Tawaf Guide Mobile Application

by

SITI ZALEHA BINTI SHAHID

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Universiti Teknologi PETRONAS
Bandar Seri Iskandar
31750 Tronoh
Perak Darul Ridzuan

ABSTRACT

For Muslims, preparation to perform Hajj or pilgrimage and Umrah are very vital before and in the time of travelling to Mecca including learning all the rituals and rules. Nowadays, more and more Malaysians prefer to perform pilgrimage at young age. Tawaf is one of the Islamic rituals of pilgrimage. During the Hajj and Umrah, Muslims are to circumambulate the Kaabah (most sacred site in Islam) seven times, in a counterclockwise direction. The circling is believed to demonstrate the unity of the believers in the worship of the One God, as they move in harmony together around the Kaabah, while supplicating to Allah. Although, there are a number of existing mobile applications in the market available which are related to pilgrimage and Umrah, the applications are less interactive and do not offer smart feature to assist the user. Besides, some of the applications has language constraint and limitation which does not meet the target users' demand. Hence, the proposed project, Tawaf Guide Mobile Application is aimed to provide more practical and enjoyable option for the young generation of Android device user to learn, understand and perform the Tawaf ritual perfectly. The scope of study for this mobile application is focused on how to implement the location sensor in order to track the device position thus determining the number of Tawaf's round completed by the user. In addition, the application will be featured with simple simulation of Tawaf with prayers. Recent studies suggested that using Android as the platform for the mobile application is cost effective as it is an open source and very popular nowadays and for the near future. The methodology chosen for this project is iterative methodology which involves the use cases diagram and prototyping. The activities included to complete the project are planning, analysis, design, implementation, testing and end product delivery. The project is estimated to be completed and delivered within two semesters of university study.

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CHAPTER 1

1. INTRODUCTION

1.1. Background of study

The Hajj or pilgrimage is the pilgrimage to Mecca. It is one of the largest pilgrimages in the world. It is the fifth pillar of Islam, a religious obligation that must be carried at least once in the lifetime by every able-bodied Muslim who can afford to do so. Every year, the number of pilgrims that travelled to Mecca from around the world keeps increasing. In year 2010, the total pilgrims from outside Saudi Arabia are 1,799,601, while in the previous year the number increases to 1,828,195 pilgrims. As for Malaysians, there are about 27,000 pilgrims that have participated in year 2011 which is an increase of 1000 pilgrims compared to year 2010.

Performing this religious duty, required the pilgrims to be prepared earlier before they travelled to the sacred land. They need to know and understand all the procedures, prayers, prohibitions of performing the pilgrimage which is include intention *and talbiyah*, *waquf-e-Arafat, tawaf Ifdah, sa'ey-of-Hajj*, shaving and following all the sequence of the ritual. These are only the main rituals of pilgrimage that need to be performed for the pilgrimage to valid.

The Tawaf is one of the Islamic rituals of pilgrimage performed by Muslims when they visit Al-Masjid al Haram. Located in Makkah, Saudi Arabia, the Al-Masjid al Haram surrounds the Kaabah, the place Muslims around the world turn towards while performing daily prayers. The mosque is the largest in the world and is regarded as Islam's holiest place. During the Tawaf, Muslim pilgrims circumambulate the Kaabah seven times in a counterclockwise direction, while in supplication to God. The Tawaf is performed both during the Umrah and the Hajj. Performing the Hajj is one of the five pillars of Islam and every Muslim aspires to visit Makkah at least once in his or her life. Annually, more than two

million Muslims perform the Hajj. While the Hajj has several stages and takes place over several days, all pilgrims move through the various stages of the Hajj on the same days which create limitations in both time and space resulting in very high crowd densities during the Tawaf. During the Hajj, or the last few days of Ramadan, as many as 35,000 pilgrims perform Tawaf at the same time in the Mataf area in the Al- Masjid al Haram.

The beauty of performing this religious duty is the pilgrims do not have to memorize all the prayers for all the rituals. They are allowed to refer to the reference books, other members of the group and also the person who guide them throughout performing the duty. So, besides asking people and referring to the books in a very crowded place, the pilgrims can also utilise their mobile devices such as smart devices and tablet to review and refresh the upcoming rituals such as tawaf. By having an application that can be accesses from the mobile devices, the preparation for the pilgrimage and performing it will be efficient, effective and enjoyable.

1.2. Problem Statement

In order to perform the pilgrimage rituals effectively, the pilgrims should utilise more effective and efficient learning tool that can assist them throughout the pilgrimage preparation and performing phases. This kind of assistance should allow them to be used in anytime and anywhere and any weather condition.

Right now, the existing mobile application in available in the market thus provide the basic guideline for the pilgrimage participant. However the existing applications are not interactive enough that allow the user to view how exactly the rituals are perform, where to begin the specific rituals such as tawaf and how to pronounce the prayers correctly.

A new mobile application, **Tawaf Guide Mobile Application** may allow the pilgrimage participants with Android-based devices to download and run this

application to learn and refer specifically on Tawaf ritual, one of the crucial parts of the pilgrimage. This new application will allow the user to view a simple simulation on how Tawaf is performed the correct way. Besides, there is a list of prayers provided for user's reference before or during performing the ritual. The application will also allow the users to track the number of round they have completed during the time of Tawaf so that they can perform it successfully.

1.3. Objectives

The aim of this project is to develop a mobile application with features:

1.3.1. Reading

The application will be able to display the text of the prayers in Arabic language.

1.3.2. Listening

The application will be able to play the audio of the prayers in Arabic language.

1.3.3. Simulation

The application will be able to play the video or the simple simulation on how to perform the Tawaf.

1.3.4. Tawaf Round Tracker

The application will allow the users to determine the number of round they have made during the Tawaf ritual.

1.4. Scope of Study

The scope of study for this application development is to locate the Android device position during Tawaf ritual to calculate the number of Tawaf rounds completed by the pilgrimage. This is possible to be conducted in the certain condition which is the device must have location sensing enabled through either wireless network or GPS satellites. By using the *LocationSensor* component, the number of rounds completed by the user during Tawaf ritual can be counted and recorded for user reference. This can be done as the latitude and longitude of the device can be determined using the respective *LocationSensor* component. Conceptually, before starting the Tawaf ritual, the user will run this application and click the specific button to activate the location sensor of the application. The application will determine the initial position of the device when the ritual start and store the latitude and longitude in the database and current variable. Throughout the ritual there will be a mechanism or event-handler to check whether the current device's position is equal to the initial device's position. If it is equal than it will start the count until it reach the maximum number of count, then it will notify the user, else it will do nothing.

Figure 1.0 show the layout of Mataf area, where the Tawaf takes place including the Kaabah, Hateem and Maqam Ibrahim. The Hateem is a semi-circular section which was originally part of the Kaabah when the Kaabah was rebuilt in A.D. 692. The Maqam Ibrahim is a structure of religious significance, to the northeast of the Kaabah.

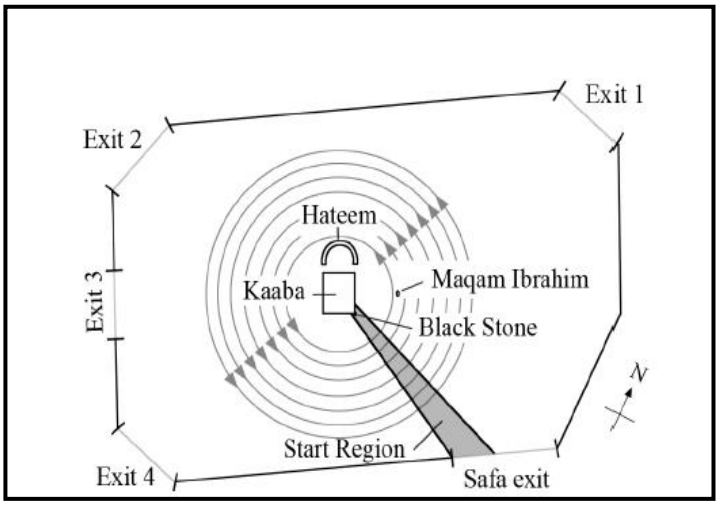


Figure 1.0 The layout of the Mataf area.

1.5. Project Relevancy

1.5.1. Increase of Android-based device users

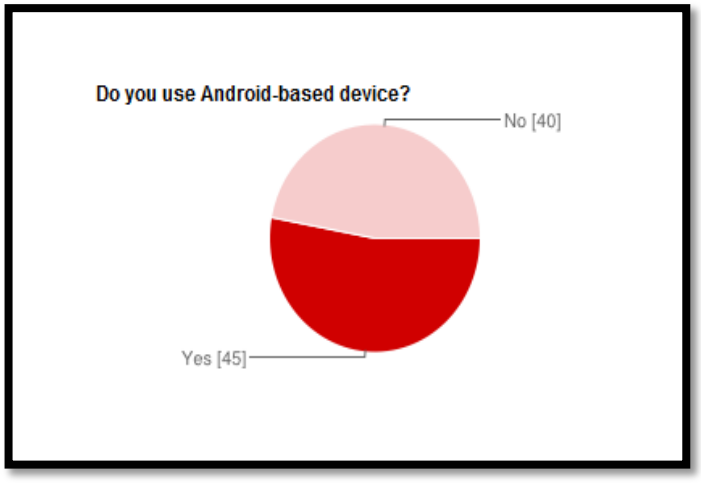


Figure 1.1 Number of users that use Android-based devices.

The result from the survey conducted show that the number of Android-based device users is higher than other devices. There are more than half of the respondents which is about 53 percent use android devices while the remaining 47 percent use other devices. As the number of Android-based devices users is higher than other devices, the better chance for this mobile

application to be distributed in the market as it will be operated using Android operating system.

1.5.2. Mobility

As the application will be installed in mobile devices mainly smart devices and tablet pc, the users can access and use it anywhere and anytime, whenever they wish. Thus, this increases the mobility and accessibility of the application.

