

Virtual Business Card Android Mobile Application (vCard)

By

Ahmad Azwan Bin Roslan

Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Information Communication Technology)

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CERTIFICATION OF APPROVAL

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Approved by,

(Miss Penny Goh Kim Nee)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

September 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

AHMAD AZWAN BIN ROSLAN

ABSTRACT

Business card is one of the simple ways to market an individual not only during business occasion but in any formal introductions as a convenience and a memory aid. In the business perspective, in order to appeal and stand out from the competitors, business card will reflect and give the first good impression of the person, company and their services by highlighting the info embedded inside the business card. It can be seen as one of the effective marketing strategy as well as improve the legitimacy of the company itself. With the vast development of mobile industry and mobile application, virtual business cards are starting to appear and they bring a lot of advantages over a traditional business card. Hence, this project aims to develop a mobile application Android based that can generate a virtual business for any individuals that use business card in any formal and informal introduction and other occasions. The purposes of this project are to increase the mobility of business card by convert it into a mobile application and in the same time reduce the usage of printed paper. Apart from that, to expand the capabilities of this new virtual business card, it will be integrated with Global Positioning System (GPS) and sync with the social network application inside the mobile device. This project will be using Rapid Application Development (RAD) methodology because of the flexibility in term of time and process of development which is very suitable to develop an application in a limited of time.

Keyword(s): Mobile industry, mobile application, virtual business card and traditional business card.

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ABBREVIATIONS AND NOMENCLATURES

API	Application Programming Interface
CSS	Cascading Style Sheets
GPS	Global Positioning System
GPRS	General Packet Radio Service
HTML	Hypertext Markup Language
IPO	Input, Process and Output
JDK	Java Development Kit
JDT	Java Development Tool
MIT	Massachusetts Institute of Technology
NFC	Near Field Communication
OS	Operating System
QR	Quick Respond Code
UMTS	Universal Mobile Telecommunications System
RAD	Rapid Application Development
SDK	Software Development Kit
SMS	Short Messaging System
VoIP	Voice over Internet Protocol
WAP	Wireless Application Protocol
XML	Extensible Markup Language

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Virtual Business Card Android Mobile Application (vCard) is a combination of mobile application and the desire to bring normal daily basis activity into a new technology experiences which will help people to make their life easier. From the past few years users of mobile phone increase drastically and lead to booming of mobile application market.

There are several platforms for mobile applications and the chosen development platform for vCard is Android. Android is open source software and it allows developers to change the codes according to their preferences (Proffit, 2011). Moreover, it provides a lot of usage and functionality to its users. Android is one of the mobile software that has many development environments (Android Developers, n.d). Thus, Android is the most preferable for any beginner developers and will be further discussed in Chapter 2.

vCard is a virtual business card using an Android mobile application platform which is difference from the traditional business card because it is integrated with the GPS and can directly show the exact location of the company and give the initial visual position to the user of this application. The idea is that, they can trace the location of the company on the go with the aid from the GPS without having a separate device or applications. So, by installed the vCard and input all the related information, it will help to search the location of the company based on the address stated in vCard by using the GPS inside the mobile devices. Furthermore, user can change any mistake on the details and information immediately and generate them as soon as possible which is cannot be done if they are using traditional business card. The ability to sync with the social network application inside the mobile device will be the additional features of vCard.

Moreover vCard will help you to separate your normal contact information with your only business related contact individual.

1.2 Problem Statement

Business cards are card which contains all the info regarding the owner and the basic function of marketing the person has no change over the years (Hold, 2010). Business cards which usually being shared during formal introductions and become more important nowadays. It is less convenient to be used as it comes in a printed paper which need to be bring together whenever place or occasion that we attend. In addition, we need extra space such as card holder in order to store all the cards and organize them accordingly which is cost and space consume. For a busy person, to keep any small tiny detail of information organize is a very hard job as well as the information must be keep updated over time. Sometime, the user of this card tend to forget to bring it together if they are attending any formal or business occasion and this might bring up some problem to them. Moreover, normal business card used up a lot of papers as they were printed on the paper and this might cause an environmental issue. If there are any mistakes or changes of details, changes cannot be done immediately as the user needs to prepare and print a new business card to replace it. Traditional business cards are less appealing, not savvy enough and not unique enough to make a good impression on the first meeting.

1.3 Objective of Study

- To develop mobile applications that can generate virtual business card.
- To develop a mobile application that can help to organize the business contact.
- To produce an alternative tool of information sharing using mobile application instead of normal business card.
- To increase the functionality of business card by integrated it with GPS and social network capabilities.

1.4 Scope of Study

The significance of vCard mobile application is to provide an alternative way for individuals to share their information details through mobile. Thus, the information can be easily shared, save, organize and use in the future. The scope of study is for any individuals that use business card in any formal and informal introduction and other occasions.

CHAPTER 2

LITERATURE REVIEW

2.1 The needs of mobile phone

Nowadays people always bring their mobile as one of the most important things to bring together with them. Tendency to forget the mobile phone is less compare if we are bring something separately like business card. This is because, mobile phone is always been used by the user; to make a calls, send messages, taking picture, listening to music, reading to map and many more. So they will felt something is missing if they forget their mobile phone. According to International Telecommunication Union (2004) the mobile phone has indeed become the most intimate aspect of user's personal sphere of objects like keys, wallet and money and this is the reasons why we need to use mobile phone compare to paper. When it comes to mobile phone, we will take a very special care of and based on the survey in a 2003 UK, 46 per cent of mobile phone users described the loss of their mobile as a form of "bereavement" (Harkin, 2003). Again, according to International Telecommunication Union (2004) for many users, the thought of having their mobile phone privileges revoked can cause indignation and even protest. Because of that we, any information are good to be save in the mobile since, users fell the "existence" of the mobile itself. Compare to the normal business card, users spend less care to it since it is less valuable and less functions; just a piece of paper with information but there is no regret of losing it compare if we lose out mobile phone. This is because; users have a more "emotional" relationship with their mobile phones than with any other form of information and communication technology (UMTS Forum, n.d).

2.2 Business card evolution

Since the 19th century, the business card has been commonly used in promoting a person or business (Stepanovska, 2012). Thus this is the proof to show that the importance of

business card for the last two centuries. We tend to use business card during introduction between two or more persons, the card will be exchange as an ice-breaker and it serves as a good memory aid to remember the person and their contact details (Ong & Rassau, 2011). Because of the importance of business card, it has been evolve from just piece of paper contain picture, company, position and address into a rich compact information holders which is contain telephone number, facsimile, mobile number and email which is not available in the previous business card. Figure 2.1 and Figure 2.2 is the comparison of business card form 19th century and the current business card that we used nowadays.

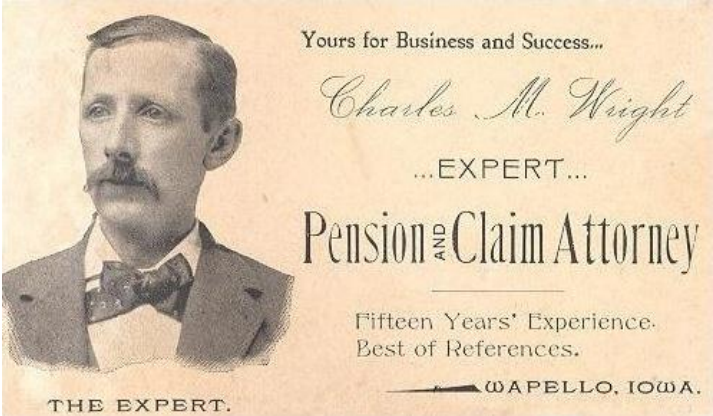


Figure 2.1: Example of business card used in 19th century (Melbourne)



Figure 2.2: Example of business card used nowadays (Ventrian Business card)

The evolution of business card seems to be the impact of technologies and they are evolving together. This is because the capacity of information expands towards the available technology. Exchanging of information through digital means can ensure that information is shared quickly and accurately. An electronic business card allows information to be stored, organized and easily retrieved when required. Because of that, it leads to the creation of virtual business card, which is another version of business card without using any printed paper that allows exchanges of information between different applications and systems as vCard is defined independent of transportation method used to exchange information (Melbourne, 2012). Mobile application has been proven to increase the operational performance, assets utilization, sales effectiveness and maintain a good relationship within the customers as one of the customer services as well as increase the throughput and increase the probability of accessibility into critical data or information at the point of work, enhance the normal communication and help to make any crucial decision making (Gabriel, 2004). Thus, we need an application that can hold all the information and pack them into one integrated packaging and user can easily use the information whenever they need.

