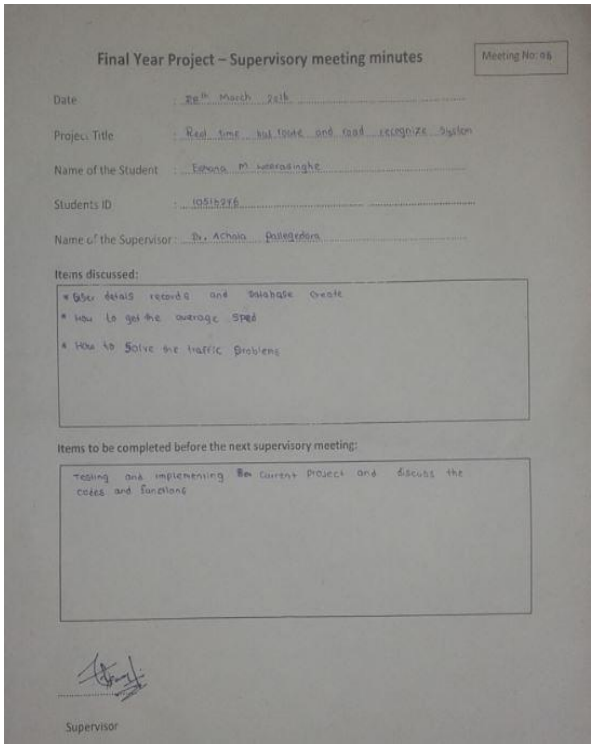
- About the main features
- Assumptions and future plans
- Interim report & and it's content

Items to be completed before the next supervisory meeting:

- How to study and fragment use in my Application Simple code implementation

Supervisor

Meeting 5


Final Year Project – Supervisory meeting minutes

Meeting No: 05

Date : 28th March 2018

Project Title : Real time bus route and road recognize System

Name of the Student : Eshana M Weerasinghe

Students ID : 10518276

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

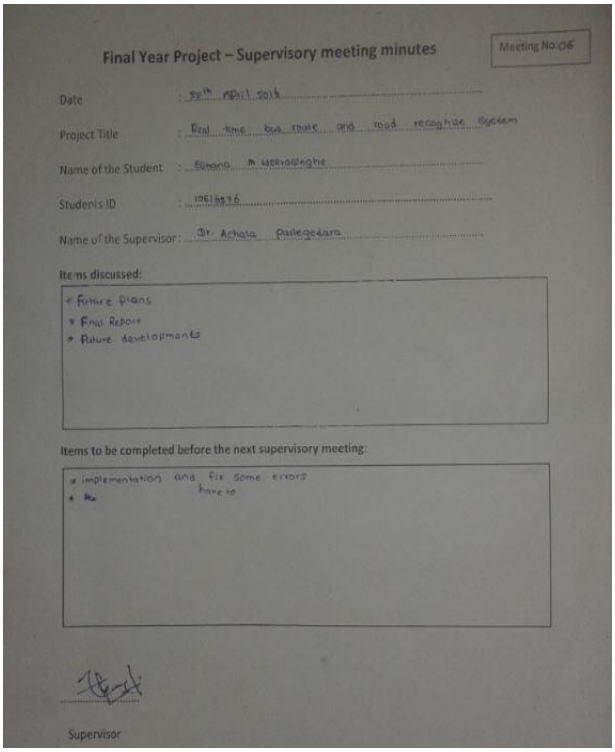
* Gps details received and Database create
* How to get the average speed
* How to Solve the traffic Problems

Items to be completed before the next supervisory meeting:

Testing and implementing the current Project and discuss the codes and functions

Supervisor

Meeting 6


Final Year Project – Supervisory meeting minutes

Meeting No: 06

Date : 9th April 2018

Project Title : Real time bus route and road recognize System

Name of the Student : Eshana M Weerasinghe

Students ID : 10518276

Name of the Supervisor : Dr. Achala Pallegedara

Items discussed:

* Future Plans
* Final Report
* Future developments

Items to be completed before the next supervisory meeting:

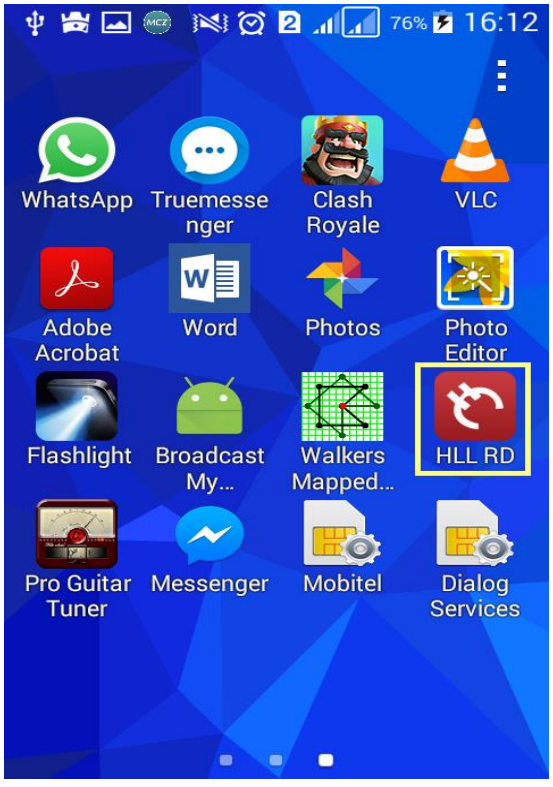
* implementation and fix some errors have to
* Re