1.5.3. Demand in the market

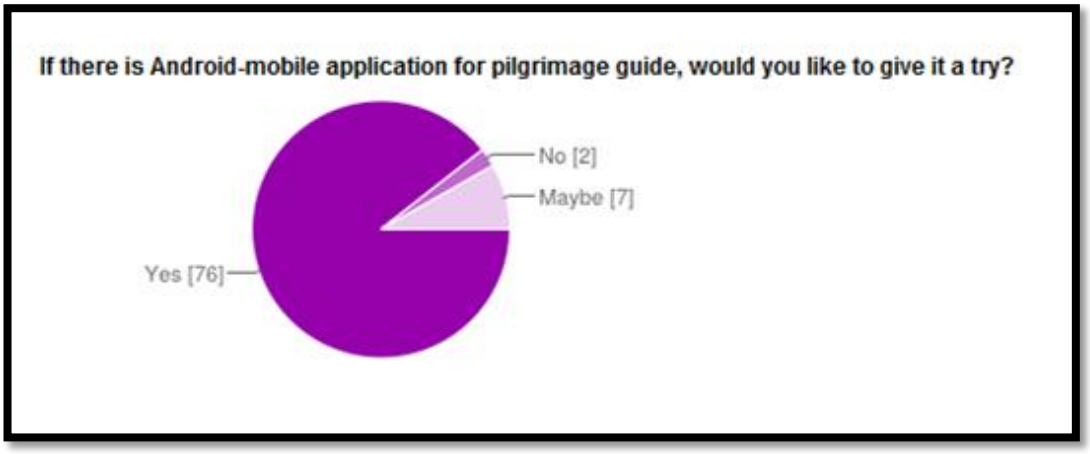


Figure 1.2 Number of users that interested to try this mobile application.

A survey has been conducted and the result shows that 89.41 percent which is 76 respondents would like to try the application if it is available in the market, 2.35 percent respondents provide negative feedback where as 8.24 maybe will give a try to this application when release in the market. This result shows that there will be quite a high demand when this mobile application releases in the market.

1.6. Project Feasibility

1.6.1. Technical

The application will be developed open source platform which are MIT App Inventor Component Designer for designing application user interface, App Inventor Blocks Editor where program blocks are assembled to determine the application behaviour and the Android emulator to build and run the prototype and the final product before submitting for evaluation and grading purpose.

1.6.2. Schedule

The development of the application will be completed within the allocated time frame which is two semesters. The planning, analysis phases will be conducted from January till April, while the designs, implementation, testing and delivery phases will be conducted from September to end of October.

1.6.3. Operational

The mobile application will be build and run using the Android emulator and also will be able to run in devices which are Android based such as smart devices and tablets after the completion of implementation and testing phases.

CHAPTER 2

2. LITERATURE REVIEW AND THEORY

2.1. Technical Report

According to Tsang and Wan (2011), the mobile application proposed by them which is Mobile Application for Chinese Learning should be implemented in Android as it is the most common and popular platform used by smart devices and tablets nowadays. Besides, the cost of development is low and relatively controllable as it is an open source platform which is very friendly to the third-part programmers. Their proposed project aimed to provide a formal course that takes advantages of the mobility of smart devices so that the users can use the application anywhere and anytime. Tsang and Wan (2011) stated that the mobility of digital gadgets allow users to utilize their time optimally especially when they are travelling and waiting.

2.2. Android-based mobile application available in the market

2.2.1 Hajj Guide Video 1.1

Hajj Guide Video version 1.1 is claimed as practical guide to Hajj. This application offers features including online Hajj training video and the guide to perform Hajj and Umrah.

However, it is not really efficient application as the training video cannot be viewed offline. The Android device needs to be connected to Internet every time the user intends to play the video. According to user reviews, it would be better and more practical if the training video can be watched offline. Figure 2.1 shows the screen shot of the application.

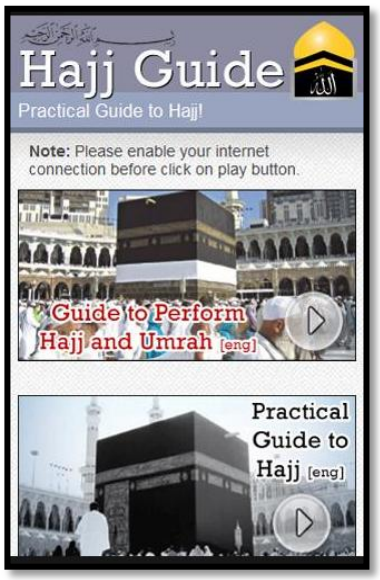


Figure 2.0 Screen shot of Hajj Guide Video 1.1 application.

2.2.2 Manasek 1.0.3

Manasek version 1.0.3 is an Islamic application that focuses on pilgrimage and Umrah ruling and activities in easy steps for quick and better understanding. This application is available in two languages which are English and Indonesian language. There are about hundred and ten topics available in this application.

Unfortunately, the application does not offer the version in Arabic language including the prayers which will be more competitive based on the user reviews where there is demand for it.

2.2.3 e Tawaf 1.0

e Tawaf version 1.0 is an Android based application developed mainly to assist the users to stay connected with their friends during performing the pilgrimage. It also provides the feature of basic guidelines for pilgrimage and Umrah as well as determining the number of rounds of Tawaf the user has made.

However, the application only available in Arabic language and no simulation for any ritual featured in the application. Figure 2.2 shows the screen shot of the application.

Figure 2.1 Screen shot of e Tawaf 1.0 application.

2.3. Theory

According to B'Far (2005), mobile computing systems are computing systems that may be easily moved physically and whose computing capabilities may be used while they are being moved. One of many instances is mobile devices. There are many things that mobile computing system can do that a stationary computing system cannot do. B'Far (2005) stated that some of the distinguishing aspects of mobile computing systems are their small size, the mobile nature of their use, and their functionalities that are particular suited to the mobile user. Thus, the mobile computing applications are inherently different than applications written for use on stationary computing systems.

B'Far (2005) described that mobile user is fundamentally different from the stationary user in the ways that first, the mobile user is moving at least occasionally, between known or unknown locations. Secondly, the mobile user frequently requires high degrees of immediacy and responsiveness from the system. Next, the mobile user is changing tasks frequently and/or abruptly. B'Far (2005) argued that this kind of mobile condition is not only the physical condition of the mobile user but also the mental state of the user which is his or her expectation and state of mind.

CHAPTER 3

3. METHODOLOGY

3.1. Research Methodology

The methodology proposed for mobile application, Tawaf Pilgrimage Guide is iterative development methodology. This methodology requires for requirements gathering and use cases design to develop the application.

By applying this methodology during project development, a series of prototype will be developed. Every version of the new prototype will be scaled down to meet the characteristic of the final version of the mobile application.

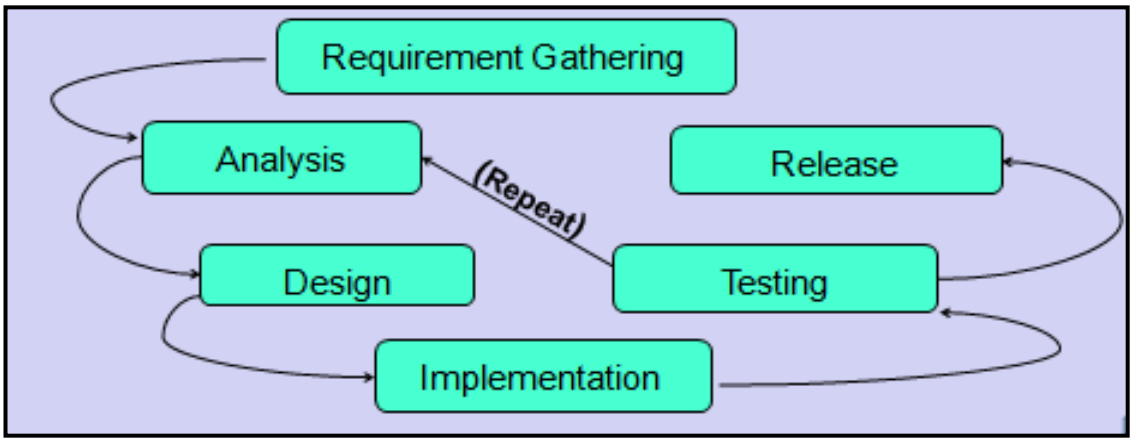


Figure 3.0 The iterative development life cycle.

3.2. Project Activities

3.2.1. Planning

In the planning phase, the application development processes will be scheduled carefully so that all the processes and activities involved can be completed within the duration given. The requirements to complete the project is gathered and collected from various sources which include the online sources, conducted survey, document and report analysis, other similar

applications analysis and reference from previous Android application developers.

3.2.2. Analysis

In the analysis phase, based on the information collected in the planning phase, the scope of the project is narrowed down and finalized. The methodology applied to develop the application is decided. The results of the survey and data collected from the analysis will be further analysed to retrieve the user requirements and expectation of the application as well as the software specification.

3.2.3. Design

During this phase, the use cases diagram is design to show the relationship and interaction between the user and the application interfaces. The application behaviours will also be designed and finalised at this phase.

3.2.4. Implementation

The project implementation will be conducted based on the use cases diagram and the application behaviours designed in the previous phase. The application will be developed using online tools of *MIT App Iinventor* where the user interface design will be implemented via online. As for application behaviours design, this will be implemented using the App Inventor for Blocks Editor that can be run using the developer's personal computer.