2.3 Mobile Application

For the last few years, the developments of mobile application are extremely in high pace. The introduction of Google's Android; a Linux based operating system design for mobile devices such as smart phone and tablet computer, which is one of the great evolution points and the most popular mobile operating system platform as stated from Figure 2.3 leads the traditional ways of life into a mobility and virtual perspective. This is the great invention because in order to successfully adopt any mobile application in the enterprise we have to search a "killer" application or a mobility platform that will generate and drive the growth of mobile enterprises (Gabriel, 2004). Furthermore, Google's Android is an open platform for mobile application development which has tons of developers and it is easy for the new mobile application developers to have guidance from.

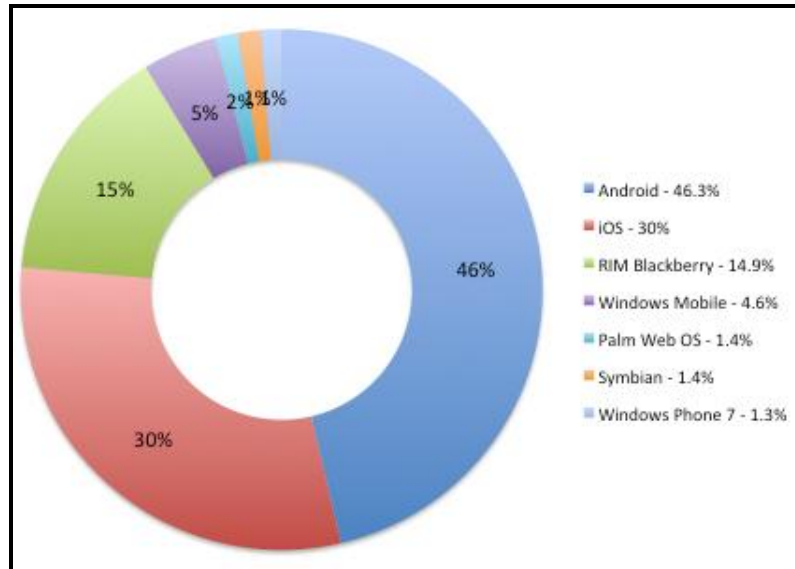


Figure 2.3: Percentage of platforms of Smartphone based on shares (Nielsen Mobile Insights)

Thus, in order to develop vCard, the level of Application Programming Interface (API) is the most concern to the developers to ensure the compatibility of their application to the android mobile phone that available in market nowadays. This is because, all the Android operation system that has been released from Table 2.1 have different level of API. Table 2.2 specifies the API Level supported by each version of the Android platform. The uses of API level in Android are as follows (Uses SDK element, n.d):

- Serves a key role in ensuring the best possible experiences for user and application developers.
- It lets the Android platform describe the maximum framework API revision that is supports
- It lets application describe the frame work API revision that they required
- It lets that system negotiate the installation of applications on the user's device, such that version-incompatible application is not installed.

2008	2009	2009	2009	2009	2010	2010	2011	2011	2012
V1.0	V1.1	V1.5	V1.6	V2.0	V2.2	V2.3.x	V3.x	V4.x	V4.x
		Cupcake	Donut	Éclair	Froyo	Ginger Bread	Honey-comb	Ice Cream Sandwich	Jelly Bean

Table 2.1: Android OS release

Platform Version	API Level
Android 4.1, 4.1.1	16
Android 4.0.3, 4.0.4	15
Android 4.0, 4.0.1, 4.0.2	14
Android 3.2	13
Android 3.1.x	12
Android 3.0.x	11
Android 2.3.4,2.3.3	10
Android 2.3.2,2.3.1,2.3	9
Android 2.2.x	8
Android 2.1.x	7
Android 2.0.1	6
Android 2.0	5
Android 1.6	4
Android 1.5	3
Android 1.1	2
Android 1.0	1

Table 2.2: Level of API base on the Android OS release

2.4 Mobile application provide better storage

Mobile application has great capabilities to store and organize any information of the users and it is easy to find if we are in need. For example, the phonebook inside the mobile can holds a lot of contacts number compare if we write it on the paper. The contacts will be organized automatically and we can organize them according to different group and frequently contacted. Thus, the information stored is more usable, clear and user can understand very well. Moreover, it can hold the additional information features that may not provide by the traditional paper phonebook; for instance, the pictures of the owner's phone number. Although we used the information

in the business card are just for the formal introduction and meeting, but the information is very importance in the future and we need to keep it as long as possible. Important contacts for long-term interaction can be identified by longevity, frequency, recency of communication. So infrequent but long-lasting contacts are important to users (Whittaker & Travenn, 2002). In addition, the storage for mobile phone is non-volatile and last for longer period and it is easy to make any correction on any mistake because it is virtual. Compare to using paper, the information is volatile and need to give extra care in order to make it last longer. This method also is not a very effective since the mistake cannot be unchanged immediately and the limited capability of storage based on the quantity of the paper itself compare to storage in mobile phone. The ability to save a lot of contacts makes mobile phone more reliable and usable as to store the important storage compare to using traditional method which is using paper.

2.5 Sharing information is better through mobile application

The capabilities of sharing information through mobile application is a great innovation since they are built with internal Bluetooth devices, Wi-Fi and internet connectivity like 3G and UTMS. Thus, sharing information especially business card become easy because, all of this technology embedded inside any phone that available in market. User can easily share by send the business card through their emails.

2.6 GPS in Android Mobile Application

With the current development of mobile devices and the ability of integrated GPS sensor with the support from the easy development environment like Android SDK, mobile application and GPS are getting batter and batter.

Android application is the most important part of the entire application. It uses Android SDK API to manage the GPS Sensor, Google Maps API to show the Map powered by Google Maps, to display the position of the person, location of the company and display the markers about the events on the Map.

Thus, we will use this method in order to integrate GPS capabilities with the vCard in order to show to the user the exact location of the address in the business. In addition, Android has been chosen as the platform of this application because it is completely open source and because it is a Google OS and it can be used in the best way in conjunction with Google Maps.

2.7 Similar Application

2.7.1 Bump

There are a lot of similar applications that give the service of virtual business card. For example, Bump an application that available for Android mobile platform. Bump is basically an application that allows users to share and exchange their details between devices by simply “bumping” the two devices together. The medium of sharing is Wi-Fi and internet connectivity is a must for the application to be working. The idea of ‘Bump’ is sharing but not in a ‘package’ of business card means this application allows user to share pictures, calendar events and connect to other people’s Facebook, Twitter or LinkedIn which is some of them are not needed in the business card.

2.7.2 Jumpscan

Another application that available related to virtual business card is Jumpscan. Jumpscan is application that places all of the user contact information into a single Quick Respond Code (QR Code) image. The application will create a QR code for your profile which is consists of your name, emails, contact number, social accounts details and more. They can easily pass the information by allow the other user to scan the owner of the QR code. The way to scan the QR code is by using the camera of the mobile phone and the application will directly translate the information inside the QR code and save them into the mobile phone.

2.7.3 DropCard

DropCard is an application for sharing virtual business card through your email. DropCard will allow user to generate their business card by inserting all the information right after login into the application. This application will ask the user common information and this system will generate the business card for them. The medium of sharing is through email with a short of SMS message. The example; “simply text “*drop someone’s@email*” to 41411” and DropCard will automatically forward your contact details to that email address. DropCard can analyze how many card that owner had shared before and provide a virtual card holder that holds others shared business card.

2.7.4 Procontact.me

Procontact.me is a web based application base which provide user desktop and mobile version. In order to view your business card, you will need a mobile phone with mobile browser and your unique url provided by Procontact.me. Owner of business card can edit their business card from the website which is the desktop version and also from the mobile. To share the information, the owner has to “Text Your Info” button right from the mobile version of Procontact.me. Enter in the recipient’s phone number and you’re set. The other users will receive a text message with your name, phone number and Procontact.me url. Thus, user just has to use the url to view the business card using their browser in their mobile.

CHAPTER 3

METHODOLOGY

Every system methodology or software development process is related to the framework that is used to structure, plan, analyze, and control the process of developing any of an information system. Thus, every single development must come with the specific structure and the structure must be suitable enough with the current condition in order to produce a high quality end-product. There is a lot of choice of such frameworks that have evolved over the years of development and every one of them comes with the strengths and weaknesses thus they are not necessarily suitable to be used by all projects. There are two types of frameworks: linear and iterative and some of the frameworks will use either one of them or both.

