



Faculty of Computer Science and Information Technology

***FOODBANK BROADCASTING FOR ANDROID***

**Nur Aina Athirah Rusdi**

Bachelor of Computer Science with Honours (Information System)

2019

***FOODBANK BROADCASTING FOR ANDROID***

**NUR AINA ATHIRAH RUSDI**

This project is submitted in partial fulfilment of the

requirements for the degree of

Bachelor of Computer Science with Honours

Faculty of Computer Science and Information Technology

UNIVERSITI MALAYSIA SARAWAK

2019

# FORM B

## UNIVERSITI MALAYSIA SARAWAK

### THESIS STATUS ENDORSEMENT FORM

TITLE FOODBANK BROADCASTING FOR ANDROID

ACADEMIC SESSION: 2016/2017

NUR AINA ATHIRAH BINTI RUSDI  
(CAPITAL LETTERS)

hereby agree that this Thesis\* shall be kept at the Centre for Academic Information Services, Universiti Malaysia Sarawak, subject to the following terms and conditions:

1. The Thesis is solely owned by Universiti Malaysia Sarawak
2. The Centre for Academic Information Services is given full rights to produce copies for educational purposes only
3. The Centre for Academic Information Services is given full rights to do digitization in order to develop local content database
4. The Centre for Academic Information Services is given full rights to produce copies of this Thesis as part of its exchange item program between Higher Learning Institutions [ or for the purpose of interlibrary loan between HLI ]
5. \*\* Please tick (✓)

- CONFIDENTIAL (Contains classified information bounded by the OFFICIAL SECRETS ACT 1972)
- RESTRICTED (Contains restricted information as dictated by the body or organization where the research was conducted)
- UNRESTRICTED

*A. Athirah*  
(AUTHOR'S SIGNATURE)

Permanent Address

LOT 782, KAMPUNG PUNANG  
JAYA, 98850 LAWAS, SARAWAK

Date: 05/08/2020

Validated by

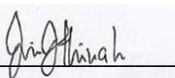
*[Signature]*  
(SUPERVISOR'S SIGNATURE)  
Dr. LAUREN PING  
Senior Lecturer  
Faculty of Computer Science and Information Technology  
Universiti Malaysia Sarawak

Note \* Thesis refers to PhD, Master, and Bachelor Degree  
\*\* For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

## DECLARATION

I hereby declare that the report “Foodbank Broadcasting for Android” that this content is an original work done by me with the consideration of the exception of research-based information and relative materials that were adapted extracted from other resources which been quoted or stated respectively.

Signed



---

Nur Aina Athirah Binti Rusdi

8 December 2019

Faculty of Computer Science and Information Technology

Universiti Malaysia Sarawak

## **ACKNOWLEDGEMENT**

Foremost, I would like to thank my supervisor, Dr Lau Sei Ping for his guidance, comments and suggestions throughout my Final Year Project. He always gives comment and feedback on my Final Year Project. I also want to thank my Final Year Project coordinator, Professor Wang Yin Chai for his valuable guidance and help in the class.

I wish to express my sincere gratitude to my parents and family for their endless encouragement and support throughout my Final Year Project. I am extremely thankful for my friends for their endless support and help throughout my undergraduate studies.

I am grateful to who, directly and indirectly, has been helping and supporting me doing my Final Year Project.

## **ABSTRACT**

Foodbank is an organization that helps students in needs. This project is a way to decrease food waste by announcing information by using mobile applications. Broadcasting systems is used every day. This mobile application is to deliver information that focuses on the Foodbank. Rather than using one broadcasting system that delivers many topics of information, it is better to focus on only one type of topics so users can alert with the information without miss the important information. Broadcasting system help users to communicate with other users so they can ask any information regarding the Foodbank.