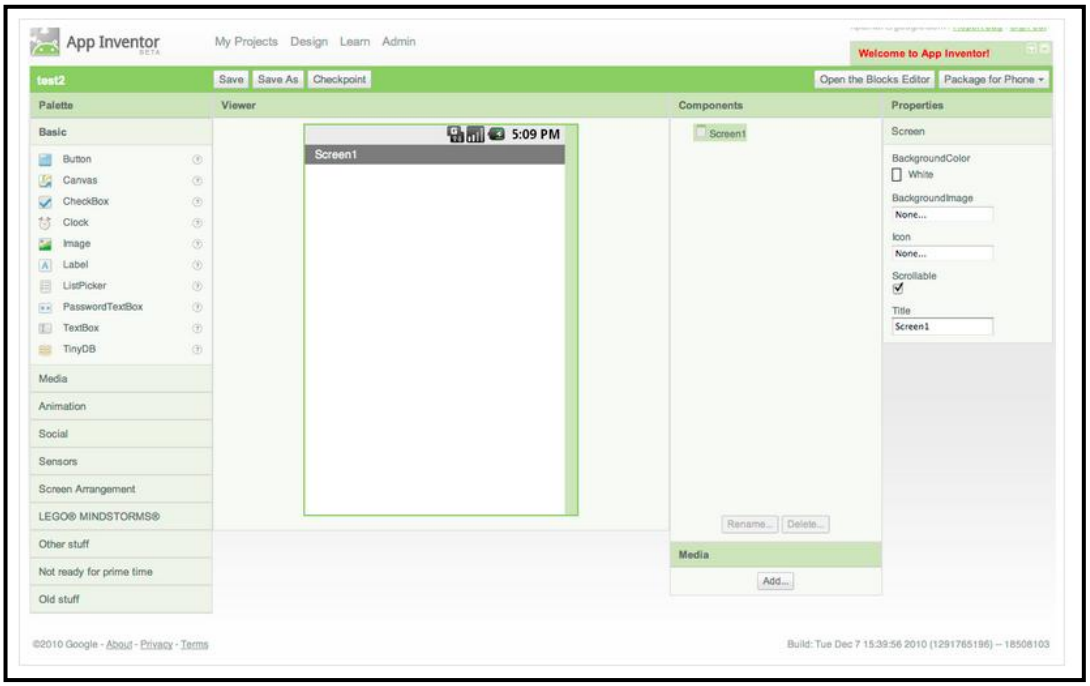


Figure 3.1 The Designer used to design the application user interface.

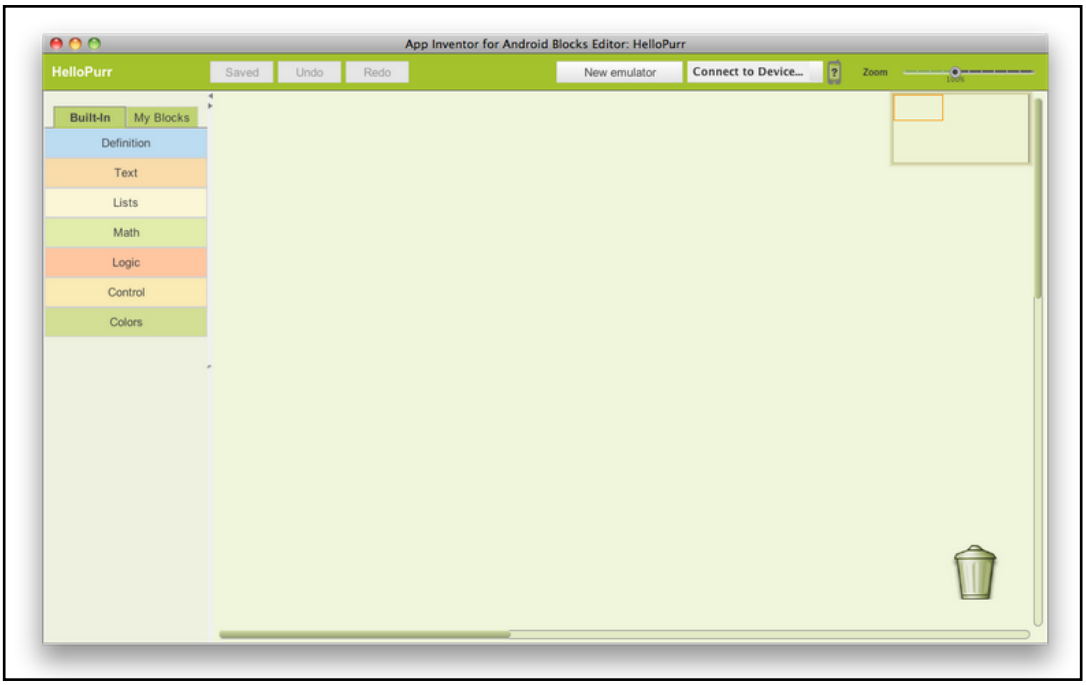


Figure 3.2 The Block Editor is used to assign behaviour to the component selected in the Designer.

3.2.5. Testing

The aims of the testing phase are to demonstrate that the mobile application meets its requirement and to discover situations in which the behaviour of the software is incorrect, undesirable or does not conform to its specification. The testing phase will be conducted in two stages.

3.2.5.1. *Development Testing*

The application will be tested during its development in order to discover bugs and defects as well as to ensure that it produces accurate output when given correct input. Every new version of prototype will be tested using emulator. Currently there are already three prototypes that have been built which is explained in the Result and Discussion section.

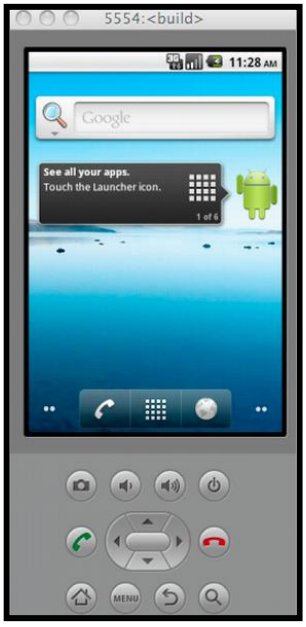


Figure 3.3 The Android emulator used during development testing.

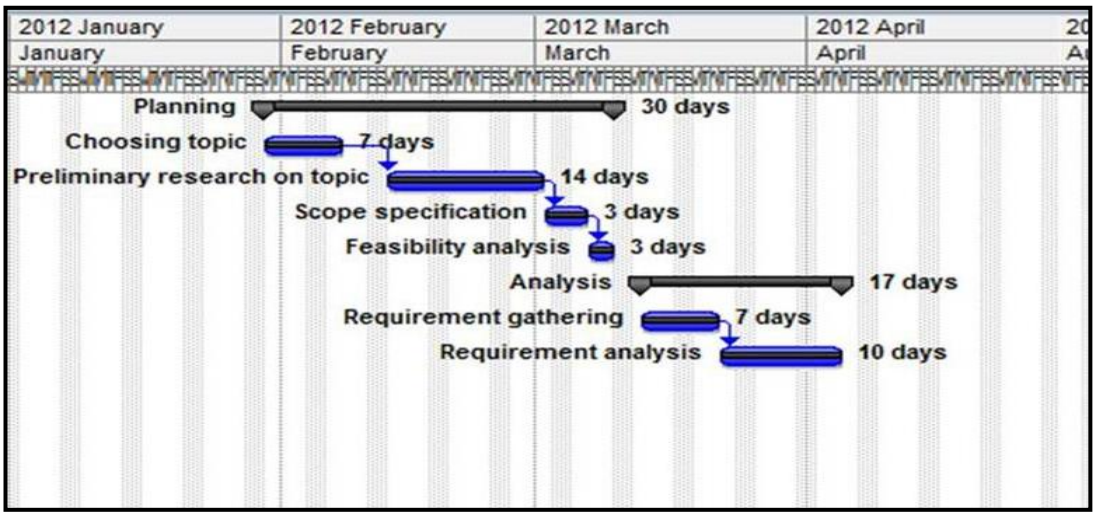
3.2.5.2. *User Testing*

The application will be tested by the targeted users using an Android-based device which is tablet pc with specification of seven inches screen size and of resolution 800 pixels x 480 pixels. The Android application package of the product will be released in the Android market for duration of time to allow for user testing. The users will be asked to answer a short survey as the feedback after using the application.

3.2.6. Delivery

In the delivery phase, the mobile application will be submitted for evaluation and grading purpose after the testing phase is completed and the application is improved and error-free.

3.3. Key Milestone



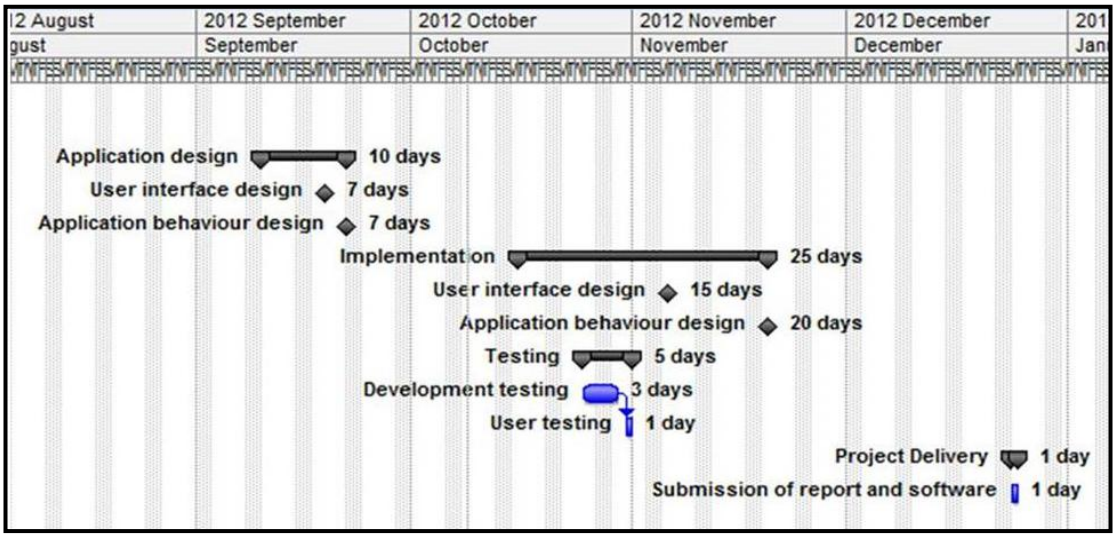


Figure 3.4 Timeline and key milestone for phase one and phase two of the project.