3.1 System Development Methodology

For vCard, RAD will be used as the framework of the project. This is because of the time constraint to develop the application starting from the system analysis and data collection until application deployment and implementation are within 8 months and RAD is the most appropriate methodology based on the stated situation (Green & DiCaterina, 1998). Moreover, this methodology will produce high quality system products in a short time, primarily through the use of iterative prototyping at any stage of the development, active user involvement, and computerized development tools which are Eclipse, an Android developers tool.

There are a lot of other advantages of Rapid Application Development (RAD) model which are stated below:

- Rapid Application Development (RAD) is a quick development and the business perspective, this approach tends to produce a product in a lower cost because of the time consume.
- Rapid Application Development (RAD) only focus on the essential systems elements form the user viewpoint, in the vCard its related to the ability to delivers is main objective; a virtual business card.
- Easy to revert to any development point to change system design demanded by users.
- Higher probabilities of system specification meet the user requirements.

Based on Figure 3.1 Rapid Application Development consists of four main phases which are analysis and quick design, prototype cycles, testing, and implementation.

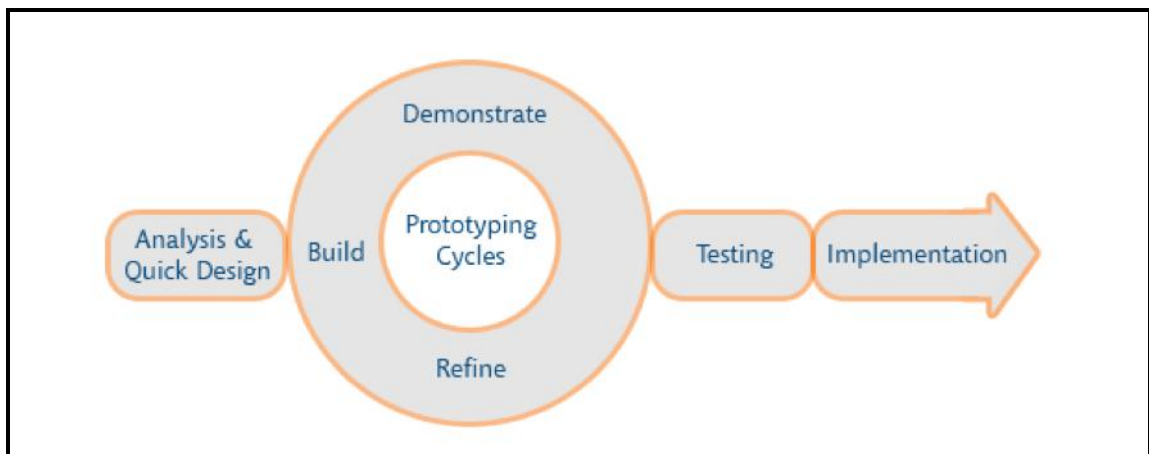


Figure 3.1: Rapid Application Development (RAD) Model (Eton Digital)

3.2 Planning and Data Gathering Phase

The first phase for the vCard project development is the planning and data gathering phase. This is the initial and important phase in developing an application because under this phase we will gather the requirements of the vCard that will be needed to implement later. Here, all the necessary information that was related to design, interface and database are gathered from the user as user requirement gathering process. The following are the steps that been carried out during this phase:

- Identify what is the topic for this project, the background study, problem statement, objectives, scope of the application and existing research paper that related to this project.
- Identify tools that needed in to develop vCard application.
- Come out with Gantt chart for the project schedule and time allocation for each part of the project from planning phase until implementation of the applications. This project is divided into two half and Appendix 1 shows the Gantt chart for the first half of the project development and Appendix 2 shows the Gantt chart for the second half of the project development.
- Identify method for data gathering; interview and questionnaires.
- Identify any similar applications that related to business card for data gathering.

3.3 Analysis Phase

After we gather all the requirements, we will have to analyze the requirements of the vCard system. All aspect needs to be analyzed to ensure the vCard system is feasible during the amount of time allocated and feasible within the limited resources. We are going to design the system interface as well as the database of the system from the finalize user requirements and this design will be used in the prototype circle later. The following are the steps taken during analysis phase:

- Conduct an interview to gather the information regarding problems or opinions from the user of business card. The result of the interview will be discussed in details later in Chapter 4.
- Analyze the best way to overcome the problem face by the user of business card.
- Come out with project approach. The system approach basically using the framework form Input, Process and Output (IPO). With the IPO diagram the developers can use the flow and understand more on how the vCard is working from the beginning of the input from user, how the information is process and the output of the vCard system.

3.4 Design Phase

In this phase we will have to design the basic of the user interface of the vCard system. In order to understand how the system works in the future and also to identify the requirements need in the application later in the development phase. The designs are based on the result gathered from the analyzing phase.

3.4.1 Graphical User Interface

For every application development, developers must come out with the initial graphical user interface in order to understand the flow of the system based on the gathered requirement. First, we come out with the sketch design of the interface and further discuss with the user whether the interface is usable and follow the rules in the human computer interaction.

Then we collect all the feedbacks from the user to use to finalize our interface before jump into development phase. The further discussion on graphical user interface will be on chapter 4.

3.4.2 Conceptual Design

Conceptual design is for identify the function of the application; the logic relation between class of function consists of flow chart and the package diagram. The further discussion of conceptual design will be in chapter 4.

3.4.3 Physical Design

In physical design we will use Windows 7 computer with compatible tools. There are some tools that needed in order to develop vCard and it is dividing into two parts which are:

3.4.3.1 Software

- Eclipse IDE for Java Developers
- Eclipse JDT Plug-in
- Eclipse is one of the available software for developing Android mobile application.
- Java Platform, Standard Edition (JDK 7)
- Android Development Tools plug-in
- Android Emulator.

Android emulator will help developers to test the system as in actual environment without having different mobile phone. Emulator from Figure 3.2 can be test out for different level of API, different resolution of mobile screen and different mobile phone processor.

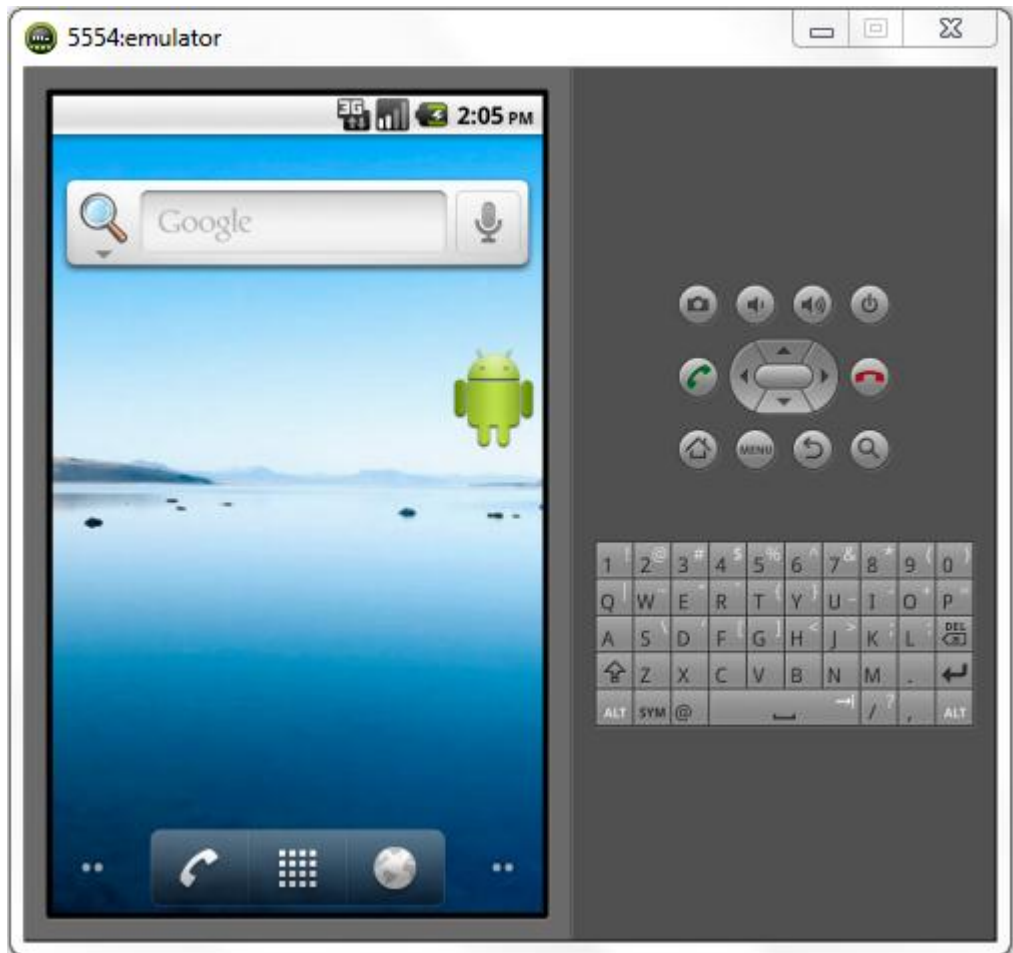


Figure 3.2: Example of Android emulator running Android 2.2 Froyo

3.4.3.2 Hardware

vCard application is for any mobile phone that support Android 2.2 and above with internet connectivity to send email. This is because, the target user is from low-end mobile phone and above and we will use the lowest Android platform for compatibility reasons.