## **ABSTRAK**

*Bank makanan ialah satu organisasi untuk membantu pelajar yang memerlukan. Project ini adalah cara untuk mengurangkan pembaziran makanan dengan mengumumkan maklumat melalui aplikasi mudah alih. Sistem penyiaran ialah sesuatu yang digunakan setiap hari. Aplikasi mudah alih ini digunakan untuk menyampaikan maklumat yang memfokuskan mengenai bank makanan. Daripada menggunakan satu sistem penyiaran yang menyampaikan banyak topik, adalah lebih baik untuk menumpukan kepada satu jenis topik supaya pengguna boleh berwaspada dengan maklumat tanpa terlepas maklumat penting. Sistem penyiaran membantu pengguna untuk berkomunikasi dengan pengguna lain supaya mereka boleh bertanya mengenai bank makanan.*

## TABLE OF CONTENTS

<b>FORM B</b>	<b>i</b>
<b>DECLARATION</b>	<b>ii</b>
<b>ACKNOWLEDGEMENT</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ABSTRAK</b>	<b>v</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>CHAPTER 1</b>	<b>1</b>
<b>1.1 Introduction</b>	<b>1</b>
<b>1.2 Problem statement</b>	<b>1</b>
<b>1.3 Objectives</b>	<b>2</b>
<b>1.4 Methodology</b>	<b>2</b>
<b>1.5 Scope</b>	<b>4</b>
<b>1.6 Significant of project</b>	<b>4</b>
<b>1.7 Project Schedule</b>	<b>4</b>
<b>1.8 Project Report</b>	<b>5</b>
<b>1.9 Project outcome</b>	<b>5</b>
<b>CHAPTER 2</b>	<b>7</b>
<b>2.1 Introduction</b>	<b>7</b>
<b>2.2 Reviewing of Existing Application</b>	<b>7</b>
<b>2.2.1 Astro Awani</b>	<b>7</b>
<b>2.2.2 Study tips</b>	<b>9</b>
<b>2.2.3 Facebook</b>	<b>10</b>
<b>2.3 Proposed System</b>	<b>11</b>
<b>2.4 Comparison between existing systems</b>	<b>12</b>
<b>2.5 Summary</b>	<b>13</b>
<b>CHAPTER 3</b>	<b>15</b>
<b>3.1 Overview</b>	<b>15</b>
<b>3.2 Methodology</b>	<b>15</b>
<b>3.3 Requirement Planning</b>	<b>16</b>
<b>3.3.1 User Requirement</b>	<b>16</b>
<b>3.3.2 System Requirement</b>	<b>16</b>
<b>3.3.3 Software Requirement</b>	<b>18</b>

3.3.4 Hardware Requirement	18
3.4 User Design	18
3.4.1 System Architecture	19
3.4.2 Data Flow Diagram (DFD)	19
3.4.3 Database Design	23
3.4.4 Application Design	24
3.5 Summary	27
CHAPTER 4	28
4.1 Introduction	28
4.2 Installation System Component	28
4.2.1 Android Studio	28
4.2.2 XAMPP	28
4.2.3 MySQL	29
4.2.4 Firebase	30
4.3 Role-based access	30
4.4 Interface Design System	31
4.4.1 Login Page	31
4.4.2 Account Registration Page	35
4.4.3 Home Page	37
4.4.4 Upload Post Page	40
4.4.5 Sign Out Page	44
4.5 Summary	44
CHAPTER 5	45
5.1 Introduction	45
5.2 Integration Testing	45
5.3 Functional Testing	46
5.3.1 Test Case	46
5.4 Non-Functional Testing	47
5.4.1 Usability testing	47
5.5 User Testing	49
5.6 Summary	50
CHAPTER 6	51
6.1 Introduction	51
6.2 Achievement	51
6.3 Limitations	52
6.4 Future Works	52