As shown in the Figure 3.4, the milestone for the project will be the design and implementation phases of the project. The design phase includes designing and selecting the components of the user interfaces as well as the functionalities of the application's components. Meanwhile, in the implementation phase, the user interface and application behaviour designs will be implemented using the App Inventor Designer and Blocks Editor respectively.

3.4. Gantt Chart

The Gantt summarizes chart all the major activities involved in completing the project. The timeline show two phase of project completion which are from January to April and from September to December. Table 3.1 shows the summary of the project activities with the time duration estimated to complete each activity including the start and finish dates.

Table 3.0 The project Gantt chart

	Task Name	Duration	Start	Finish	Predecessors
1	**Planning**	**30 days**	**Mon 12-01-30**	**Fri 12-03-09**	
2	Choosing topic	7 days	Mon 12-01-30	Tue 12-02-07	
3	Preliminary research on topic	14 days	Mon 12-02-13	Thu 12-03-01	2
4	Scope specification	3 days	Fri 12-03-02	Tue 12-03-06	3
5	Feasibility analysis	3 days	Wed 12-03-07	Fri 12-03-09	4
6	**Analysis**	**17 days**	**Tue 12-03-13**	**Wed 12-04-04**	
7	Requirement gathering	7 days	Tue 12-03-13	Wed 12-03-21	
8	Requirement analysis	10 days	Thu 12-03-22	Wed 12-04-04	7
9	**Application design**	**10 days**	**Mon 12-09-10**	**Fri 12-09-21**	
10	User interface design	7 days	Mon 12-09-10	Tue 12-09-18	
11	Application behaviour design	7 days	Thu 12-09-13	Fri 12-09-21	
12	**Implementation**	**25 days**	**Tue 12-10-16**	**Mon 12-11-19**	
13	User interface design	15 days	Tue 12-10-16	Mon 12-11-05	
14	Application behaviour design	20 days	Tue 12-10-23	Mon 12-11-19	
15	**Testing**	**5 days**	**Thu 12-10-25**	**Wed 12-10-31**	
16	Development testing	3 days	Thu 12-10-25	Mon 12-10-29	
17	User testing	1 day	Wed 12-10-31	Wed 12-10-31	16
18	**Project Delivery**	**1 day**	**Mon 12-12-24**	**Mon 12-12-24**	
19	Submission of report and software	1 day	Mon 12-12-24	Mon 12-12-24	

Gantt Chart

3.5. Tool Required

3.5.1. Hardware

Table 3.1 The hardware required

Task	Tools
Design **Documentation** **Implementation** **Testing**	**Sony Vaio:** ¬ Window 7 Home Basic, ¬ Processor- Intel(R) Core(TM) i3 ¬ RAM -4.00 GB, ¬ 64-bit Operating System
Testing **Development Testing** **User Testing**	**An android-based device which is tablet** (Nautica 1).

3.5.2. Software

Table 3.2 The software required

Task	Tools
Documentation	**Microsoft Office 2007,** **Paint**
Implementation and Testing **Implementation**	**MIT App Inventor Designer** (online) **Android Blocks Editor**(offline) **MP3 Resizer** **MP3 Cutter** **Video Encoder** **Video Cutter**
Development Testing	**Android Virtual Device** (emulator)

CHAPTER 4

4. RESULT AND DISCUSSION

4.1. The interaction between the user and the application interface

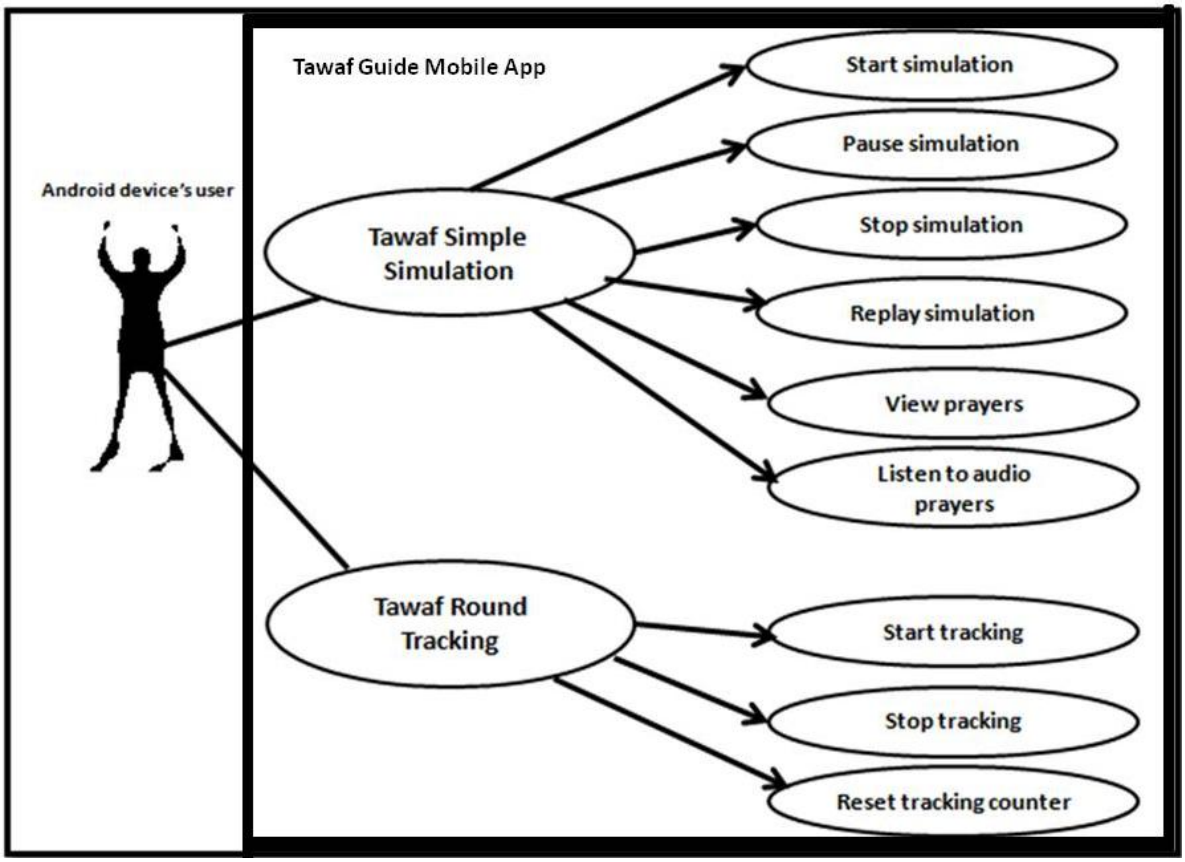


Figure 4.0 Use cases diagram to show the interaction between user and the application.

Figure 4 above shows the use case diagram that describes the set of actions that the mobile application should or can perform in collaboration with external user which is the Android device's user of the application.

The use case starts when the user triggers any of two features offered by the application which are the Tawaf simple simulation or Tawaf round tracking with the assumption that the user has been able successfully runs the mobile application using the Android device.

4.2. Tracking and Calculating the number of Tawaf rounds completed

The LocationSensor component has the ability to report the position of the device including the device's latitude and longitude. Its *LocationChanged* event is triggered when sensor gets its first reading and when the reading changes when the device has moved.

TinyDB allows the user to store data persistently in the device's database. The data in a variable or property is lost when an application closes, the data the user store in the database can be loaded into the application each time it is opened.

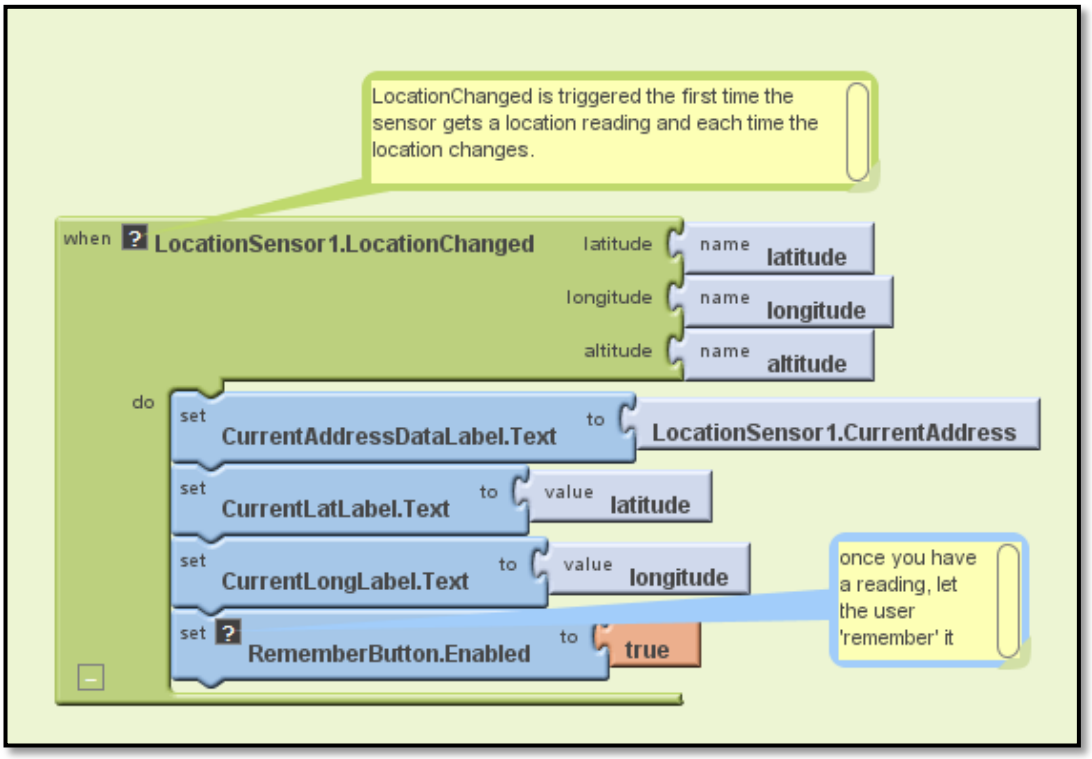


Figure 4.1 Sample event-handlers for detecting change of location.