3.4.4 System Architecture

The architecture of vCard is standalone application that has its own database. Every new input from the user of the application will be stored into this database using SQLite. Thus every details that has been stored before can be modify or delete by the user and the details will be permanently. User can easily retrieve the details in the future. Figure 3.3 is the vCard system architecture.

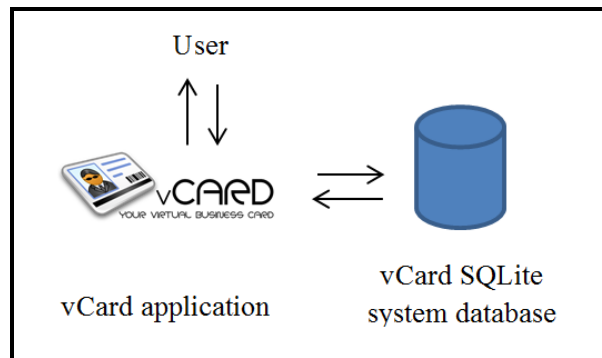


Figure 3.3: vCard system architecture

3.5 Prototype Phase (Build, Demonstrate and Define)

Here we will use an iterative prototype circle which is development of the system and system testing will going concurrently as to demonstrate to the user that the software meets its requirements right after the development of the vCard. By using Android emulator, we will test out the application before we test it on the actual mobile phone. This is because the emulator can provide virtual environment level of Android platform for every mobile available in the market not only for different level of Application Programming Interface (API) but different screen resolution too. Thus, we can discover situations in which the behavior of the application is incorrect, undesirable or does not conform to its specifications and changes to the system can be done immediately. This circle will repeat itself until the system is ready for testing.

During prototyping phase, we have using three type of method of development which will be further discussed in Chapter 4.

3.6 Testing

In this phase we will test out the system with the actual user to get their feedback on the application. The vCard application will be install and we test out in actual mobile phone. If there any changes or missing of requirements we will go back to the prototype circle this is because prototype circle and testing are related to each other and the process may repeat until the application ready for implementation. Every testing conducted must be approved by the user which is ready to by deploy or not.

For vCard we will try to test out the system to 20 actual users and gather their feedback regarding on any related problems, enhancement and opinions before we deploy the system.

3.7 Implementation and Deploy

Application will be ready to be used and the final product will be deploy to the actual end-user and perform its main objective which is to generate a virtual business card with additional features for the user. For example it will be uploaded into Android Play Market to be used by the Android phone users.

CHAPTER 4

RESULTS & DISCUSSION

What type of your information that needs to be shared, how to share the information, how to store the information which all of this questions and how to develop the system are the most concern issues in developing a virtual business card application.

4.1 Information that need to share

Business card basically will have name of the owner of business card, company name, position in the company, logo, address of the company, contact number and email. All of this information is important and compulsory in any business card.

Basically, vCard is a system that can help people to manage their important contact information which has a value others then family related contact like we store in normal mobile phone book. vCard will help to distinguish between important contact: business or work related from family related contact information details. For certain people they like to have their own mobile phone only for business and vice versa. Means, they want a separation between working related contact and family related contact information.

4.2 Project Development

When developing an Android application using Eclipse software, there is some method that can be use besides using Java. Basically for Eclipse we will use Java as the main language for development but during the development of the vCard, we have try different type of method on how to develop an Android application and will be discuss further on this chapter.

4.2.1 Using jQuery Mobile framework

At the beginning, vCard was developed using Java, jQuery Mobile framework and JavaScript which means the interface of the vCard will be implemented using jQuery Mobile page elements, in particular the container and contact pages and basically a website mobile application. By using jQuery we can control the HTML page which will be the interface of the Android application. Basically jQuery will be need as one of the plugin in the Android applications. The application of jQuery is same with CSS in HTML but jQuery control the formatting of HTML inside mobile application.

The basic layer of development is still the same; using Java as the method but the differences is present of JavaScript and HTML instead of XML which is same as the architecture use in web site.

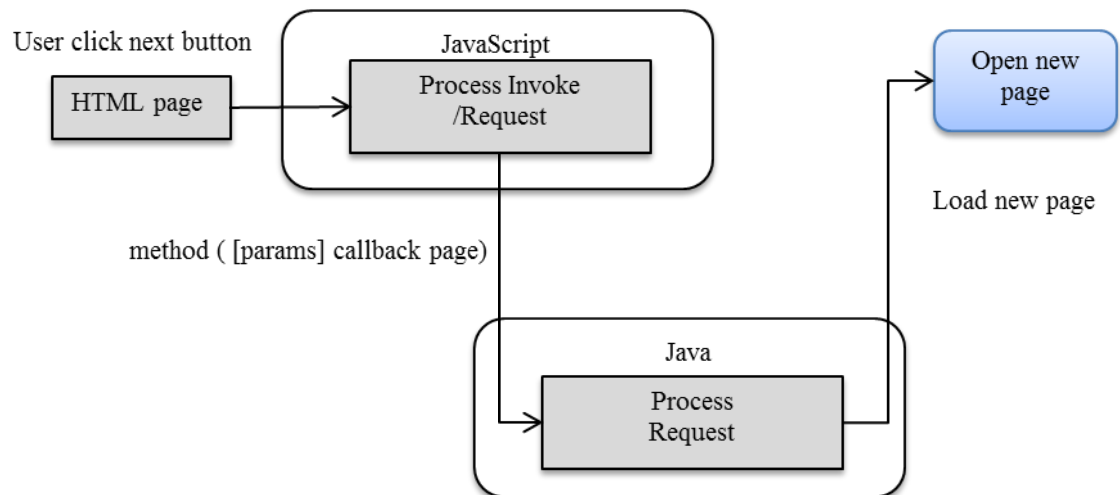


Figure 4.1: JavaScript, HTML architecture in Android

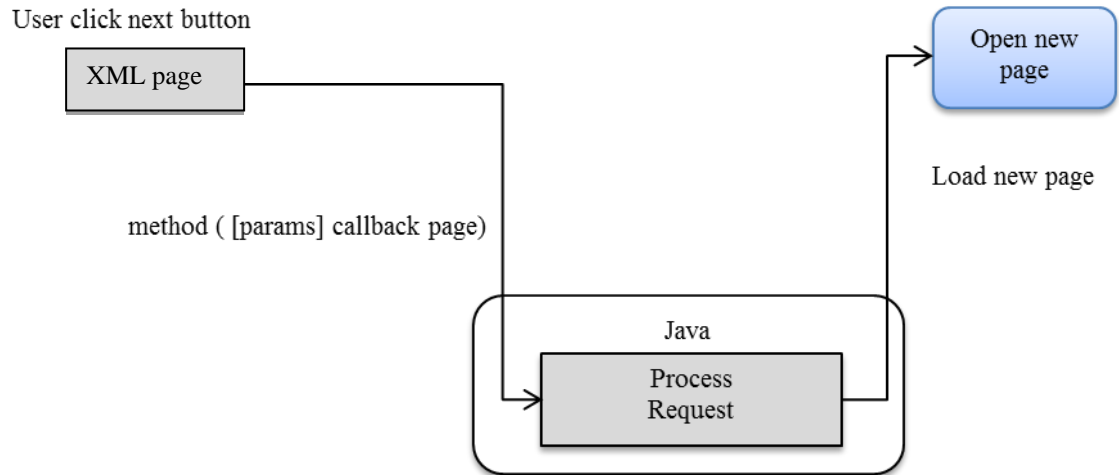


Figure 4.2: XML and Java architecture in Android

We only use this architecture for the View Location function because Google Map is basically using the same architecture in Figure 4.1 and to implement the Google API in Android in Figure 4.2 is more complicated and take a lot of time. We will only use XML and Java when the method involve with SQLite database which is simpler and less complicated.