<b>6.5 Conclusions</b>	<b>54</b>
<b>REFERENCES</b>	<b>55</b>

## LIST OF FIGURES

Figure 1.1 Rapid Application Development Methodology	3
Figure 1.2 Final Year Project Gantt Chart	5
Figure 2.1 Astro Awani application main page	8
Figure 2.2 Astro Awani live TV page	8
Figure 2.3 Study Tips Main Page	9
Figure 2.4 The content of the study tips	9
Figure 2.5 Facebook Main Page	10
Figure 2.6 Facebook expanded like button	11
Figure 2.7 Facebook example of a private group	11
Figure 3.1 Rapid Application Development (RAD) methodology	15
Figure 3.2 System Architecture of Mobile Application	19
Figure 3.3 Context Diagram of Food Broadcasting Mobile Application	20
Figure 3.4 Level 0 of Food Broadcasting Mobile Application	21
Figure 3.5 Level 1 for User Registration	21
Figure 3.6 Level 1 for User Login Process	22
Figure 3.7 Level 1 for View Home Page	22
Figure 3.8 Level 1 for Post Food Information	22
Figure 3.9 Level 1 for Post Food Information	23
Figure 3.10 Level 1 for Show Updated Food Quantity	23
Figure 3.11 Entity Relationship Diagram for Food Broadcasting Mobile Application	24
Figure 3.12 Login Page of Mobile Application	25
Figure 3.13 Sign Up Page of Mobile Application	25
Figure 3.14 Home Page of Mobile Application	26
Figure 3.15 Post Announcement Page of Mobile Application	27
Figure 4.1 The Database of the System	29
Figure 5.2 The Firebase cloud storage	30
Figure 4.3 Login Page	31
Figure 4.4 Recover Password	32
Figure 4.5 Message to inform that email has been sent	32
Figure 4.6 Password recovery email	33
Figure 4.7 Key in a new password	33
Figure 4.8 Google sign in	34
Figure 4.9 Login Successful Alert	34
Figure 4.10 Register Page	35
Figure 4.11 Registering a user	36
Figure 4.12 Registration success	36
Figure 4.13 Empty home page	37
Figure 4.14 Newsfeed	38
Figure 4.15 Decrease Quantity Button	38
Figure 4.16 Search activity	39
Figure 4.17 Post page	40
Figure 4.18 Post page with image	41
Figure 4.19 Post successful alert	41
Figure 4.20 User profile page	42
Figure 4.21 User profile page	42
Figure 4.22 User profile page updated	43

Figure 4.23 Other User profile page	43
Figure 4.24 Sign Out Confirmation	44
Figure 5.1 Pie Chart for User Permission	49
Figure 5.2 Bar Chart for a survey regarding mobile application	49
Figure 5.3 Result for a survey regarding the functionality of the mobile application	50

## LIST OF TABLES

Table 2.1 The comparison between existing systems and proposed system	12
Table 5.1 Relationship between functions and objectives	45
Table 5.2 List of all test case	46
Table 5.3 List of Usability Testing	47
Table 6.1 The achievement of this project	51

# CHAPTER 1

## 1.1 Introduction

Foodbank is an initiative by an organisation to give out food to help the persons in need. In Universiti Malaysia Sarawak, Foodbank is usually placed at a designated place. For example, in the Faculty of Computer Science and Information Technology (FCSIT), the Foodbank is placed in front of the Student Interaction Room at Ground Floor, Block B, FCSIT.

Different from other Foodbank, the Foodbank in the faculty usually consists of food with shorter shelf life, especially food that already been cooks. This makes it easier for a student to just pick up and enjoy the food. The foods in the Foodbank usually donated by students and staffs.

As food was donated and there is no fix amount and time, a student unable to speculate what time the food will arrive and its availability. Some student may have walked a long way, for example from their college to find out the food is already finished. This will make all the effort and time go wasted.

This arises the need for a system to be able to broadcast the information regarding the Foodbank from time to time. This not only energy saving but also save students' time. Knowing real-time update from their smartphone is very efficient, rather than going to Foodbank.

## 1.2 Problem statement

Every student has a different schedule and a different lecture venue. Some may have class only in the evening while some start the class early in the morning. Due to different and

busy schedule, students tend to miss the Foodbank when they need it. This sometimes leads to food wastage because they do not know that there is food available at the Foodbank.

The time to refill the food in the Foodbank is rather random and depends on the contributor's schedule and availability, so it difficult for students to knows when the food has arrived and ready to be collected. This leads to the needs of the application, where the users can check the live quantity of food no matter where the users are.