Figure 4.1 shows the sample of event-handler named **LocationSensor1.LocationChanged**. Basically, it occurs when the device's location sensor first obtains a reading, or when the device is move to produce

a new reading. This event-handler just places the readings which are the latitude and longitude into the corresponding "Current" labels so that they appear on the device. The RememberButton is enabled when the location is changed and its enabled setting should be set to false in the Component Designer because there is nothing for the user to input until the sensor obtains a reading.

This event-handler is one of crucial in order to detect the initial position of the device as well as the user during the tawaf ritual. Once the latitude and longitude of the device is identified and appear on the device screen as well save in the device database, when the device return to the same position, the application will notify the user that a round has completed and so on.

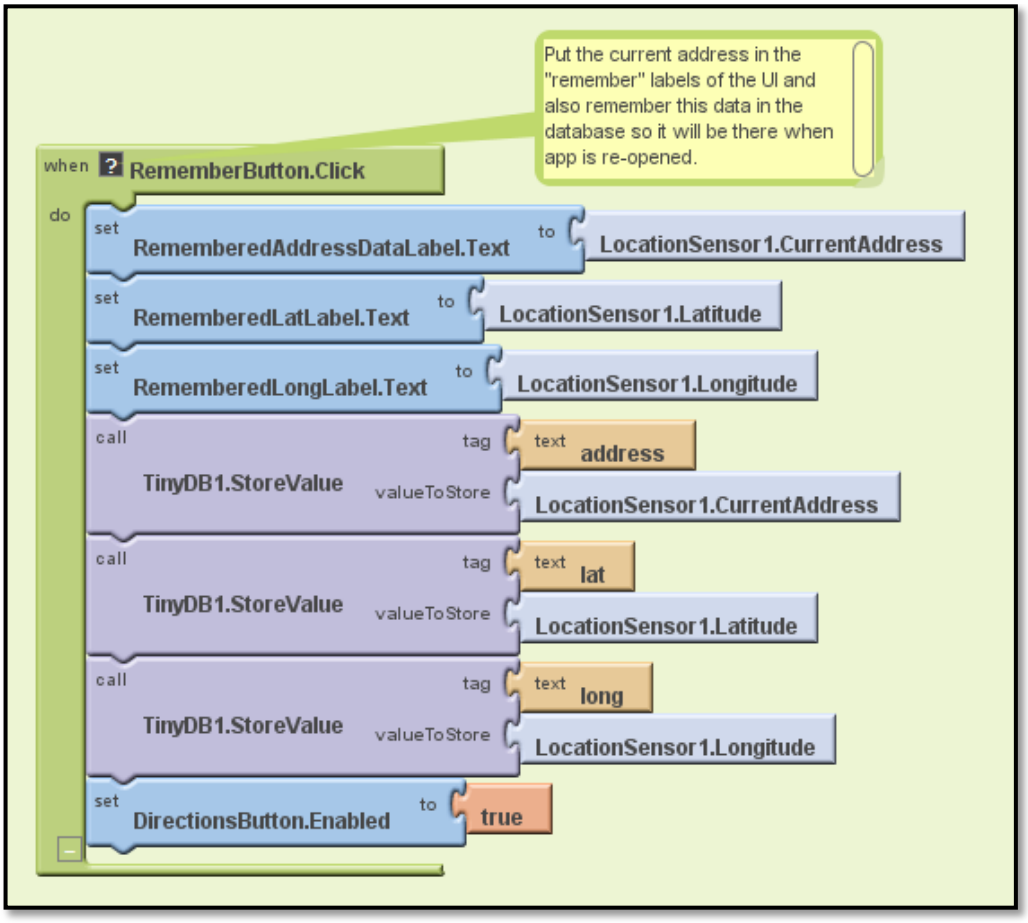


Figure 4.2 Sample of event handler for the application to keep the location when the specific button is triggered.

Figure 4.2 shows the sample of event-handlers **RememberButtonClick** of the application. Conceptually, when the RememberButton is clicked, the location sensor's reading are put into the "remember" labels and stored to the database as well.

As for the mobile application, this event handler will be implemented as part of the application behaviour to allow the application to store and remember the initial position of the device at the beginning of the tawaf ritual once the respective button is clicked. Thus, the number of rounds that has been completed can be counted once the device moves and returns back to the initial position.

4.3. The Application Screens Components and Interactions

In developing this project, the back end processes and interactions between the components are implemented in the Block Editor. The figures below shows all the major screens components design that has been implemented and function as expected. There are included The Home, Contents, List of Prayers, Tawaf Simulation and Tawaf Tracker.

The Home is the first screen to welcome the user. The Contents is the screen that displayed all the features offered by the application. Currently, the application only offers three features which are:

- The application allows the user to view text prayers and listen to audio prayers simultaneously.
- The application allows the user to watch simple simulation on how to perform the Tawaf ritual the correct way.
- The application is able to assist the user in tracking and calculating the number of round completed during Tawaf ritual.

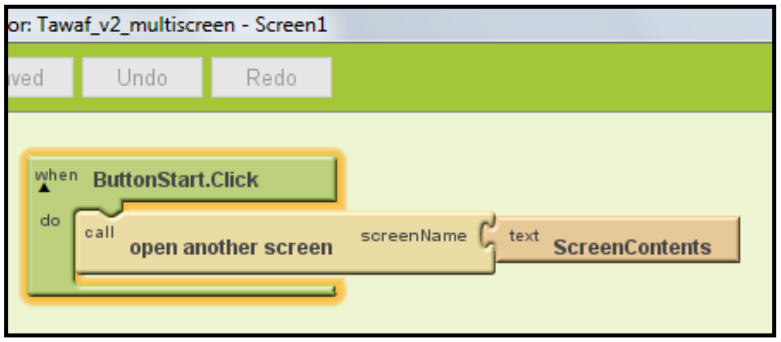


Figure 4.3

The screen consists of components of the Home screen, the first screen shown when the application executes

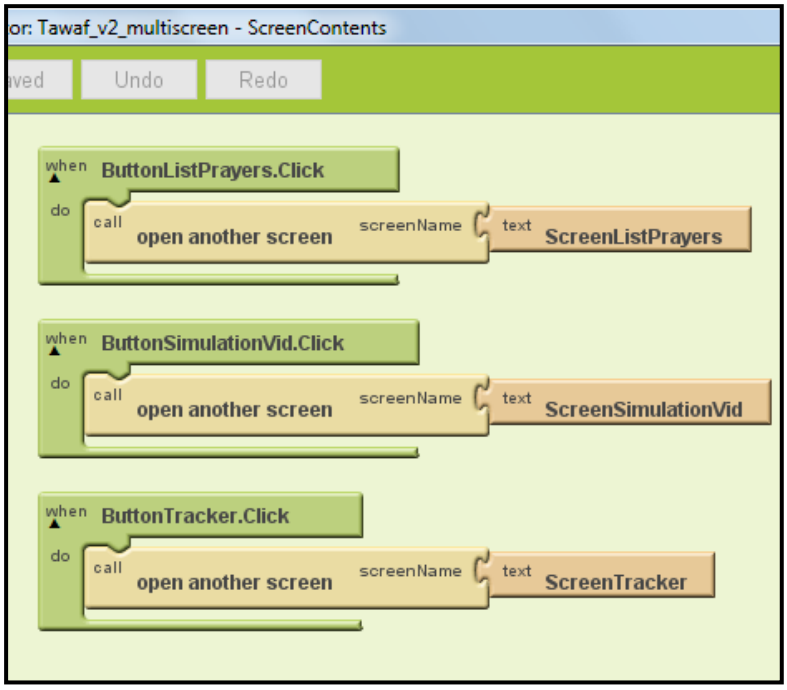


Figure 4.4

The components of the Contents screen, which show the list of features offered by the application.

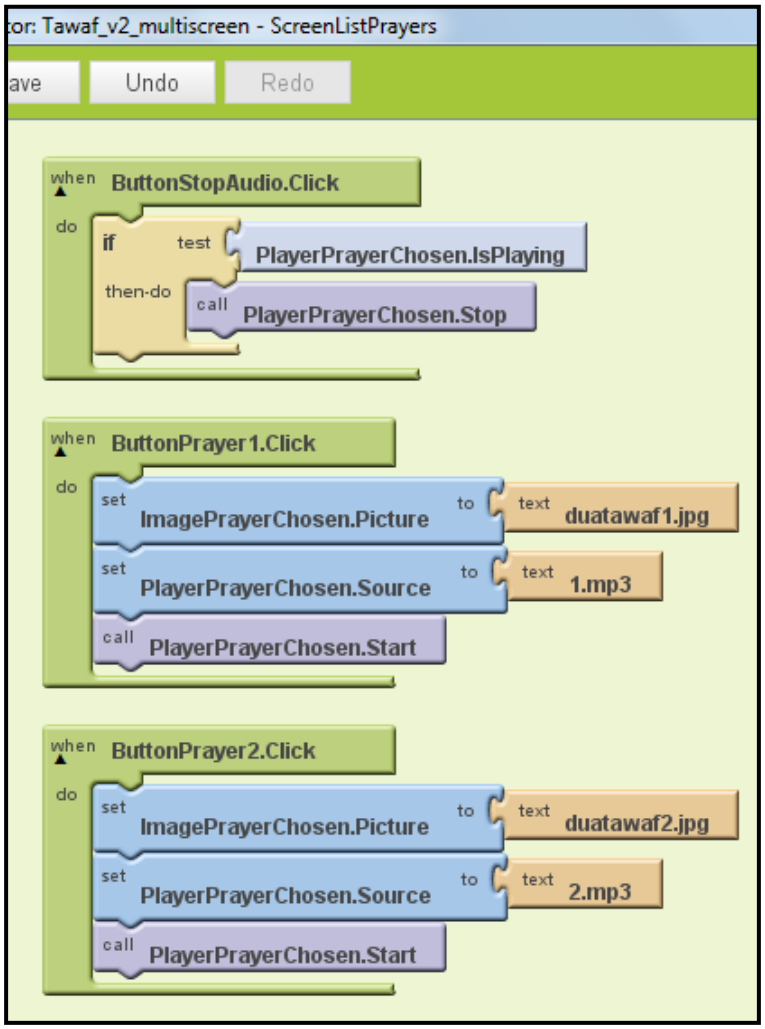


Figure 4.5

The components of the List of Prayers screen which consists of seven buttons to choose which prayer to view and listen to and the button to stop the prayer's audio.