4.2.2 Using MIT App Inventor

Another method to develop vCard application is using MIT App Inventor. MIT App Inventor is an open source and a Web-based system developed by MIT that allowed people to create Android apps even without any experiences to develop. Instead of writing code, the Android mobile app can be visually designed with App Inventor. Basically, MIT App Inventor can help beginner developers to understand how the Android is develop which will teach the developers on logic of the Android system. Below are the advantages and disadvantages of using MIT App Inventor.

Advantages:

- Easy for development of Android application.
- Developers don't have to remember any codes.
- Easy debugging.
- Developments are easy to assist and learn.

Disadvantages:

- Customization is restricted.
- Insufficient sources to develop.
- Less plug-in because still in beta stages.
- Restricted size of application; only 5MB allowed per application.

There is some example of development using MIT App Inventor. Basically MIT App Inventor is divided into 3 parts which are Interface Designer, Block Editor and emulator. Figure 4.3 is the Interface designer which is the workspace to develop the interface of your system. Figure 4.4 is block editor which is the workspace to develop the functions of the system by using drag and drop block function which symbolize the method and logic of one's system. Nevertheless, because of the limitation on customization and insufficient sources to develop vCard application using MIT App Inventor, we decide to use Android SDK and Eclipse as the development tools with the help of Android Virtual Device as the emulator to test the application.