The quantity of food is varying every day and keep decreases over time. No one was able to tell the latest amount of food at the Foodbank and the availability of the food until having a physical check on the Foodbank.

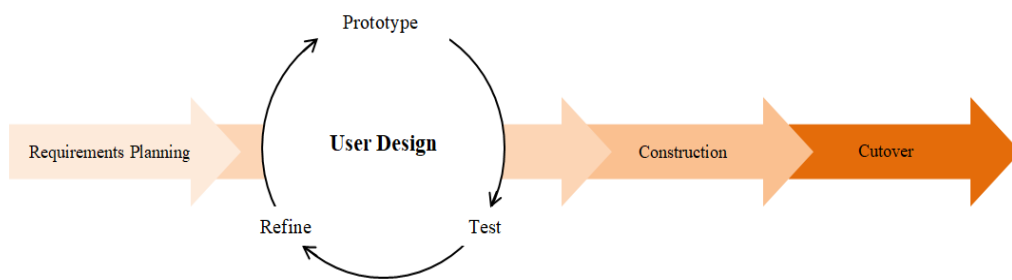
### **1.3 Objectives**

The main objectives are:

- i. To design a mobile application that allows the user to broadcast the availability of the food in the Foodbank.
- ii. To show food information about the available food in the Foodbank.
- iii. To inform other users about the quantity of food available in the Foodbank.

### **1.4 Methodology**

The methodology used in developing this project is Rapid Application Development (RAD) methodology as shown in Figure 1.1. According to airbrake.io, Rapid Application Development (RAD) is “a method of software development which heavily emphasizes rapid prototyping and iterative delivery” (Powell-Morse, 2016). Rapid Application Development is chosen because this project only takes a short period.



*Figure 1.1 Rapid Application Development Methodology*

**Requirement planning** phase is a phase where goal determination and the expected outcome. This phase also expected the current and further issues that will occur when developing this project. Requirements planning will need a lot of communication with those who related. The important steps in this phase are researching the problems, clarify the requirements of the project and conclude the requirements with those that related.

**User design** phase is a development phase where user design converts into a prototype. The aim is to make sure all the needs and requirement achieved. The prototype is tested on every point to make sure all the requirements achieved. In this phase, the developer and the user work together, where the developer develops the prototype and the user test it and give feedback to the developer what the shortage of the prototype.

**Construction phase** is turning the prototype into a working model. 4 important steps in this phase are preparing rapid construction, application development and program, coding and system testing. This phase is important because the project needs to be working smoothly and achieve the needs and requirements. This phase will go a lot of alterations because of tester feedback or even the solution to the existing problem that led to changing the project.

**Cutover phase** is the final phase, where the finished product will be launch. One more final testing will be done before it launches. This will be called beta tester, where only a few of the

user being chosen and their feedback will be collected. In this phase, the users will receive more change. The changes into a new system and they will also go into user training.

### **1.5 Scope**

This mobile application is mainly for Android users, for them to be able to display the information regarding the Foodbank or maybe to announce that they going to donate. This mobile application required the user to be active because all the information from this mobile application is are all from the user itself.

### **1.6 Significant of project**

This project creates a broadcasting application that mainly focuses on informing information to the users only regarding Foodbank. This project is using a mobile application programming language to create a mobile application. The users of the mobile application become more alert and well informed. Hence, this project enables the user to indirectly communicate with other users by looking at the information shown.

### **1.7 Project Schedule**

The Final Year Project 1 takes approximately 65 days. Final Year Project 1 started on 13<sup>th</sup> September 2019 and end on 12<sup>th</sup> December 2019. Final Year Project 2 will start when Final Year Project 1 end that is next semester. Final Year Project 1 report will include Chapter 1: Introduction, Chapter 2: Literature Review and Chapter 3: Methodology.