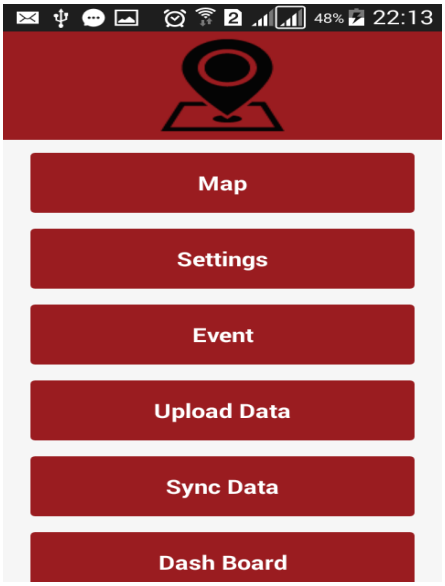
Supervisor

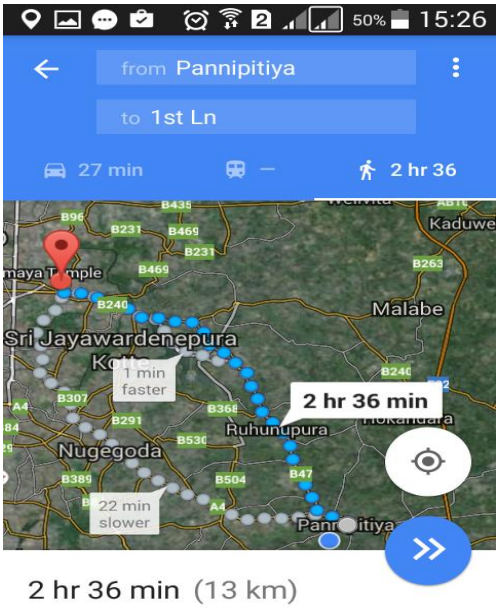
Appendix 5: Designs

Appendix 5A Android app screenshots

See screenshots of app running on a Sumsung Gallaxy core prime, Android 4.4.4 kitkat

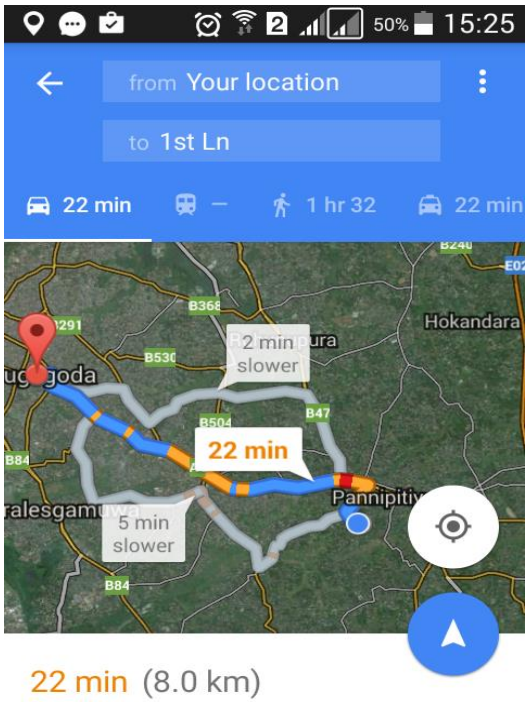






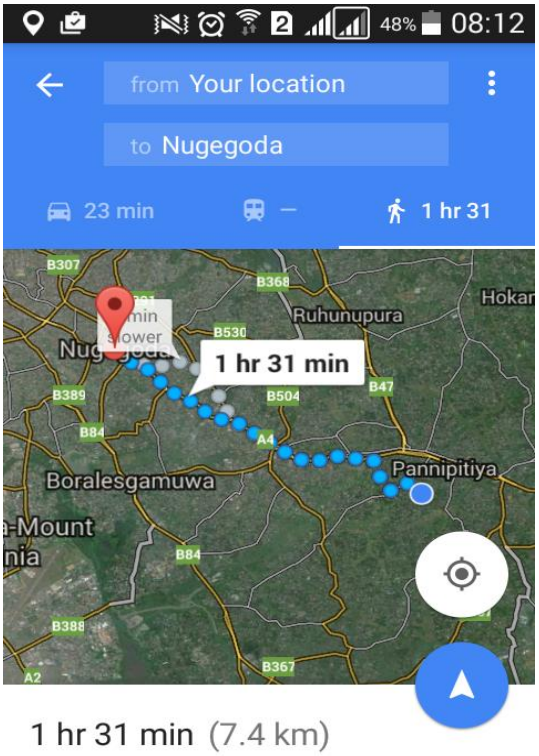
2 hr 36 min (13 km)

via B47



22 min (8.0 km)

Fastest route, despite the usual traffic



1 hr 31 min (7.4 km)

via Colombo-Batticaloa Hwy

Appendix 6: Architecture

Appendix 6.A Android UML class diagram, simple