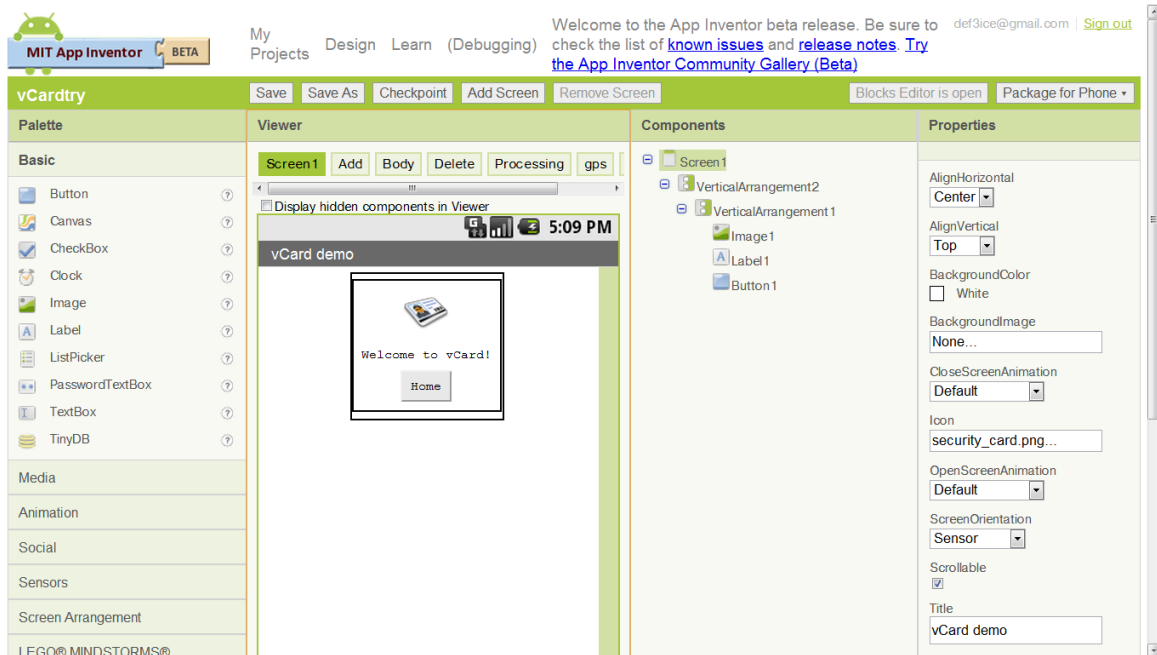


Figure 4.3: Interface Designer

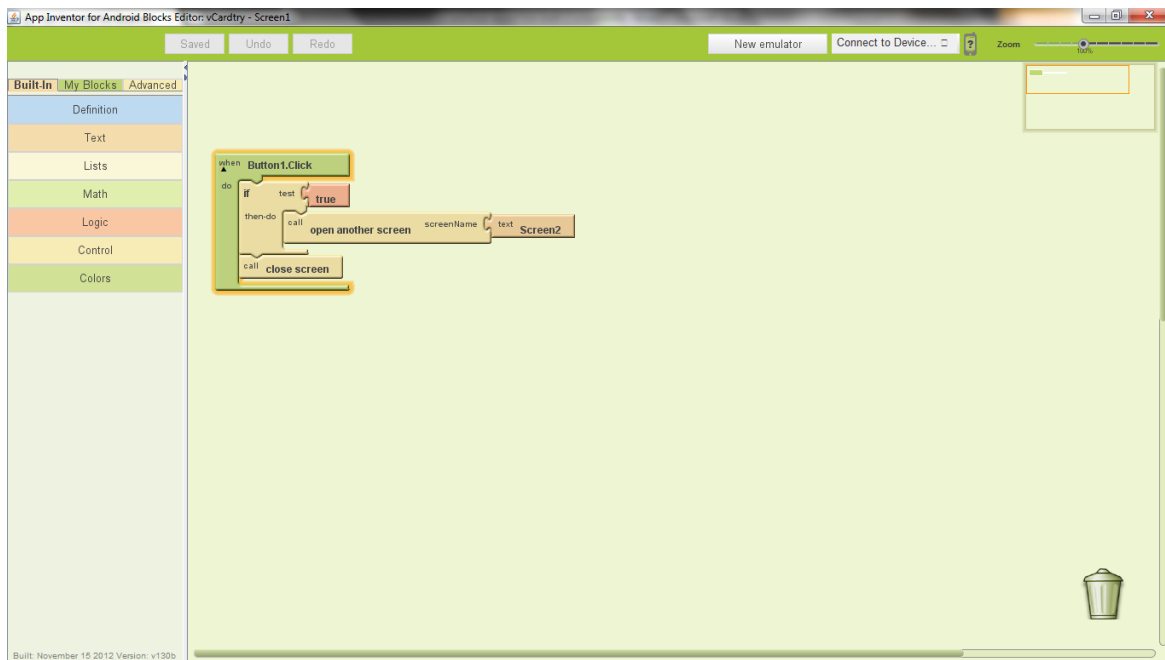


Figure 4.4: Block Editor

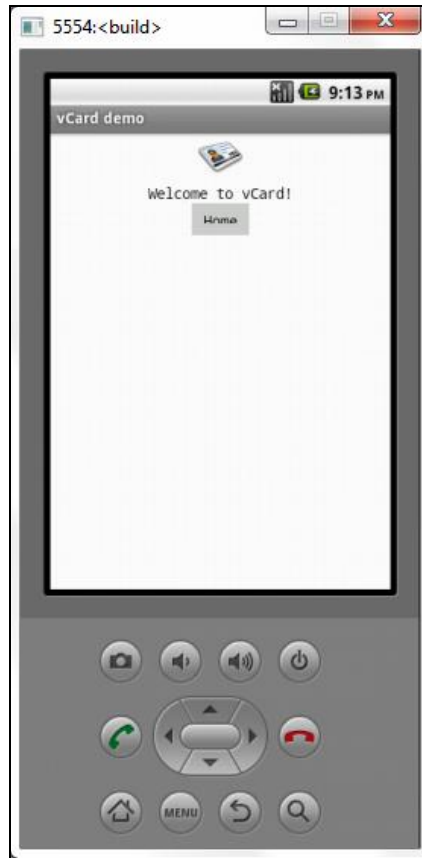


Figure 4.5: App Inventor Android emulator

4.3 System Conceptual Design Flow

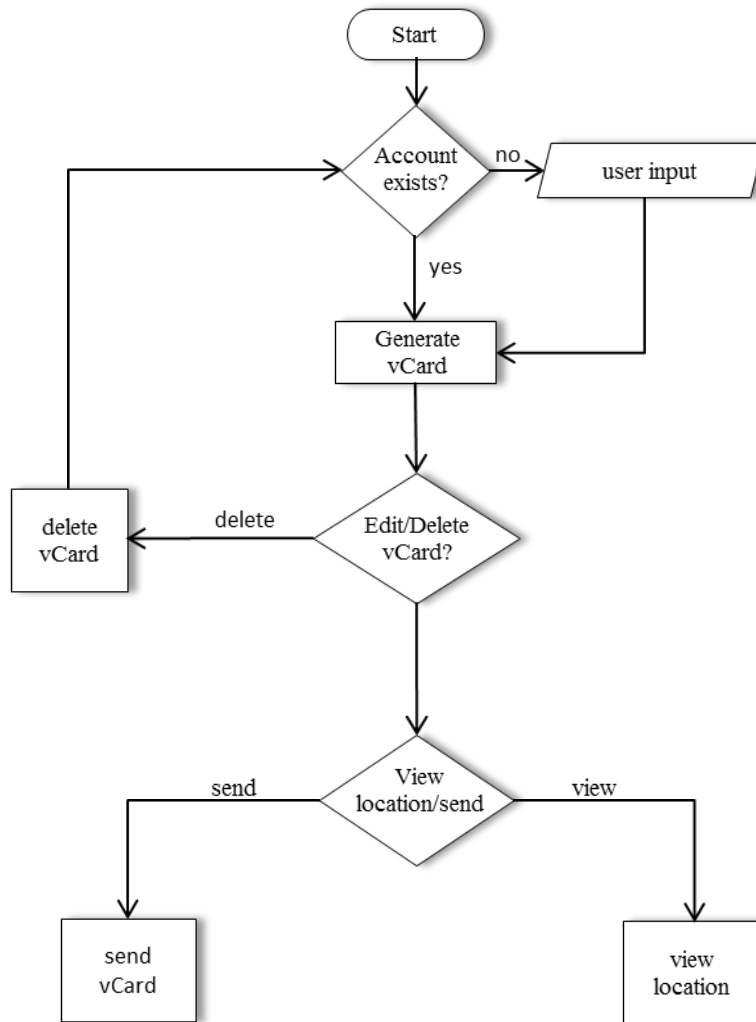


Figure 4.6: vCard Design Flow Chart

4.4 Deliverable's Graphical User Interface

After successfully complete all the development process we have delivered the final application to the target group. In this section, all the interfaces of vCard will be explain from the starting of the application until the end and all the functionality will be describe one by one. The main interfaces of overall application are as follow:

4.4.1 Welcome Screen

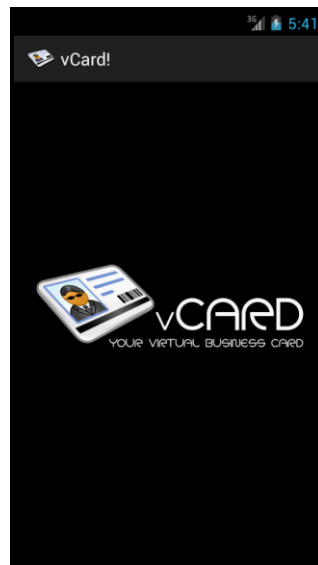


Figure 4.7: vCard Welcome Screen

Figure 4.7 is the start screen for vCard application. Every application will start with home screen as the welcome page. Every time user start the application, it will start it welcome screen. User need to wait for a few second before automatically change to the next page. User will be directed to the list of user page as depicted in Figure 4.8.

4.4.2 View Contact Screen



Figure 4.8: vCard View Contact Screen

In View Contact screen, list of contact name will be shows up in a list which will shows user the list of user that has been save into vCard database before. For first time user, a black screen will be show as in Figure 4.9 (a).



(a) blank View Contact



(b) Add Contact menu button

Figure 4.9: vCard Add New Contact

Figure 4.9 (b) shows the menu which will ask user to add new contact. Add new contact button will direct user to the Add Contact Screen as shown in Figure 4.11 (b).

In View Contact user will know which contact is not available yet since we have list out the entire contact name that available in the database. If the user had save the contact means it will list out in the view contact screen or otherwise contact are still not save yet. List of name will be sort alphabetically and it will help user to find the contact because it already sorted automatically which will not happen when using normal business card. Figure 4.10 is the example of vCard with list of contact.

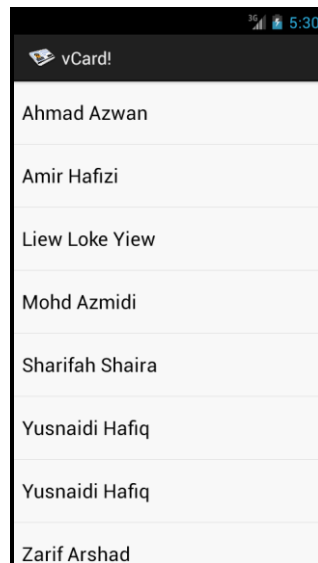
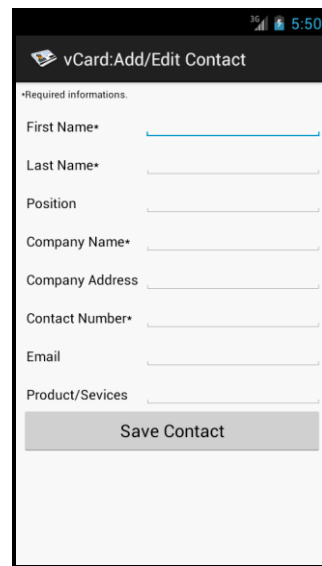


Figure 4.10: View Contact Screen with list of contact

4.4.3 Add or Edit Contact Screen



The screenshot shows a mobile application interface titled "vCard:Add/Edit Contact". Below the title, there is a section labeled "*Required informations." followed by several input fields: "First Name*", "Last Name*", "Position", "Company Name*", "Company Address", "Contact Number*", "Email", and "Product/Services". A "Save Contact" button is located at the bottom of the form.

(a) blank Add Contact



The screenshot shows the same "vCard:Add/Edit Contact" interface as in (a), but with the following details filled in: "First Name*" is "Ahmad Azwan", "Last Name*" is "Roslan", "Position" is "Associate Mid-range", "Company Name*" is "Sunway", "Company Address" is "Menara Sunway, Bandar Sunway, 46150 Petaling Jaya Selangor", "Contact Number*" is "0195262714", "Email" is "anroslan@gmail.com", and "Product/Services" is "IT Services". The "Save Contact" button is still visible at the bottom.

(b) Add Contact with details

Figure 4.11: vCard Add or Edit Contact Screen

First the first time user or user want to add new contact, user has to go to Add or Edit Contact screen which from Add Contact menu from View Contact screen. Here user will be asked to input all the information which is first name, last name, company name, company address, contact number, email, company website url and social network account as you can see from Figure 4.11 (b).

To save the new contact, user have to click on save contact button and all the details will be save into vCard own database by using SQLite with the help of DatabseConnector.java and DatabaseOpenHelper.java. The architecture of database and UI are explained in Figure 4.12.

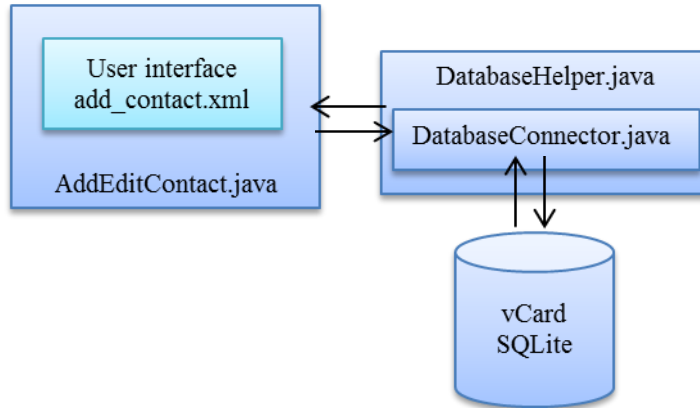


Figure 4.12: Add or Edit Contact UI to database

4.4.4 vCard Generate Screen

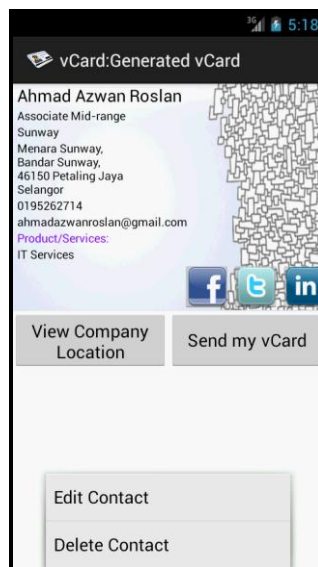


Figure 4.13: View Contact Screen: Generated vCard



Figure 4.14: Social network integration example

After input all the required details, a virtual business card will be automatically generated as shown in Figure 4.13. Here user will displayed all the information details with social network icon link. User can click on the social network button to view owner's social network homepage as Figure 4.14.