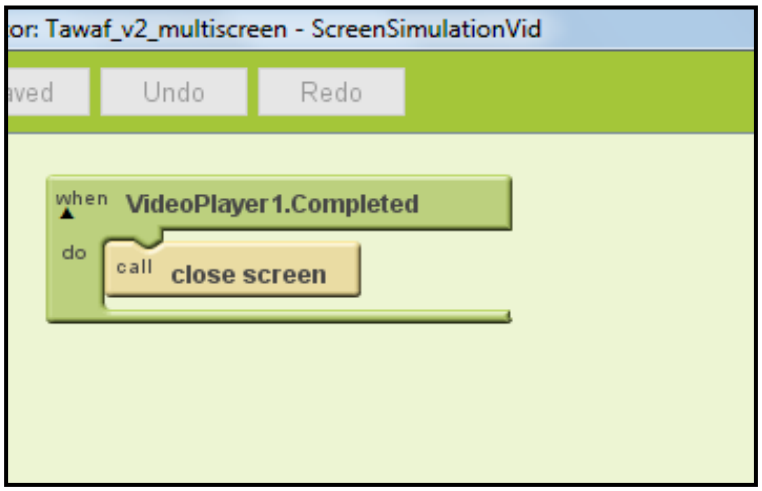


Figure 4.6

The components of the Simulation Screen which is the current screen will be closed after the video player has completed playing the simulation.

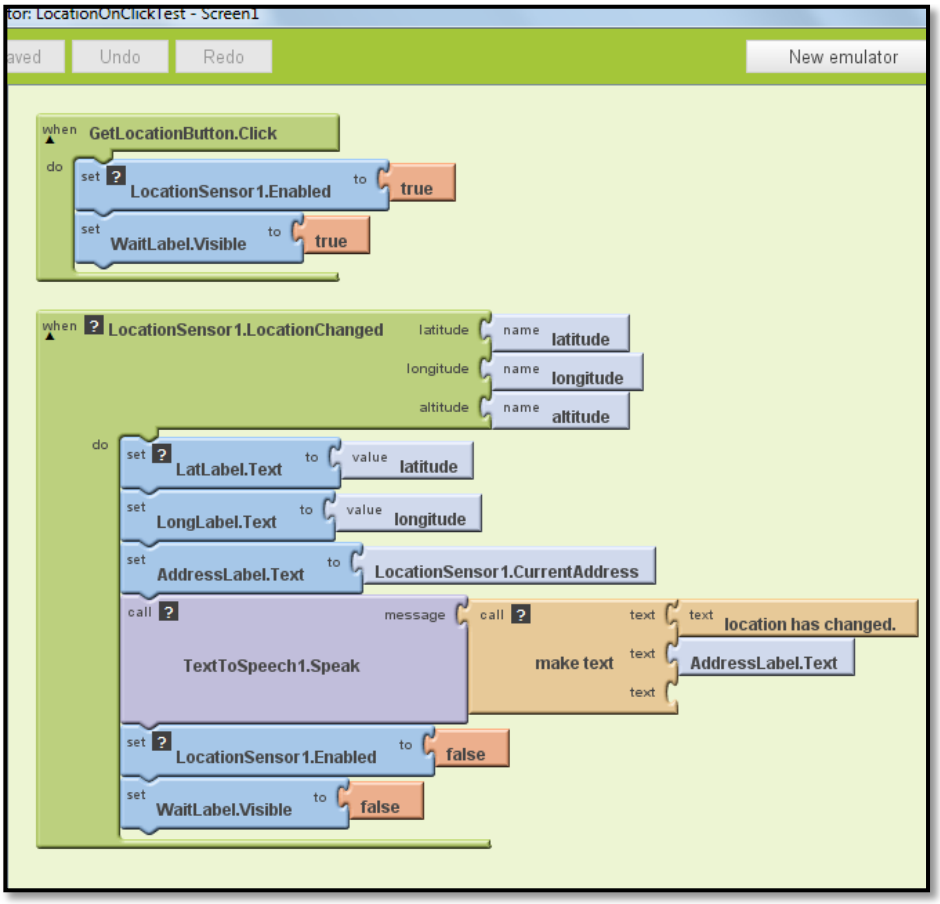


Figure 4.7 The components for the Tawaf tracker screen to assist use in determining and calculating the number of Tawaf round completed by the pilgrimage.

4.4. Prototype

4.4.1 Prototype version 1

The standalone application is built and tested using Android virtual device. The Android emulator, software the runs on the computer and behave just like Android devices.

Figure 4.8 The home screen of the application.

Figure 4.9 The screen shows the prayer text clicked by the user of the application.

Figure 4.10 The screen shows the Tawaf simulation, other feature of the application.

The Android application package is installed in the tablet and the application is tested in the real environment using the target device which is the Android device with 7-inch screen size and resolution of 800 x 480 pixels.

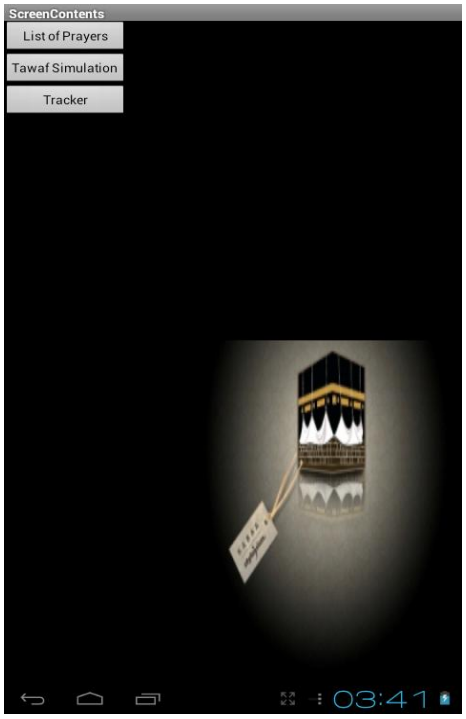


Figure 4.11 The content screen of the application using the Nautica 1 tablet.

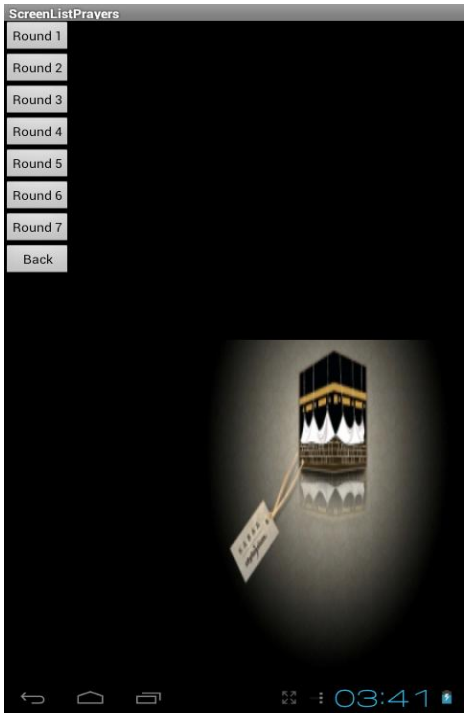


Figure 4.12 The list of prayers screen of the application using the Nautica 1 tablet.

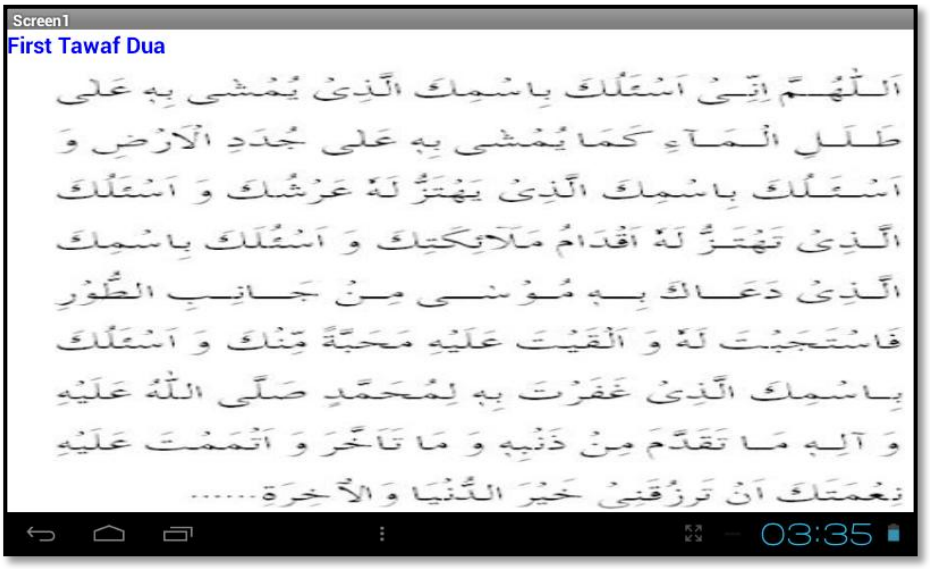


Figure 4.13 The screen shows the prayer text clicked by the user of the application.