Figure 1.2 Final Year Project Gantt Chart

## 1.8 Project Report

This report contains five parts that are Chapter 1: Introduction, Chapter 2: Literature Review, Chapter 3: Methodology, Chapter 4: Implementation, Chapter 5: Testing and Chapter 6: Conclusion and Future Work. Chapter 1, Chapter 2 and Chapter will be done in Final Year Project 1 while Chapter 4, 5 and 6 will be done in Final Year Project 2.

Chapter 2 is focused on comparing this project with another similar project. The similar project can be obtained from books, journal and thesis. Chapter 3 will explain the methodology chosen in detail. Chapter 4 is to start developing the actual product. All the progress and details of the project will be recorded. In Chapter 5, user testing is being conducted on the finished mobile applications. Lastly, Chapter 6 is a conclusion for this whole project. All the future work or the possible next steps will be included in this chapter.

## 1.9 Project outcome

At the end of the project, the expected outcomes are:

- i. A mobile application that enables the users to post information regarding food bank or edit the quantity of the amount.

- ii. A mobile application that enables users to only show the information, photos and the real-time quantity.

## **CHAPTER 2**

### **2.1 Introduction**

This chapter mainly focusing on Broadcasting mobile applications. Three mobile applications that have similarity with Broadcasting mobile application is being discussed. All the similarity and the differences between these three existing mobile applications and the proposed application will be reviewed. The strength and weaknesses of each existing mobile application being state as a guide for proposed applications.

### **2.2 Reviewing of Existing Application**

The mobile applications chosen are Astro Awani, Study Tips and Facebook. All these applications are sharing the news or info to others. All these applications either using texts, images or videos in other to share the news or info to the others.

#### **2.2.1 Astro Awani**

Astro Awani is one of the biggest news channels in Malaysia. Due to the popularity of this news channel, the existing of the mobile applications will help the fans of this news channel stay up to date no matter where they are.

The article in the applications will be classified by each category, that are Malaysia, entertainment, world and politics. The category Malaysia is focusing on things that happen in Malaysia, while the world is focusing the things happens on other countries. The keyword entertainment is about artist and keyword politics is more towards the governments in Malaysia.

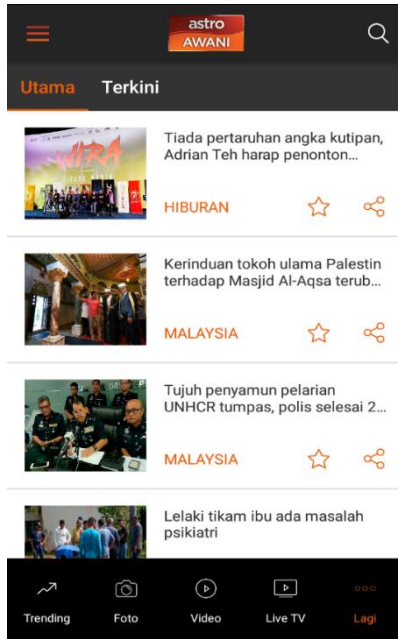


Figure 2.1 Astro Awani application main page

One of the features in this application is it shows trending news so that the users knew what other news other users interested. This application also allows users to watch live news from the application as figure 2.2 shown.



Figure 2.2 Astro Awani live TV page

## 2.2.2 Study tips

Study tips is a mobile application to share all the study tips and tricks. The main objective of this mobile application is to help the students to study smart and better.

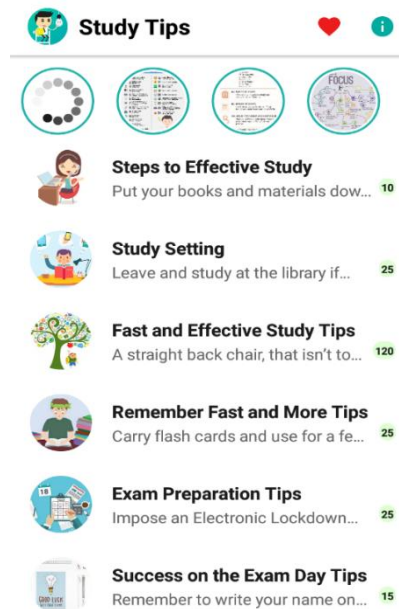


Figure 2.3 Study Tips Main Page

All the tips and info on how to study smart is provided by the mobile applications owners. Users can read all the content provided and share the tips to another medium. Other than that, user not provided access to change the content of the applications.