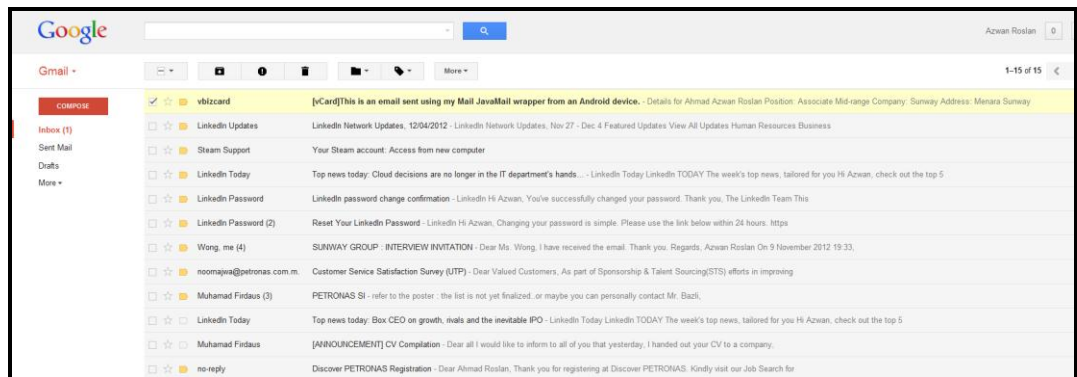


Figure 4.15: Email of vCard details

If the user wants to send the card, user can click on the Send my vCard button as Figure 4.13 and the card will be send to the respective emails as shown in Figure 4.15. The emails will contain the details of owner's business card information.

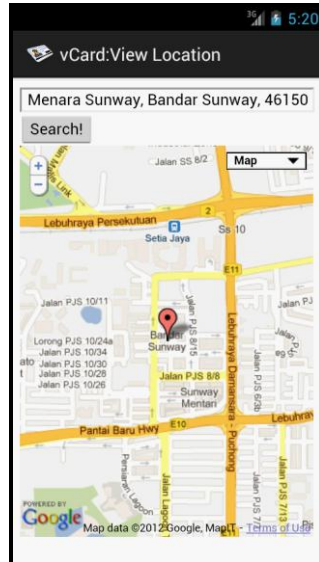


Figure 4.16 View company location

To view the location of the company, user will have to click on the View Company Location button and a new screen with Google Maps will be displayed as shown in Figure 4.16. There are some features in View Company Location which user can change the view of the map; user can view by Map, Satellite, Hybrid or Terrain as shown in Figure 4.17. Thus user will can customize the view according to own preferences.



Figure 4.17: Type of map view

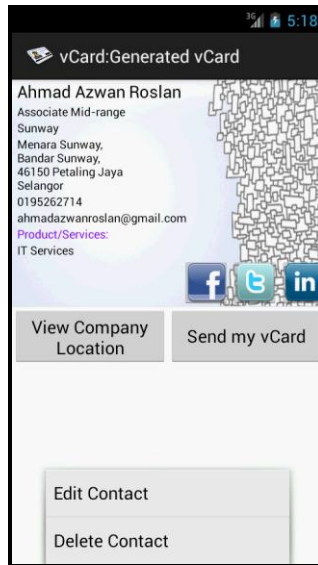


Figure 4.18: View Contact Screen: edit menu for generated vCard

If there any mistake on the generated card, user can choose Edit Contact from menu button as shown in Figure 4.18. User can delete the contact by click on the button Delete Contact and a toast will pop out to ask for user confirmation to delete the contact which can be seen in Figure 4.19.

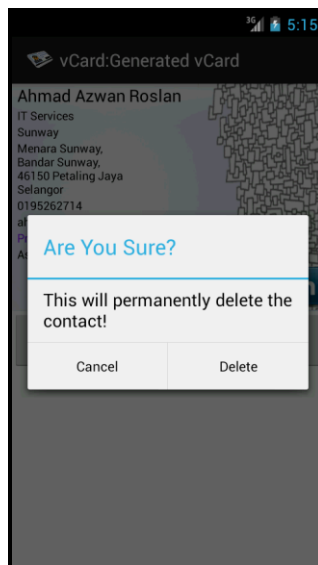


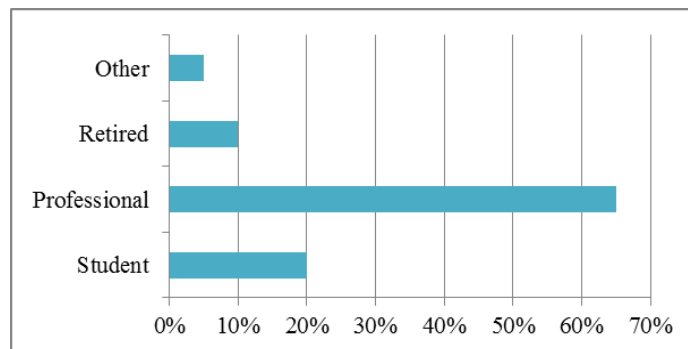
Figure 4.19: View Contact Screen: delete in generated vCard

4.5 Post – Implementation Survey

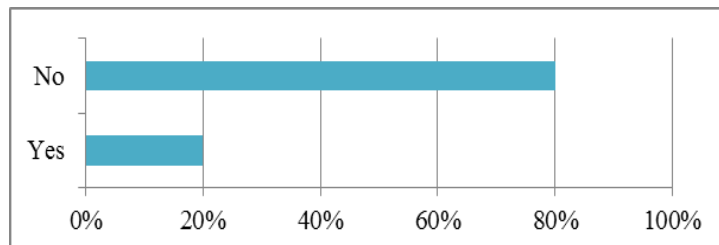
A survey had been conducted for Virtual Business Card Android Mobile Application vCard to evaluate the effectiveness and successfulness of project objective. The objective of this survey is to evaluate the usability, level of user friendly, the functionality of vCard towards the user of application. This survey is consists of six (6) rating questions, two (2) yes or no questions and one (1) open questions which will ask user to write their opinion about the system. Refer to Appendix 3 for the survey form. The target group is from university students until retired person who are using business card not only in business related activities but for any formal introduction.

Below are the analyses of result from conducted survey:

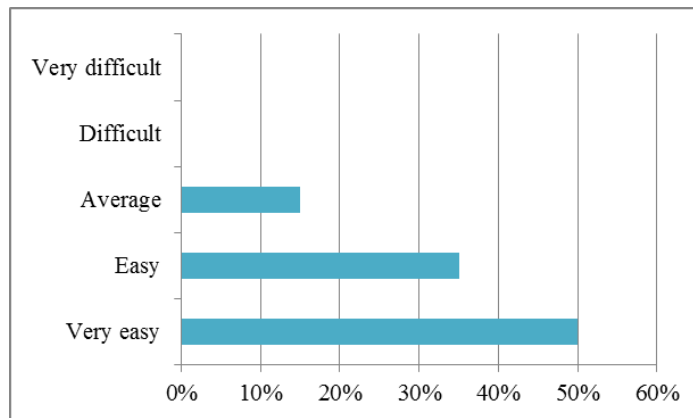
- i. Please state your occupation.



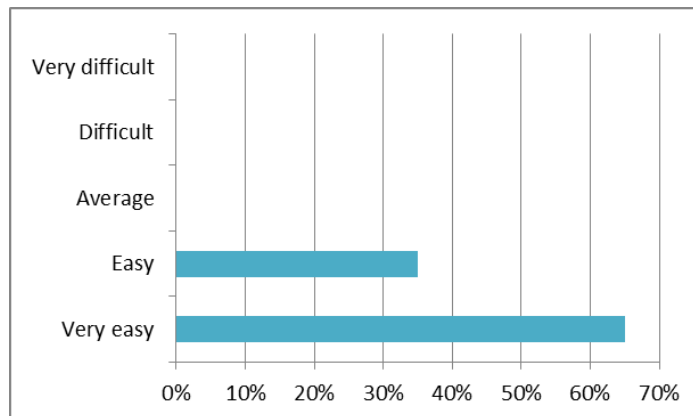
- ii. Have you try any similar application before?