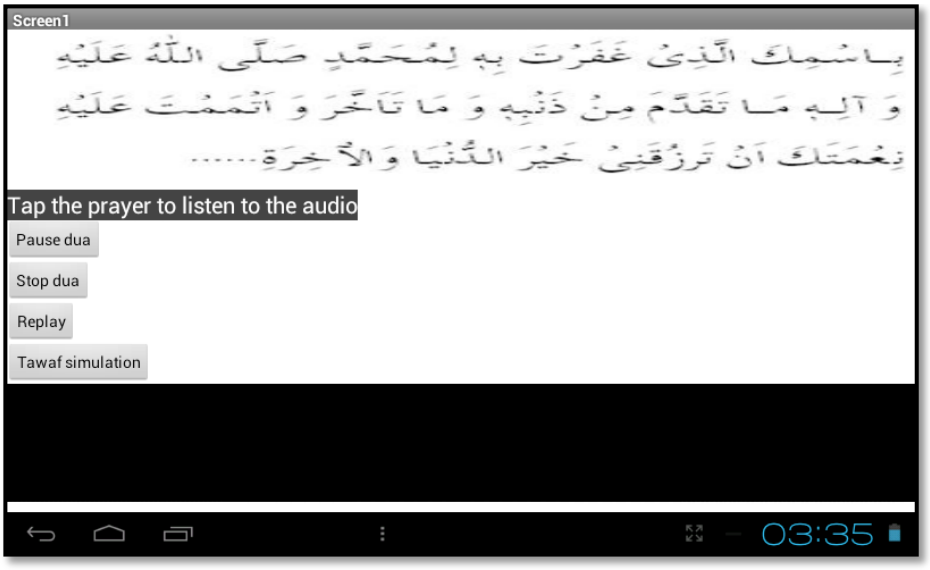


Figure 4.14 The screen is part of the above screen which shows instruction that allow the user to play, pause, stop and replay the respective prayer audio by tapping the text or clicking the respective button.

4.4.2 Prototype version 2

Figure 4.15 The screen shows the Home screen which is simpler than the version 1.

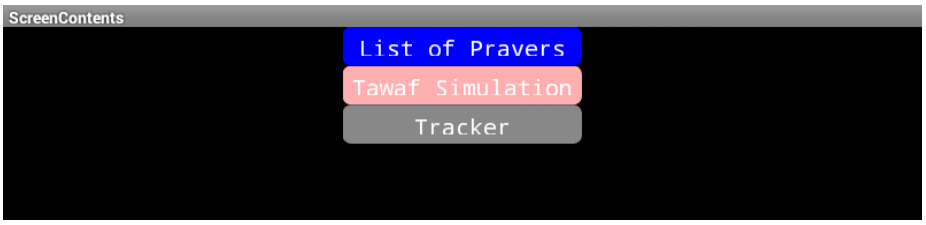


Figure 4.16 The screen shows the features of the application with new design.

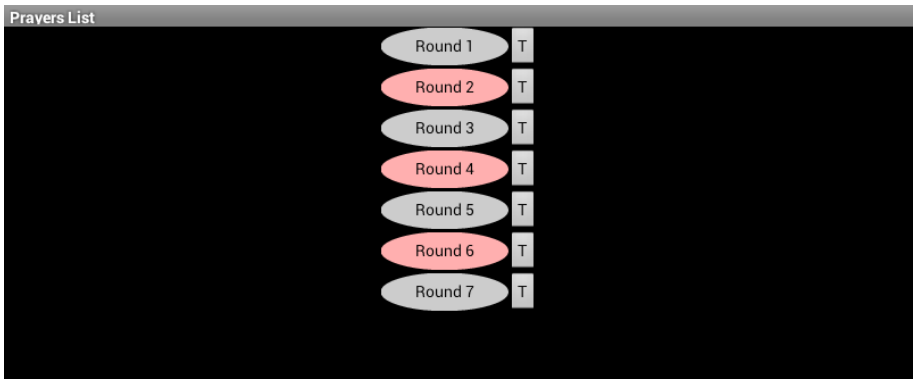


Figure 4.17 The initial components of Prayer List screen with improve design.

Figure 4.15 to Figure 4.18 shows the screen shots of the version two of the application prototype which include the Home, Features, and Prayer List screens. The second prototype is improved in the aspect of text readability, the arrangement of the screen's components as well as the colours chosen. This prototype is more user friendly than the first one but, the position of the text prayer need to be reconsidered. Besides, there is an issue when the audio is played. The player keeps repeating the first audio of the prayer even though different button for different prayer is clicked. The audio issue is

solved for the version three as the audio file format .aac is replaced with .mp3.

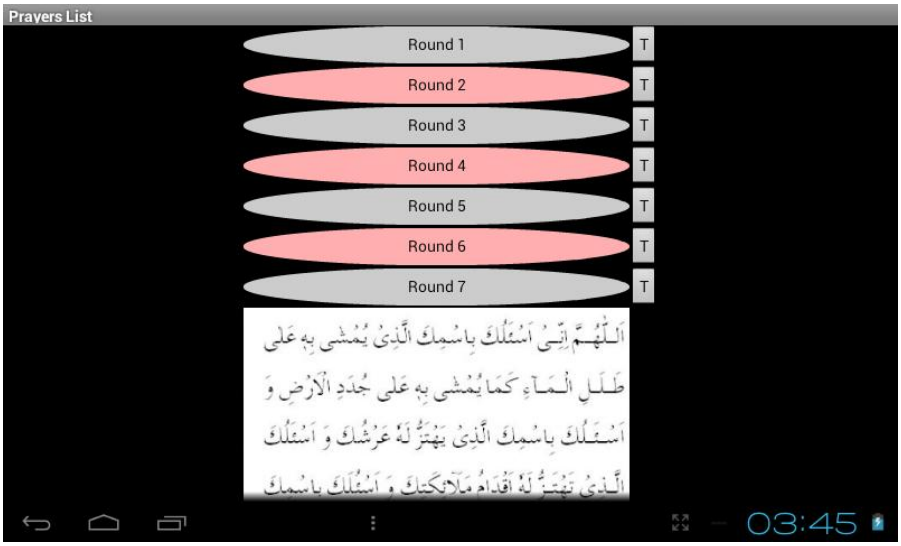


Figure 4.18 The screen to listen to the prayer audio when the oval button is clicked.

Figure 4.19 The screen to display the prayer when button T is clicked.

4.4.3 Prototype version 3

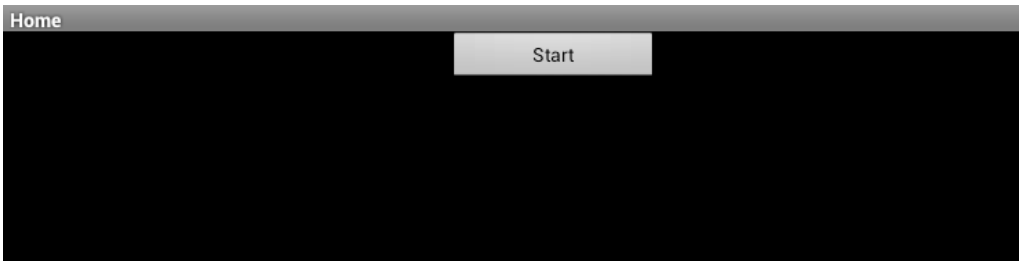


Figure 4.20 The Home screen in simplified version with removed background image.

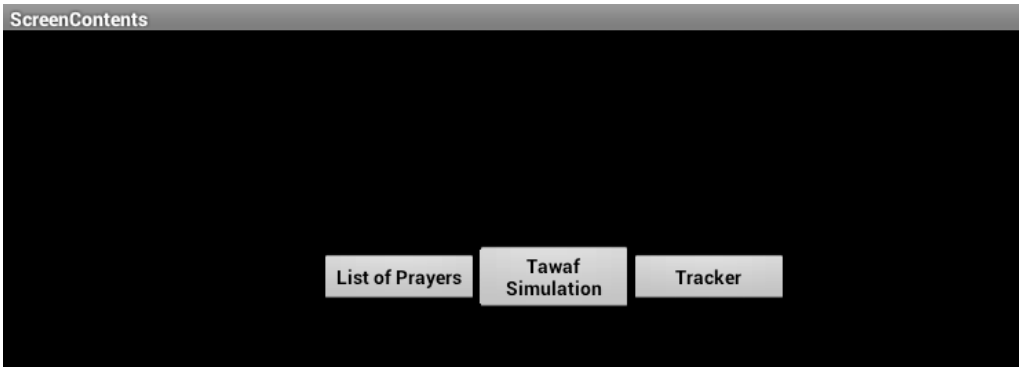


Figure 4.21 The application feature with horizontal arrangement.

Figure 4.22 The Prayer List screen with the change in the text position to the top of the screen and the prayes list is arranged horizontally at the bottom of the screen.

CHAPTER 5

5. CONCLUSION AND RECOMMENDATIONS

The Tawaf Guide mobile application is developed in order to provide more interactive alternative learning tool with added intelligence for the young generation of age eighteen to twenty five. The users are able to learn and review the Tawaf ritual in a more enjoyable, efficient and effective way, whenever they prefer. The application will offer features such as simple Tawaf simulation with recommended prayers in text and audio and more importantly assist the users when performing the real Tawaf. In developing the application, the study will be majorly focused on how to locate the Android device position during Tawaf ritual to calculate the number of Tawaf rounds completed by the pilgrimage. This is possible to be conducted in the certain condition which the device must have location sensing enabled through either wireless network or GPS satellites. It is very relevant to develop this application based on the survey conducted from 6th April to 9th April 2012; the result of the survey shows that fifth three percent of the respondents are currently using Android-based devices including smart devices and tablet which is slightly higher that those who are using other type of devices. In addition, there are about eighty-nine percent of the respondents are interested to try this application when it is available in the market in the future. These show that, as the number of Android-based device users increases in the future so as the demand for Android-based application. Thus, the probability for Tawaf Guide Mobile Application to be in demand in the future market will be high too.

As for the future enhancement and improvement of the application, the application can be enhance to be more dynamic in the aspect of its compatibility with the devices' screen size and resolution. As for the time being, the application is best running using 7-inch tablet pc. Besides, more rituals related to Hajj can be included in the application so that the users can refer other related rituals performed during Hajj such as *Sa'ei* and *Wuquf* at 'Arafah. By building

the application to be compatible with various screen sizes and resolutions as well as adding more features, the application will become more competitive and is able to grab potential users' attention to use it.

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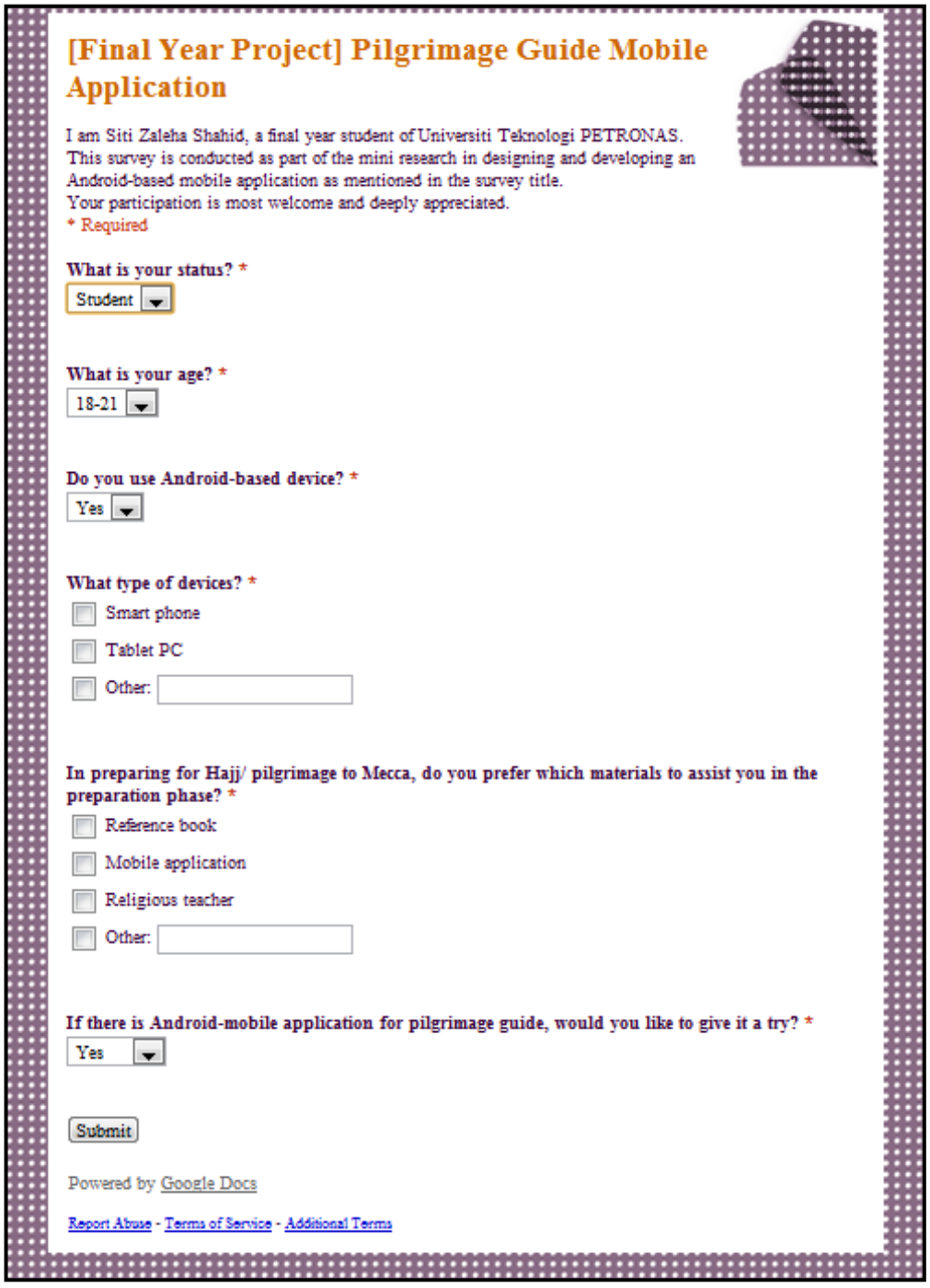
APPENDICES

Appendix 1.The survey form



[Final Year Project] Pilgrimage Guide Mobile Application

I am Siti Zaleha Shahid, a final year student of Universiti Teknologi PETRONAS.
This survey is conducted as part of the mini research in designing and developing an Android-based mobile application as mentioned in the survey title.
Your participation is most welcome and deeply appreciated.
* Required

What is your status? *
Student

What is your age? *
18-21

Do you use Android-based device? *
Yes

What type of devices? *
- Smart phone
- Tablet PC
- Other:

In preparing for Hajj/ pilgrimage to Mecca, do you prefer which materials to assist you in the preparation phase? *
- Reference book
- Mobile application
- Religious teacher
- Other:

If there is Android-mobile application for pilgrimage guide, would you like to give it a try? *
Yes

Submit

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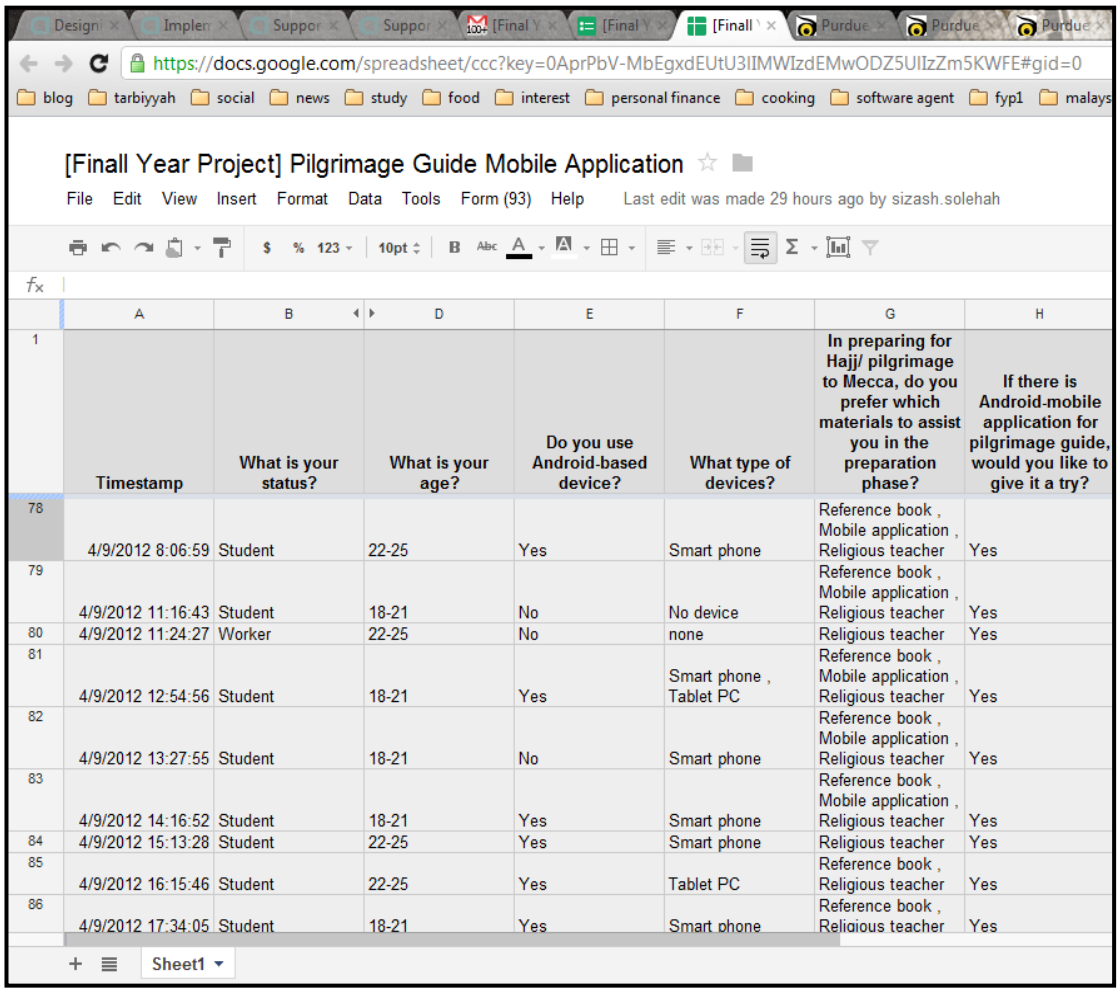
Appendix 2.The feedback from the respondents



[Finall Year Project] Pilgrimage Guide Mobile Application

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	A	B	D	E	F	G	H
1	Timestamp	What is your status?	What is your age?	Do you use Android-based device?	What type of devices?	In preparing for Hajj/ pilgrimage to Mecca, do you prefer which materials to assist you in the preparation phase?	If there is Android-mobile application for pilgrimage guide, would you like to give it a try?
78	4/9/2012 8:06:59	Student	22-25	Yes	Smart phone	Reference book , Mobile application , Religious teacher	Yes
79	4/9/2012 11:16:43	Student	18-21	No	No device	Reference book , Mobile application , Religious teacher	Yes
80	4/9/2012 11:24:27	Worker	22-25	No	none	Religious teacher	Yes
81	4/9/2012 12:54:56	Student	18-21	Yes	Smart phone , Tablet PC	Reference book , Mobile application , Religious teacher	Yes
82	4/9/2012 13:27:55	Student	18-21	No	Smart phone	Reference book , Mobile application , Religious teacher	Yes
83	4/9/2012 14:16:52	Student	18-21	Yes	Smart phone	Reference book , Mobile application , Religious teacher	Yes
84	4/9/2012 15:13:28	Student	22-25	Yes	Smart phone	Religious teacher	Yes
85	4/9/2012 16:15:46	Student	22-25	Yes	Tablet PC	Reference book , Religious teacher	Yes
86	4/9/2012 17:34:05	Student	18-21	Yes	Smart phone	Reference book , Religious teacher	Yes

Sheet1