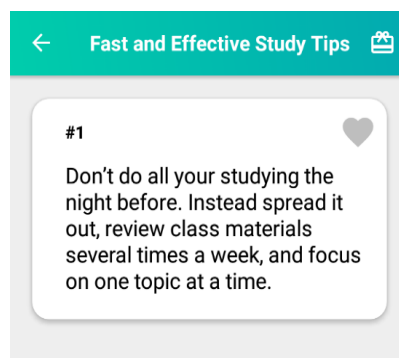


Figure 2.4 The content of the study tips

Figure 2.4 is an example of the content of tips in the category Fast and Effective Study Tips. The heart-shaped on the corner is for bookmarks, so users can easily find the tips that they think important rather than searching one by one.

### 2.2.3 Facebook

Facebook is a social media with the most user compare to other social media with 2.3 billion users. Facebook is a great place to share news and info to others. Not only that, but Facebook also allows the user to make groups so that the user can share the info into the selected users. Facebook users consist of people from a different age.

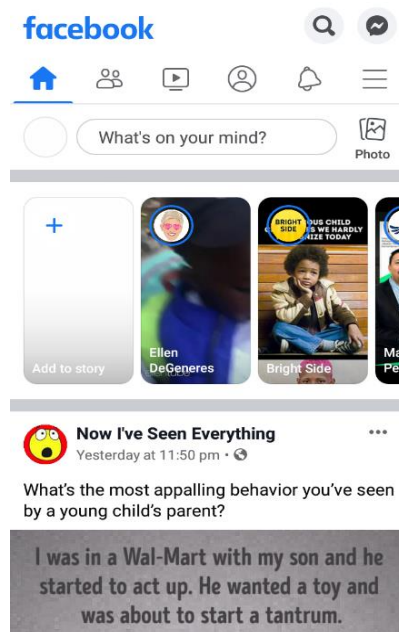


Figure 2.5 Facebook Main Page

Facebook allows users to post texts, images and videos. Facebooks also allow users to tagged other people, add locations and going live. Not only that, but Facebook also let users declare their relationship status with other users and users can react to other users' post. Facebook also has interesting features where the like button expands to shows other reaction such as love, laughing emoji, impressed emoji, sad emoji and angry emoji.



Figure 2.6 Facebook expanded like button

One of Facebook features is allowed users to create group whether it is private or public. The private group need users to request to admin to joins the groups while the user does not need permissions to join public groups. Groups in Facebook is for users with the same interest or from the same background to receive info related to the group. Furthermore, Facebook groups also have no limits member which make easier for an organisation with a big number of members to interact with each other.

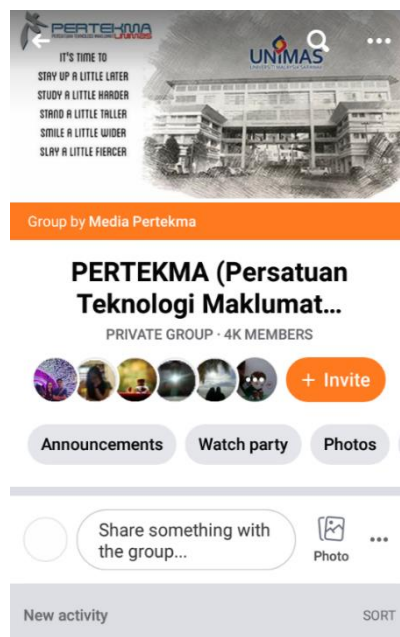


Figure 2.7 Facebook example of a private group

## 2.3 Proposed System

The proposed systems are Foodbank Broadcasting which mainly to broadcast or make an announcement. The Foodbank Broadcasting will be made into android application. This application will enable users to post regarding food in the foodbank. This application will