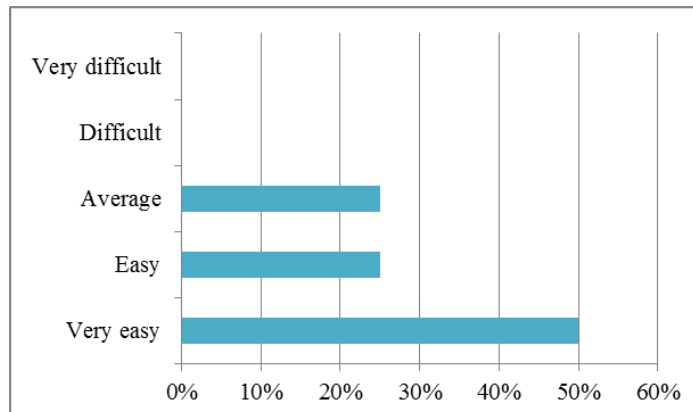
iii. How easy was it to use vCard application?



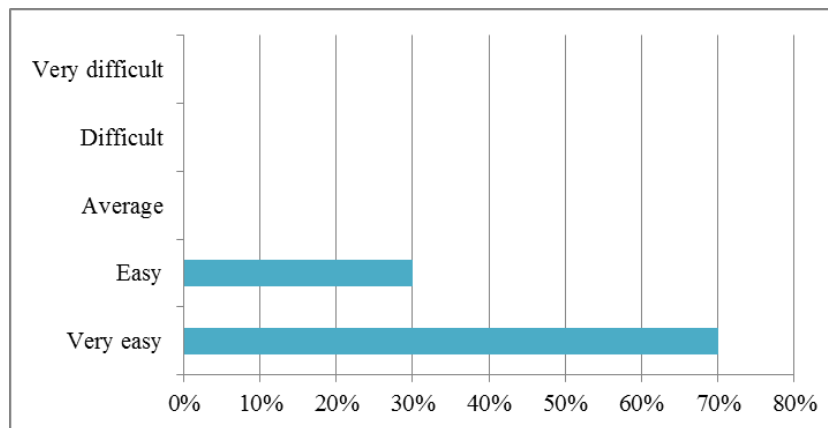
iv. Do you find the instructions inside vCard are easy to understand?



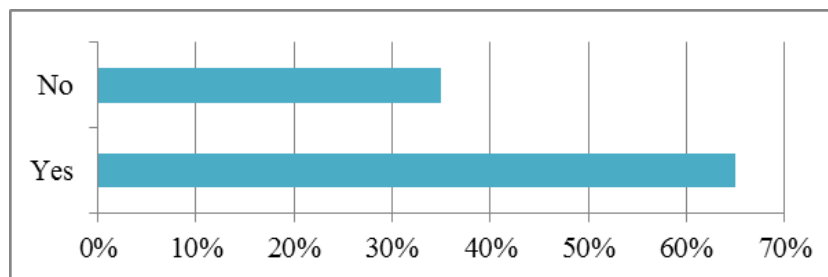
v. Do you find vCard can help you manage your important contact easily?



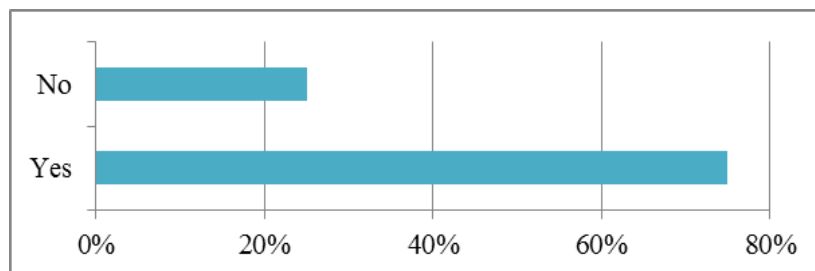
vi. I can easily add, modify and delete any contact when using vCard.



vii. Do you find vCard as an alternative tool of information sharing instead of normal business card?



viii. Do you find vCard is more effective and has greater functionality compare to normal business card?



As a conclusion, the overall result and feedbacks from the respondents which is the user of vCard are positive and they are strongly agree that this application is effective in and have archive the project objective. But as some of the user are still prefer to use normal business card but they are believe the virtual business card has a lot of potential because of the booming of mobile market and most of them agree if the virtual mobile application is commercialize in any organization and the system is enhance with the latest sharing technology, vCard will be one of the most important tools to be used and will replace the normal business card. In this survey, we are receiving a lot of recommendations, which are; include the ability to send the business card directly to other phone via Near Field Communication (NFC) and VOIP technology.

CHAPTER 5

CONCLUSION & RECOMENDATION

5.1 Conclusion

Mobile technologies nowadays grow very rapidly and significantly and have demonstrated great promise and potential organization user. vCard is a mobile based application that has to develop because there is a lot of advantages as the important tool for individual and organizations over the traditional business card which had been discuss from the project background in this documentation and supported by the selected journals which is related to the vCard mobile applications.

This application should be used and establish as one of the most needed apps for mobile, smart phone, computer tablets and any other devices that use Android as its platform as it help people to introduce themselves to the others and share the information easily. People can bring it everywhere as it comes in an application which is being installed into the mobile and it is more convenient and easier to be used. Moreover, this application also can be used as the tool for helping people trace the location of the vCard owner as it used GPS and tracking process will be easier and convenient. User can share his or her card just by using the sending option and this can be done just by few simple steps. This application is very user friendly and easy to learn and can be used by all level and type of users. In addition, this application will help so much in business development as well as one of the needed tools for their marketing strategies. Moreover, this application is compatible to any low-end until high-end mobile phone and user still can use as long as they using mobile phone with Android platform. Thus, as conclusion, vCard should be used and establish as a new method on how a business card should be look alike in this modern era of technology.

5.2 Recommendation

The recommendation for the vCard in the future is to implement the Near Field Communication (NFC) as one of the method to share the business card between two mobile phones. Implementation of VoIP which allows user to make calls directly from the application is one of the recommendations that can be done in further research. Moreover, this application can be upgraded as a portal of information sharing in mobile. Thus, it will store the business card in a centralize database and user can log in into the application and they can search any business card that they want to know about.

Another recommendation is, we can deploy this system into another platform like flash, Apple iOS and windows applications. This is because, the number of user for another platforms are getting bigger and in the same time the marketability for this system is keep increasing together with the demand. Thus, the application can be used not only for Android mobile based but for the other platform; mobile and computer respectively.

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Appendix 1: Gantt Chart (Part 1)

NO	Details/Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	Topic Selection and Proposal															
2	Proposal Submission															
	Research Work															
3	Abstract of study															
4	Identify problem statement															
5	Literature review research															
6	Methodology research															
7	System data gathering															
8	Draft graphical user interface															
9	IPO design															
10	System workflow															
11	Preparation for Draft Extended Proposal															
12	Submission of Extended Proposal															
13	Preparation for Proposal Defense															
14	Proposal Defense															
15	Preparation for Draft Interim Report															
16	Submission of Interim Report															

Appendix 2: Gantt Chart (Part 2)

NO	Details/Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Research Work														
1	Update abstract of study	█	█	█	█	█	█		█	█	█	█	█	█	█
2	Update introduction	█	█	█	█	█	█		█	█	█	█	█	█	█
3	Update problem statement	█	█	█	█	█	█		█	█	█	█	█	█	█
4	Modify literature review research	█	█	█	█	█	█		█	█	█	█	█	█	█
5	Update methodology research	█	█	█	█	█	█		█	█	█	█	█	█	█
	System Technical Work														
6	Update system workflow	█	█	█	█										
7	System development	█	█	█	█	█	█		█	█	█	█			
	System testing								█	█	█	█			
8	Preparation for Draft Progress Report	█	█	█											
9	Submission of Progress Report				X										
10	Preparation for Draft First Dissertation									█	█				
11	Submission of First Dissertation											X			
12	Preparation for Pre-EDX									█	█				
13	Pre-EDX											X			
14	Preparation for Viva									█	█	█			
15	Viva												X		
16	Submission of Final Dissertation														X
17	Submission of Technical Report														X

Appendix 3: Post-Implementation Survey

Virtual Business Card Android Mobile Application (vCard)

The purpose of this survey is to evaluate the effectiveness of the Virtual Business Card Android Mobile Application (vCard).

Please state your occupation.

- Student Professional Retired Other: _____

Have you try any similar application before?

- Yes No

How easy was it to use vCard application?

- Very easy Easy Average Difficult Very difficult

Do you find the instructions inside vCard are easy to understand?

- Very easy Easy Average Difficult Very difficult

Do you find vCard can help you manage your important contact easily?

- Very easy Easy Average Difficult Very difficult

I can easily add, modify and delete any individual information when using vCard.

- Very easy Easy Average Difficult Very difficult

Do you find vCard as an alternative tool of information sharing instead of normal business card?

Yes

No

Do you find vCard is more effective and has greater functionality compare to normal business card?

Yes

No

Please give your suggestions for improvement: