CHAPTER 1

INTRODUCTION

1.0 Background of study

Approximately partial of the world's population is booming today because of enlarged food production driven by mineral fertilizers. Fertilizers and other inputs give the manufacturing countries inexpensive food.

There are two type of fertilizer which are as organic and inorganic or also known as reproduction substantial that comprise the biochemical elements that recover productiveness as well the growth of the plants. (Fabian.E.E et al., 1993)

Fertilizers are used to boost the natural fertility of the soils or replace the chemical elements taken from the soil by previous crops.

According to Erhart.E & Hartl.W (2010), they stated that the custom of manure and composts as fertilizers is probably almost as long-standing as agriculture or in farming industry. Most important in plant nutrition: nitrogen, potassium and phosphorus where is recent chemical fertilizers that must include one or more of the three elements to be used.

Currently, mobile device had become tremendously increasing among the people around the globe especially for generation Y. Societies are more towards using the mobile devices like smart phone and tablet because it is convenient and portable to bring anywhere. As the attractiveness of mobile devices keep increasing, mobile

application had come out with a various function and purpose for incoming years to be establish.

Normally, mobile application also had been known as mobile apps which are having software to make it run for example on tablet computer and smartphone. By having that kind of software, it will help the user easier to connect the internet because they can bring their device to anywhere.

However, the applications that are keeping provided more toward the application for the games, photography and social network where there is less for recommender system and environmental.

Currently, application for environmental friendly is rarely to be used by the user because it is only provides general information about the fertilizer but not giving any recommendation to the users. There are also an application just about the counting on how much fertilizer need to be used .User needs to manually search what types of fertilizer are suitable for their flower plants.

Furthermore, it is also lack of customization where the user not allowed selecting and customizing the fertilizer they have. Without customization recommender, the user cannot monitors and knowing what type of fertilizer needed to their plants.

Besides that, the existing application are not attractive because of the features of the apps is dull and not efficient. Thus, it will make the users will lost an interesting to use it.

Last but not least, the notification functionality when the exact time that a fertilizer as well as watering the plants also one of the functionality or ability of the current system and application lack and need improvements.

1.2 Problem Statements

The problem statements of this project are:

- Lack of information and available application on recommendation of fertilizer especially for the flower lovers.
- Lack of information about fertilizer that are suitable for flower plants.
- Lack of existing application has a customization of recommender system so the user cannot monitors and knowing what type of fertilizer needed to their flower plants.

The first point of the problem statement stared that Lack of information and available application on recommendation of fertilizer especially for the flower lovers because currently, the number of mobile application that focused on the recommendation the suitable fertilizer for flower plants are rarely to be found. The existing application which is “Fertilizer” is able to do several functions such as instruction on how to use that application, button to select the crops button to select the fertilizer, and lastly it will display the result of recommendation fertilizer for selected crops but only has abilities on selecting the crops but not for flower plants.

Furthermore, the problem of lack of information regarding the instruction of what type of fertilizer is suitable and how when the user need to feeding their flower with a fertilizers as well watering their flower plants. Users do not know the correct steps and procedures to put the fertilizer in order to make their flower blossom.

The lack of recommender system also makes the user cannot monitor as well knowing what is the most suitable fertilizer for their flower plants for it blooming. Users need a simple but fully useful input so that they will be easier to apply the fertilizer to their flower plants. Besides, the user of the system may find easier to receive the notification from the system by just referring to their mobile phone.

At this current moment, an application for recommendation of the fertilizer for flower plants has not been developed. There are a few existing mobile application currently been used in the market but only provides common information about the crops. The mobile application that will be developed will provide user friendly interface and more dynamic and interactive elements. Furthermore, the user friendly features will make the application looks more attractive to be used by the users. The most important thing for the delivery of the application is all the features have to be satisfying the end user of the application.

1.3 Objectives and Scope of Study

1.3.1 Objectives

There are several main objectives of this project to:

- Identify the element that needs to be considered in recommending the right fertilizer for certain flower plants.
- Develop a “Fertilizer Recommendation System for Flower Lovers: Home Guide” for users.
- Evaluate the system in terms of user acceptance

1.3.2 Scope of Study

There are several scopes of study of this project including:

- Research on suitable fertilizer to the flower plants.
- This project is to develop a customization android application that helps the end user regarding the correct type of fertilizer.

- This project is focus on only certain flower plants that are commonly planted in the garden in Malaysia.
- System evaluation only focuses on user acceptance test on the developed product

1.4 Relevancy of the Project

The system is on purpose to be developed to the person that directly or indirectly to the flower plants. By being aware lack of recommendation system in the flower plants sectors, “Fertilizer Recommendation System for Flower Lovers: Home Guide” will be proposed.

The main parts of this mobile application are providing information regarding the suitable fertilizer for a flower plants and the notification to alert the users. Therefore, this mobile application is very suitable to be used by the users as it would provide a complete guidance of what fertilizer supposed to use.

1.5 Feasibility of the Project within the Scope and Time Frame

In terms of time frame, this project requires a high time commitment in the development process. Since the research period is very short, the process of finding the research outcome and transfer it into the working system is quite challenging.

The time frame for this project to be established is two semesters of study. For the first semester the project will be concentrated on the planning, analysis, research and design phase. Meanwhile, in the second semester will be developing the prototype and usability testing.

Moreover, in terms of technical, this “Fertilizer Recommendation System for Flower Lovers: Home Guide” focuses on two different features which are providing information regarding the suitable fertilizer and planner the notification the spread fertilizer as well as watering a flower plants. Besides that, the function and process of the mobile application are feasible to program within the time frame.

CHAPTER 2

LITERATURE REVIEW

2.0 Fertilizer

Fertilizer is a chemical compound that is given to plants to promote growth. It is often imposed on the soil, but can also be placed directly on the roots or sprayed on the leaves of plants. Fertilizer is divided into two, namely natural and chemical fertilizers. However, sometimes it also known as organic fertilizer which is organic materials containing or derived from living organisms, while chemical fertilizers anyway, sometimes known as inorganic fertilizers or artificial fertilizers, containing materials of inorganic chemicals or minerals.

Besides that, fertilizer can occur naturally, such as peat and mineral, or manufactured after going through a natural process such as decomposition or chemical processes for example, the Haber process. In addition, some chemical compounds makes the page, gardens and land looked more beautiful because it provides vital nutrients that promote plant health and flower plant to blossom.

Fertilizer specially formulated for a specific purpose, such as to facilitate the growth of leaf or fruit production. It typically consists of three major chemical elements, namely nitrogen, phosphorus and potassium in varying rates. “Nutrients are taken up by plant roots in three ways: 1) root interception, 2) mass flow, and 3) diffusion. As roots grow

through soil, they physically contact pockets of nutrients that are available for uptake — this is root interception" (Mengel 2008).

Other elements such as calcium, sulfur, magnesium or micro-nutrients (micronutrients) are also used by utilities or use the steel. While nitrogen can be found in the earth's atmosphere, there is only a small group of plants that make the process of nitrogen bond which is the conversion of atmospheric nitrogen into forms that are more useful, such as nitrate, ammonia and nitrogen oxides. Almost all plants need nitrogen compounds in the soil to thrive

2.1 Combination of Organic and Chemical Fertilizer

There is several type of fertilizer but the best fertilizers for flowers must contain with nitrogen to promote growth, potassium to improve flowering and lastly phosphorus which is to enhance roots system and strength.

Organic fertilizers are environmentally friendly fertilizers that do not contain chemicals. It is a natural mineral elements needed to restore soil fertility and death. The use of chemical fertilizers continuously without balanced with using organic fertilizers have been proven cause damage to either of the nature of soil physical, chemical or biological properties of soil. By using organic fertilizers, soil damage can be repaired and returned to the nature of its fertility while improving agricultural productivity.

For a chemical fertilizer, it is defined as any inorganic material of wholly or partially synthetic origin that is added to the soil to sustain for plant growth. Many artificial fertilizers contain acids, such as sulfuric acid and hydrochloric acid, which tend to increase the acidity of the soil, reduce the soil's beneficial organism population and interfere with plant growth.

Combination of organic and chemical fertilizer fertilization both enhanced C storage in soils, and reduced emissions from Nitrogen fertilizer use, while contributing to high crop productivity in agriculture (Pan et al., 2009).

According to Tiwari et al., (2002), they stated that the inclusion of manure in the fertilization schedule improved the organic carbon status and available N, P, K and S in soil, sustaining soil health. Several researchers also have demonstrated the beneficial effect of combined use of chemical and organic fertilizers to mitigate the deficiency of many secondary and micronutrients in fields that continuously received only N, P and K fertilizers for a few years, without any micronutrient or organic fertilizer.

Based on the evaluation of soil quality indicators, Dutta et al. (2003) reported that the use of organic fertilizers together with chemical fertilizers, compared to the addition of organic fertilizers alone, had a higher positive effect on microbial biomass and hence soil health. Application of organic manure in combination with chemical fertilizer has been reported to increase absorption of N, P and K in sugarcane leaf tissue in the plant and ratoon crop, compared to chemical fertilizer alone (Bokhtiar & Sakurai 2005).

Addition of organic materials of various origins to soil has been one of the most common practices to improve soil physical properties (Celik et al., 2004). In addition, Zhao et al. (2009) reported that farmyard manure combined with chemical fertilizer management resulted in a higher increase in maize yield, soil organic matter, available N and available P compared with those found under straw manure combined with chemical fertilizer management.

2.2 Flower Plant

A flower is the reproductive tissue of all flowering plants. A single flower produces egg and sperm and the complete process of fertilization in plants happens inside the flower.

A single flower gives growth to fruit and seeds. In addition to reproduction flower plays a vigorous role in pollination by attracting animals, birds and other flies to transfer the pollen grains. According to the history, flowering plants came into existence about 135 million years ago. In fact, the food, which we consume every day, comes from the flowering plants itself.

Flowering plants are separated into two groups which are Monocotyledons and Dicotyledons. The foods of seed are stored in one cotyledon or known as seed leaf which is for Monocotyledons. The parts of the flowers of monocotyledons are arranged in threes or more. It may contain flowers with three petals, flowers with six petals and the stamens also follow this pattern and they are herbaceous plants. The examples of Monocotyledons are grass, rice, corn, etc. However, for Dicotyledons, it contains two cotyledons, leaves with branching, flower parts in groups of four or five and have netlike veins. Dicotyledons seeds also contain an embryonic plant and seed is protected by a seed coat. The examples of Dicotyledons are sunflower, roses and etc.

Deserts are the household to many living things. Florae that grow in a desert have to be adapted to the dry circumstances. They must be able to assemble and store water to reduce water loss. These plants look quite dissimilar to plant that grow in other places. The desert plant includes bushes, acti, saguaro cactus, which have been adjusted to survive in the tremendously dry conditions. Desert plants are hard and have a capability to stand in alkaline soils.

The hanging flowering plants can be well-defined as small evergreen shrubs, which can be grown in hanging pots or in baskets. These types of flowering plants can also be planted on boundaries and yards. They are outdated plants, which are planted in between the month of April to early June. These plants are familiar to more heat and plenty of water. There are plenty of hanging flowering plants, which includes: moss rose, lantana, fuchsia, verbena, sweet alyssum, etc.

2.3 Suitable soil for flower plant

According to Hoeft et al., (2000), soil pH is also determining factors for a health plants. Other elements such as calcium, sulfur, magnesium or micro-nutrients (micronutrients) are also used by utilities or use the steel. “Applying phosphorus (P) fertilizer to soil can be divided into three consecutive steps: (i) Measurement of soil-P availability, (ii) calibration of the soil-P fertility level and (iii) estimation of the recommended P dose” (Hoftman et al., 2012).

The three main types of soil are sand, silt, and clay. The perfect soil for most plants is a rich, sandy loam. Loam is an even mixture of the three main types of soil. In most cases, user will need to amend the soil with compost. Depending on how compact the soil is, user may also want to add peat moss and sand. However, there are many plants that are well adapted to growing in particular types of soil.

Like all plants, flower also desires a good soil in order to rise up strong and healthy. Regardless of whether the users are planting their flowers in a garden or in a pot, it must have good soils. The user must avoid soil that is heavy with clay, sand, or rocks, and that has a balanced pH near 7 because flowers need at least six inches of loose soil to start out growing in so the user need to loosen up a top layer at least this deep.

Test the soil's pH level to regulate if user needs to add anything. If the soil has a low pH below 6.5, it means the soils contain high acidic so the user need add in ground sulfur to neutralize it. High pH levels which are alkaline can be rectified by adding in ground limestone. Both are available at garden centers. Growth in organic materials to add nutrients to the soil by decomposing leaves and plant matter mixed with the soil will help the plants to grow healthier and faster.

2.5 Android

Android is a mobile operating system or called (OS) which are based on the Linux kernel and presently developed by Google. The user interface is based on direct operated. Android is featured mainly for touchscreen devices such as tablet, smartphone and tablet computer with focused user interfaces for televisions. To enhance the android products, the touch input are developed, like pinching, swiping, tapping, and reverse pinching where it can operate on-screen objects, and a effective keyboard. In spite of being mainly designed for touchscreen input, it also has been used digital cameras, game consoles, regular PCs and other electronics.

According to the survey that are conducted in April-May 2013, Google plays store get over half billion application was downloaded. On 2015, Android has the largest mounted of all general-purpose operating systems.

The source code for Android which is open source licenses was released by Google, even though most Android devices eventually ship with a combination of open source and registered software, including proprietary software developed and licensed by ssxcxxGoogle.

2.6 The Importance of Technology to Solve the Issue

swwMoving into the 21st century, technologies are important so people can exchange the information as well will help the country to move forward. Technology states to the gathering of tools that make it easier to use, manage, and create. Moreover, technology also the use of tools by human beings was for the progression of discovery and development.

Technology also refers the information and the use of tools, techniques and systems in order to help a bigger persistence like solving problems or making life easier. Its consequence on humans is tremendous because technology helps them adapt to the environment. The growth of high technology including computer technology's Internet and the telephone has helped overcome communication obstacles and association the gap between people all over the world.

Besides that, technology also is one of many tools that organizations practice to help solve problems. The whole process of difficult solving involves gathering and analyzing data, and then placing forth solutions that remedy an issue in the business.

2.7 Current Relevant Product

There are several current relevant products in the mobile application that is similar to the Fertilizer Recommendation for Flower Plug: Home Guide project itself. The relevant product exists in android platform same as author project. In this section, author will list the relevant products and how it is differentiated from the project that author progressing on.

2.7.1 Fertilizers

This particular mobile application now exists in Android platform. Fertilizers application is able to perform several functions such as instruction on how to use that application, button to select the fertilizer, button to select the crops and lastly it will display the result of recommendation fertilizer for selected crops. However, this mobile application only has abilities on selecting the crops but not for flower plants.

Figure 1: Fertilizer apps

(Fertilizer, 2014)

2.7.2 Fertilizer Removal

The system in this mobile application is completely different. This application comes with built-in calculation adjusters that make it easy to scale how much a fertilizer need for a crops. It is an apps that is able to find alternative to removal surplus fertilizer if absent of certain nutrient besides being an apps that is able to convert measuring scale for farming purpose. Furthermore, this application also has website that are explain their current doing. However, this mobile application only has abilities on calculating the fertilizer needed for plants not for flower plants same as fertilizer mobile application.

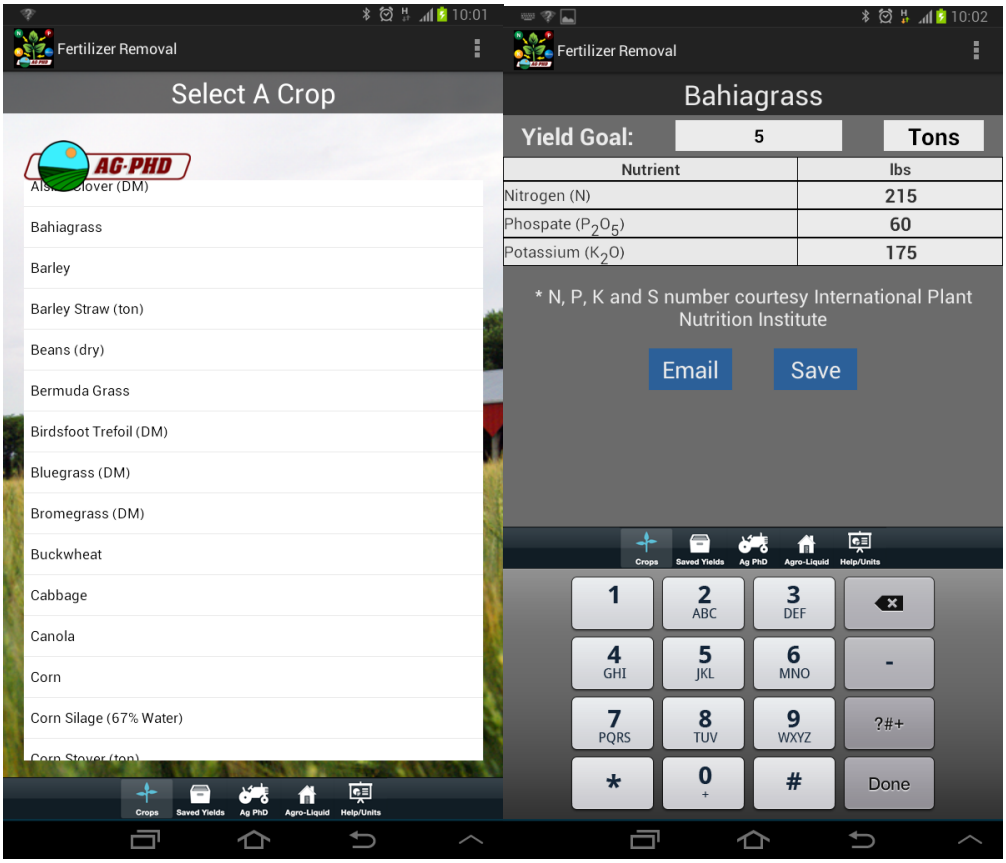

Figure 2: Fertilizer Removal Apps
(http://global.britannica.com/Ebchecked/topic/205346/fertilizer)

2.8 Comparing existing application.

Characteristic	Fertilizers	Fertilizer Removal
User Interface	Complex and the color are too bright.	Complex
Functionalities	Search and recommendation	Calculation
Scope of Content	Niche (i.e. crops)	Open/General
Visibility	Free	Free

Table 1: Comparisons

For this section, the author will compare two existing mobile application that related to the project her progressing to which are fertilizers and fertilizer removal apps. This current project is one of closet competitors to the current project that is being proposed.

However, these current application do not have a recommendation for flower plants in order to help a housewife especially to obtain what kind of fertilizer needed for theirs flower plants to make it blossom because the main focus for fertilizer apps is to recommend what kind of fertilizer needed for the chosen crops while fertilizer removal apps only focus on how to calculate the nutrient for a crops.

Besides that, these apps are rather not user friendly, the design appears also to be complicated and messy especially fertilizers mobile apps. As we can see, the interface of fertilizer apps is messy and makes the user confuse because of the color.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Research Methodology

Research methodology means the processes that are used to gathering the data and information to resolve the business decision making. The methodology also includes publication research, survey, interview and also others techniques. It also may contain both current and important information. “Systems development life cycle (SDLC) is a large of business scale where it will develop large scale useful business systems in an age” (Elliott et al. 2004).

System development life cycle also known to as the application development life-cycle is a term used in information system, system engineering and software engineering to describe a process for planning, creating, testing, and deploying an information system. The systems development life-cycle conception applies to a variety of hardware and software configurations, as a system can be composed of hardware only, software only, or a grouping of both.

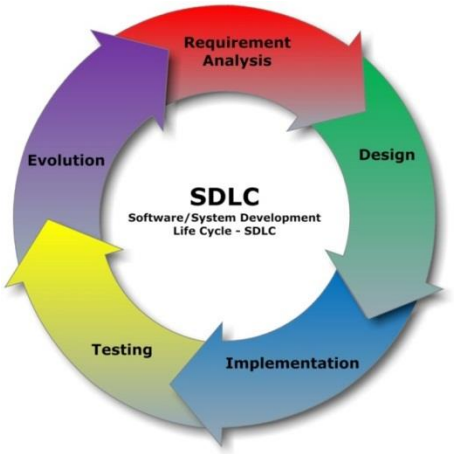

Figure 3: SDLC Methodology

3.1 Development Methodology

There are several type of system development life cycle (SDLC) can be used for research methodology in this project. Based on figure 3, author had chosen prototyping methodology for her project because it will continually performed the analysis, design and implementation phase in a cycle until it completed. Prototype methodology also helps the author to understand user's requirements at an early stage of development and also becoming very popular as a software development model nowadays.

There are various benefits of using prototype methodology and one of it is prototype methodology lets users to identify the difficult functions or confusing data in this project. It can also notice the missing functionality in the project to be identified easily. Prototype methodology is the perfect tie for this project compared to waterfall methodology because of the dateline for the project delivery is short – about 7 to 8 months only and by using this method; it will provide a minimal amount of structures.

The project will be divided to four main phase, as illustrated in figure 4.

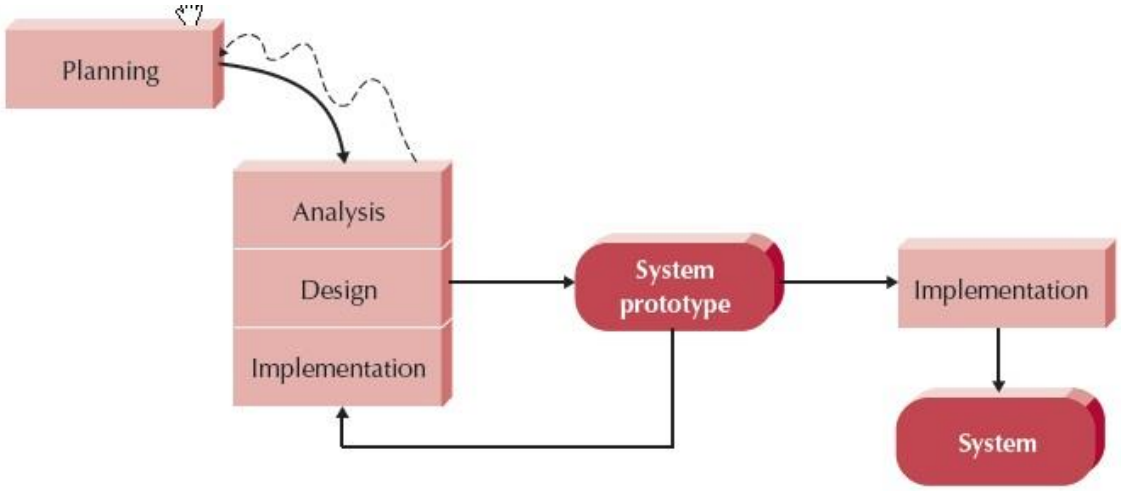

Figure 4: Prototype research methodology

- Planning phase

A feasibility analysis in ensuring a smooth development has to be conducted before mobile application is able to be developed. A proper planning in ensuring a successful development of the application has to be done. This includes the development of the Key Milestones as well as Gantt Chart where both of these can become a reference in ensuring the completeness of every single task on particular time frame.

- Analysis phase

In this phase, author has gathered all the information that needed for this project by doing an interview, survey and also through browsing internet. An interview is a typical part of qualitative research so author make a decision to do an interview at Tapak semaian, Seri Iskandar, Perak to get the right information before author can go to the next phase. The question that been asked related to the problem that faced by users regarding the recommendation for the right fertilizer that user need to use for

their flower plants. All the information regarding the project is collected during the interview session will be used as a reference.

Beside the interview, the past research paper related to the project also important in this phase. The information from past research paper can be a reference as well to make author's project more intelligent from the existing system.

In addition, author also collects the information through internet by searching the information and data needed for this project using Google, Yahoo and etc. By using the different platform for searching the information, author will get more information to be evaluated

- Design Phase

During this phase, there are several number of design process will occurred. Issued such as inputs, outputs and functionality are addressed during design phase. The resulting design must meet or surpass the product specifications developed. In this phase, it is not only the design needs to meet the functional requirements, but it must also meet the form and fit requirements driven by the users. The interface will be design during this phase according to the requirement get from analysis phase.

- Implementation phase

After the system has been designed, it must be implemented. In this phase, it will step in by programming or coding the design specification into file files called source code (Crater, 2011).

3.2 Tools and Equipment Used

Hardware and software used in this project:

HARDWARE

- ✓ Device
- ✓ Laptop

SOFTWARE

- ✓ Firebase
- ✓ CSS
- ✓ Adobe Photoshop
- ✓ Phone gap

3.3 Gantt Chart and Key Milestones

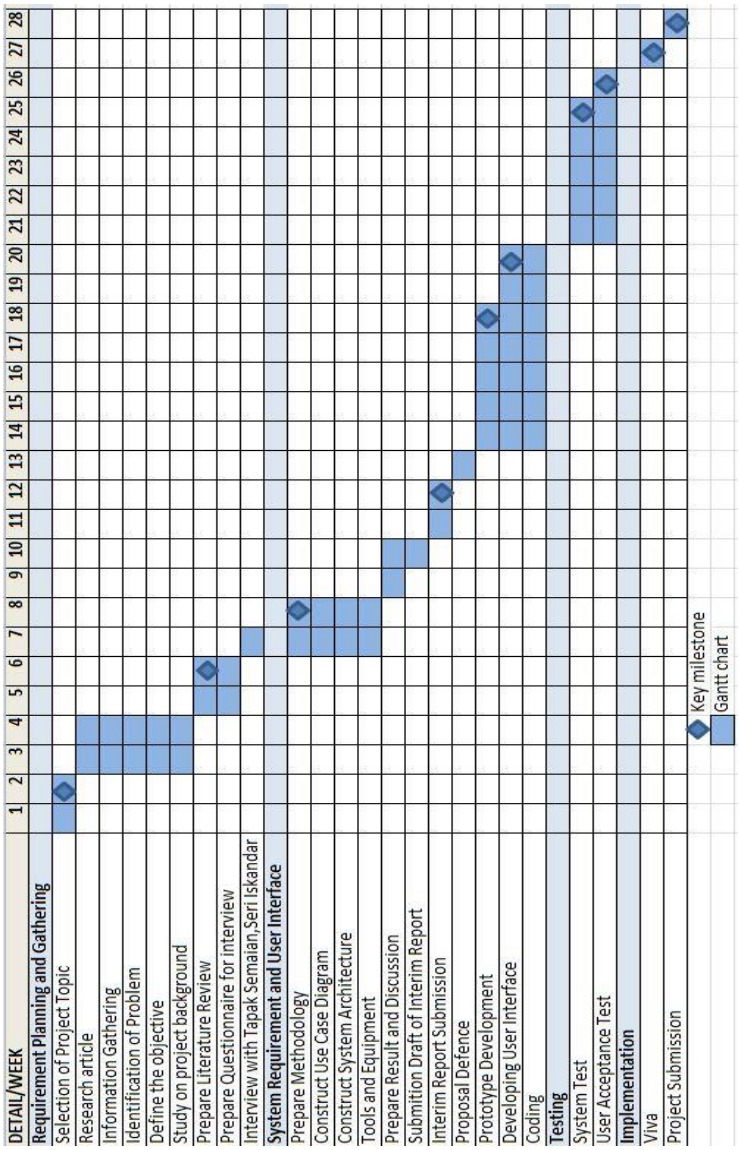

Figure 5: Gantt chart and Key Milestone FYPI & FYPII

3.4 Use Case Diagram

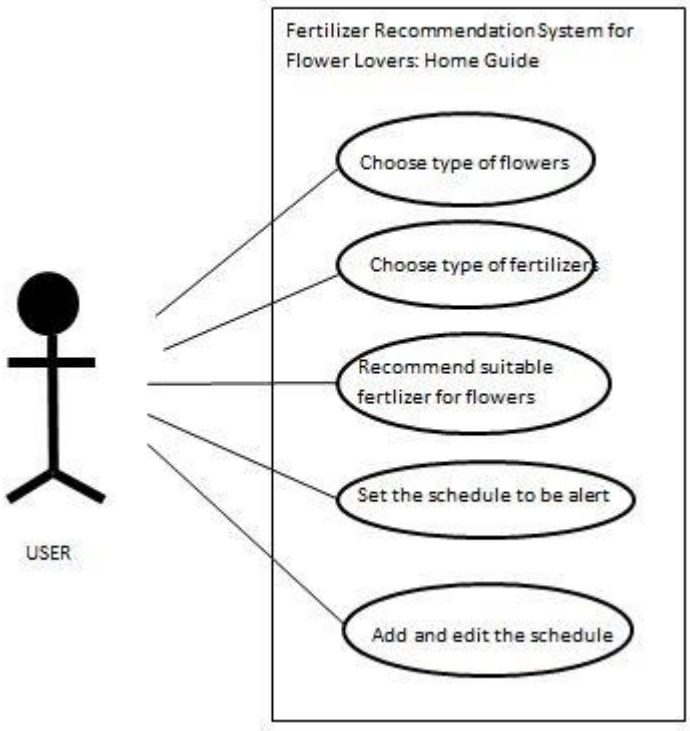

Figure 6: Use Case Diagram

Use cases are used at a complex level than within software engineering, often demonstrating mission goals. The comprehensive requirements may then be taken in System Developing language (SysML) or as predetermined statements. A use case is a set of scenarios that describing an interaction between a user and a system. Figure 6 show that in this project, it is only involve one type of system user which is the user himself.

3.5 System Architecture Diagram

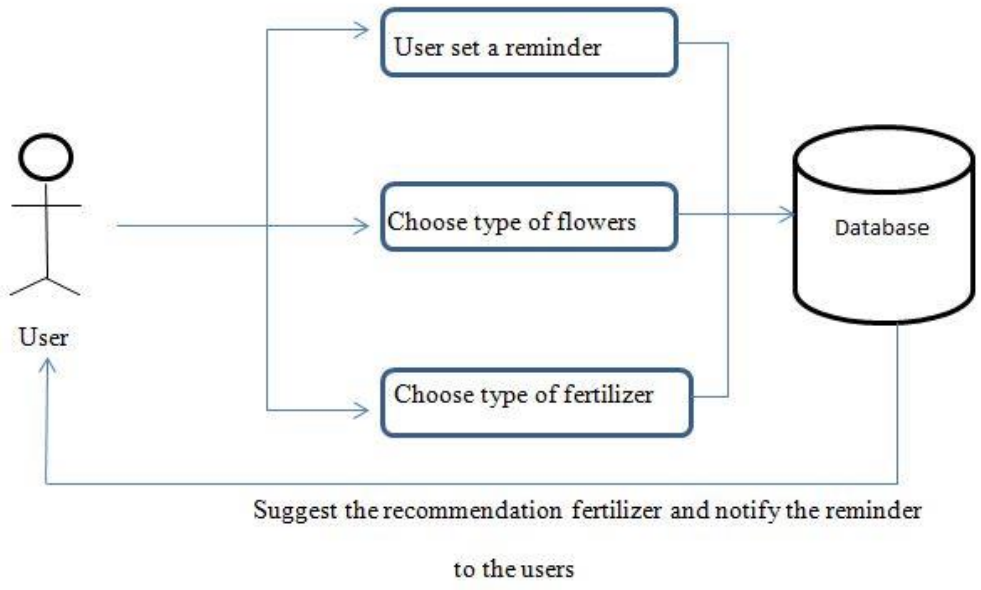

Figure 7: System architecture

System architecture is relates to how the system is going to relate with other components in the project. Figure 7 show that the system first recognized is connection between the d users will connect to the mobile application to extract the recommendation of fertilizers from the database.

The record are extracted and stored in an internal database named Fertilizer Database. The system then will use the details based on the data stored to recommend to the user what type of fertilizer is needed for a specific flowers that the user input. User also can set the notification to make sure user feeding their flower in an accurate time includes watering the plants. The reminder also will alert the user if the fertilizers is about to finish. User will refer the time frame for fertilize their flower after they choose the type of fertilizer they wanted to use and it will display how long it will take for next fertilizing time.

CHAPTER 4

RESULTAND DISCUSSION

4.1 Introduction

Being aware of the small number of mobile apps being developed in the agriculture industry, one mobile application that that may be developed that related to this is the "Fertilizer Recommendation System For Flower Lovers: Home Guide".

Basically, this project will be based on the study of the usage of mobile app for agriculture industry in general or more specific for flower lovers. The "Fertilizer Recommendation System For Flower Lovers: Home Guide" will use Android operating system for its operations as Android has large number of users thus it would be more users to download and use the application compared to other operating systems.

The main parts of this mobile application are providing information regarding the fertilizer suitable for flower plant and the notification to alert the user's .In this Chapter 4, the result of the system development is discussed in details.

4.2 System Interfaces Screenshots

The system interface divided by two parts which are the user site (mobile application) and administrator site (web application). The user site was developed by using Unity Software while the administrator site was developed by using Dreamweaver Software. The following figures show the interface's screen shots of the user site and administrator site.

4.2.1 Home Page and Main Menu

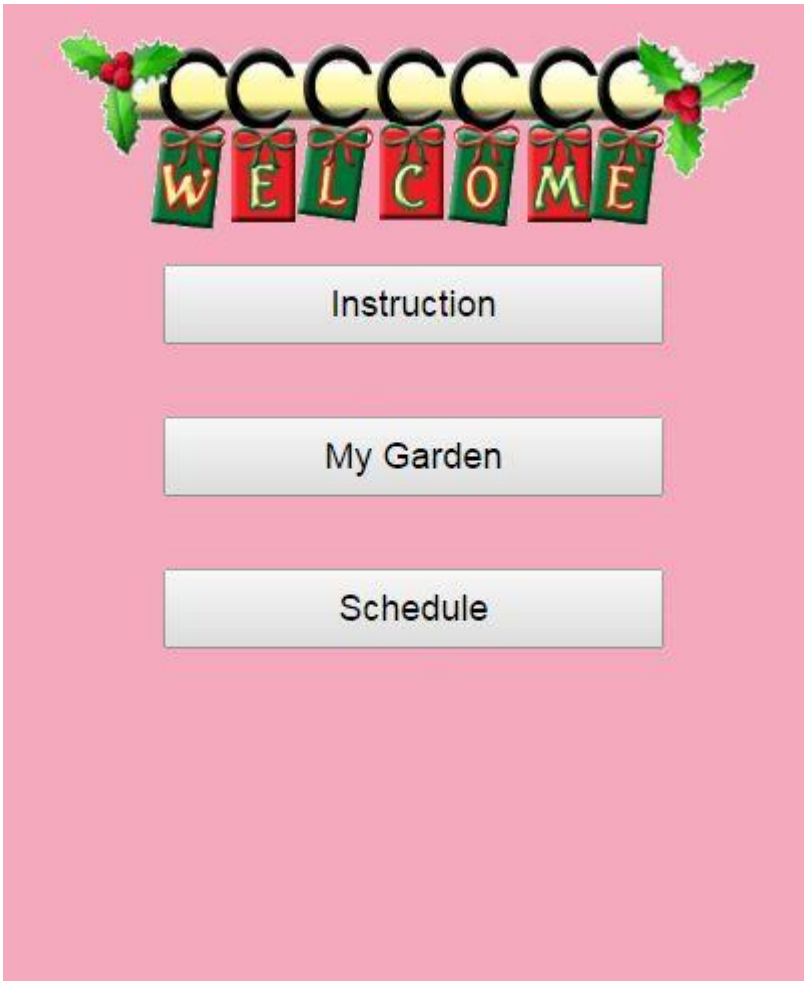

Figure 8: Home page

From the home page, user will then select the home page buttons that consist of about an instruction on how to use the application, my garden that consists of type of fertilizer and the type of fertilizers and lastly schedule button.

Figure 9: Instruction

From the instruction button, users will then select the “My garden” and also “schedule” button which is will give the instruction on how to use the application. Each of the buttons will deliver the respective information about the instruction.

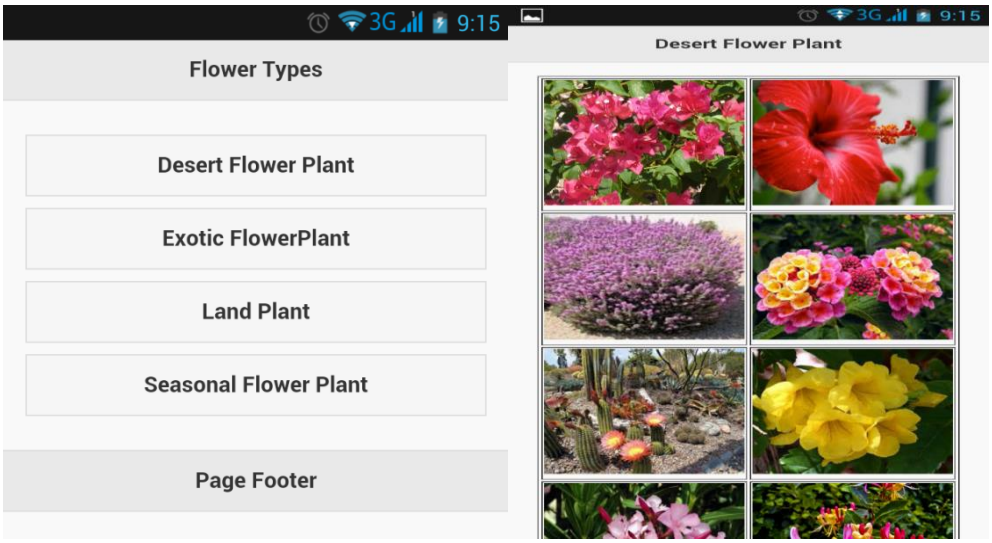

Figure 10: My Garden page

From the “My Garden”, users will select the type of flower they want to planting in their garden and it will display the general information for each flower after click the image of the flower. The general info will display the right information of the flower and also user can choose the type fertilizer whether they wants to use organic or inorganic fertilizer for their plants. After choosing the type of fertilizer, it will display the recommended fertilizer that are suitable for selected flower.

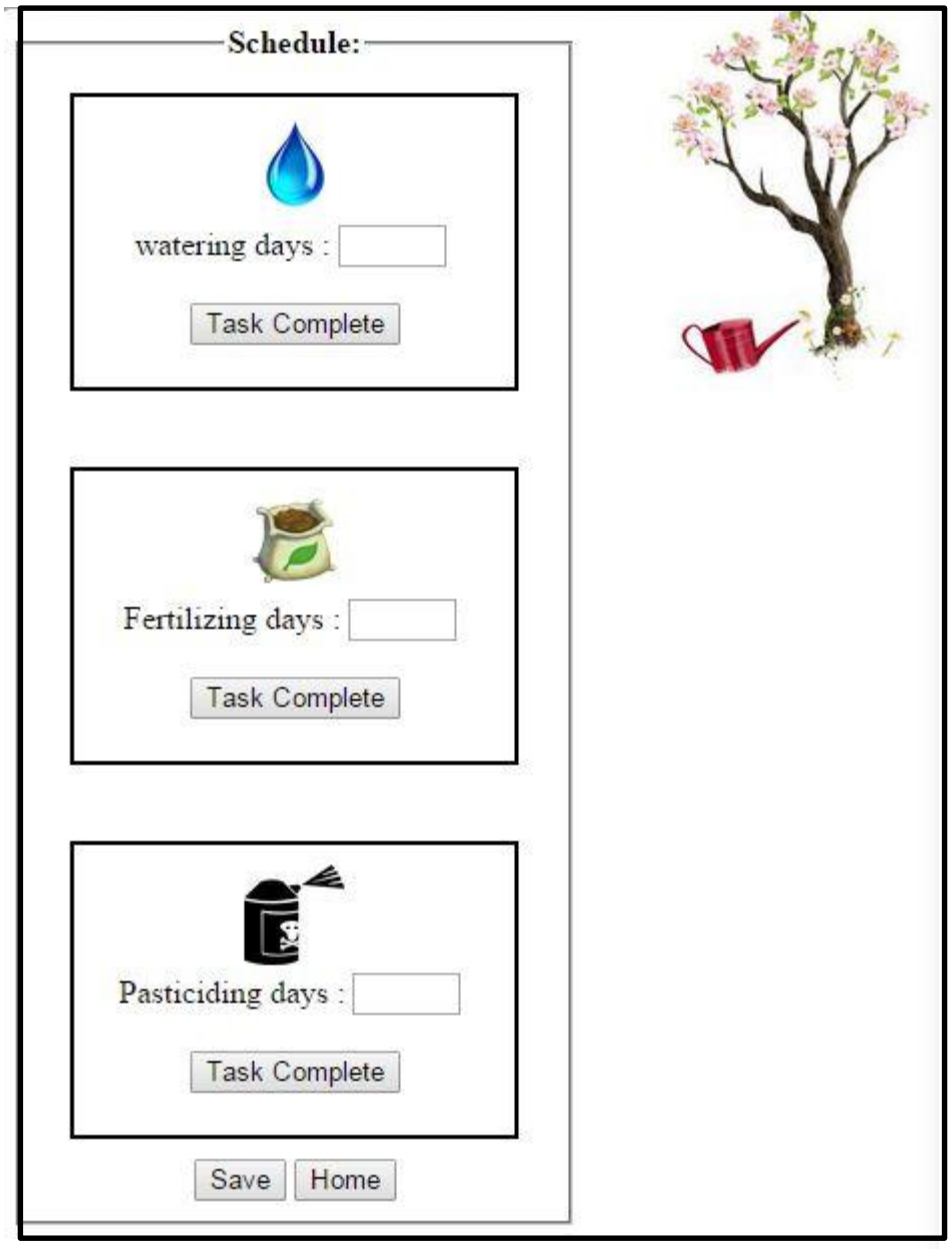

Figure 11: Schedule page

For this section, user will be notified when they need to watering, fertilizing and pesticiding their flower by insert how many days for them to be alert. By having this notification alert, user will be more alert to take care of their flowers. It is also will help the flower more health because the user not put the fertilizer too much or too less for their flower plants.

4.4 Testing

4.4.1 Functionality Testing

The purpose of the system testing is to check the fulfillment of functionalities based on the requirement. There are several question need respondent to answer it. The main purpose of this survey is to get the feedback from user acceptance testing for this mobile application.

Functions	Expected Outcome	Testing Frequency	Testing Result	
			Success	Failure
Home page	This page will contain with instruction, my garden and schedule button.	10	10	
Instruction page	This page will contain the instruction on how to use the application.	10	10	
“My garden” page	In my garden page, it will display the type of flower for the user to choose it.	10	8	2
Fertilizer recommended	Fertilizer will be recommended when the user click the flower they want to planting.	10	10	
Schedule button	This page will contain with the schedule of the days for watering, fertilizing and pesticiding the flower plant.	10	10	
“home” button	Navigate to application homepage	10	10	
“Save” button	Save the date the users want to take care of their flowers and it will notify the users.	10	10	

"Task complete" button	User need to click "task complete" button when they complete watering, fertilizing and pesticiding their plants.	10	8	2

Figure 12: Functionality Test

Figure above indicate the result from the application functionality test. The test are focused on four major section which are "Home page", "My Garden", "Schedule" and "Task Complete". The most successful functionality is "instruction" and "Schedule" as recorded 100% success rate. The least successful functionality is "task complete" as only recorded 60% success rate.

4.4.2 User Acceptance Testing (UAT)

User Acceptance Test is a test that is conducted in order to determine the efficiency of the application. This testing is conducts on the flower lovers after the development of this application is complete. The criteria that will be tested in the user acceptance test are understandability, learnability, attractiveness, and performance effectiveness.

Listed below are the objectives for the test:

1) To test users' acceptance to the application.
2) To test users understanding towards information in the application.

In order to achieve the objectives, survey checklist was prepared prior to the testing. Elements from the checklist were listed to observe about the users' acceptance towards the developed application.

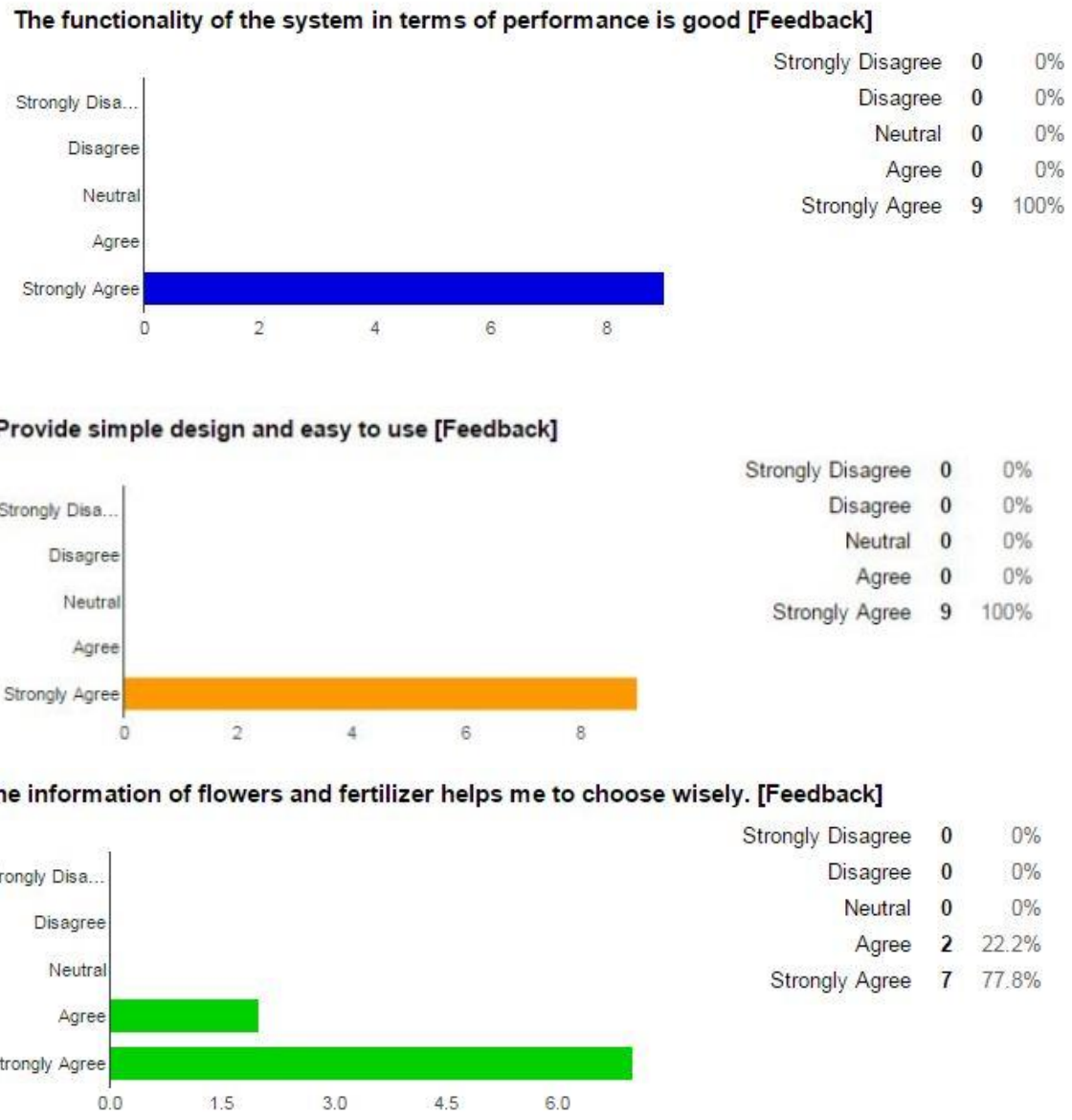

Figure 13: User Acceptance Test

Above figure shows 9 respondents taking part to testing this application. Based on the user's participation in the activity, it can be concluded that they can use and accept the application very well. They can follow the simple instruction given and none of them withdraw from the activity. On the other hand, the result also showed that all the users agreed that this application is very helpful in order to hel the novice baker or

beginners. They also comment that the apps can improve more in terms of the functionality and features in the future.

4.5 How System Will Help the Operations

The system will help the flower lovers in giving the information to the user of the system regarding the suitable fertilizer for their plants as well the user can customize their fertilizer. Besides that, a part of recommended fertilizer details, the user of the system also will be able to view the details of a fertilizer needed for a specific flower. This system application may benefit the user especially the new flower lovers and planters as they had lack information regarding the fertilizer should they used. By having the notification, user might alert when they need to take care of their flower plants.

4.6 Object Recognition Method

To enhance the usability and performance of the system, the object recognition method should be developed in the future. The object recognition method is basically a new feature which the user of the system will be able to retrieve the information for example the information of flower seed's condition by snapping of its picture by using the built-in photo camera of mobile phone itself. If this feature is introduced the gardener or planters may be able to check the condition of flower seed immediately

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

As for conclusion, “Fertilizer Recommendation System for Flower Lovers: Home Guide” will provide the correct fertilizer recommendation for the type of flower are chooses by the flower lovers which is the important reasoning elements this project that need to be identify. Each flower have their own reasoning elements such as Adenium, has two categories of fertilizer which are organic and inorganic.

Besides that, this mobile application would be supportive for all the users as it could customize all related fertilizer stuff. Furthermore, this system has the functionalities that have been designed to meet the project’s objectives and solve the problem statements. Moreover, this project will be a good project for the entire expected user; when they wanted to use a mobile application to find the suitable fertilizer for their plants.

In this project report, it explained the details about the project itself which are project abstract, background of study, problem statements, and objectives. Other than that, the methodology also has been selected in order to develop the system which is the Prototype model. By the end of the day, this mobile application ―Fertilizer Recommendation System for Flower Lover: Home Guide should work fine and meet the user’s requirements.

5.2 Recommendation

This “Fertilizer Recommendation System for Flower Lover: Home Guide” may be added with the new features that may help the users more than what the system offers now for example by adding the objet recognition method. Furthermore, other than object recognition application in this system, the developer may add the voice recognition application in order to enhance the user’s satisfaction and experience when using the system.

Besides that, this application also may added with the location where are the nearest shop or any suggested online shop for user to easy get the right fertilizer for their flower plants. On top of that, this system may also be officially introduced by Malaysian Government in order to promote the usage of the system by the users.

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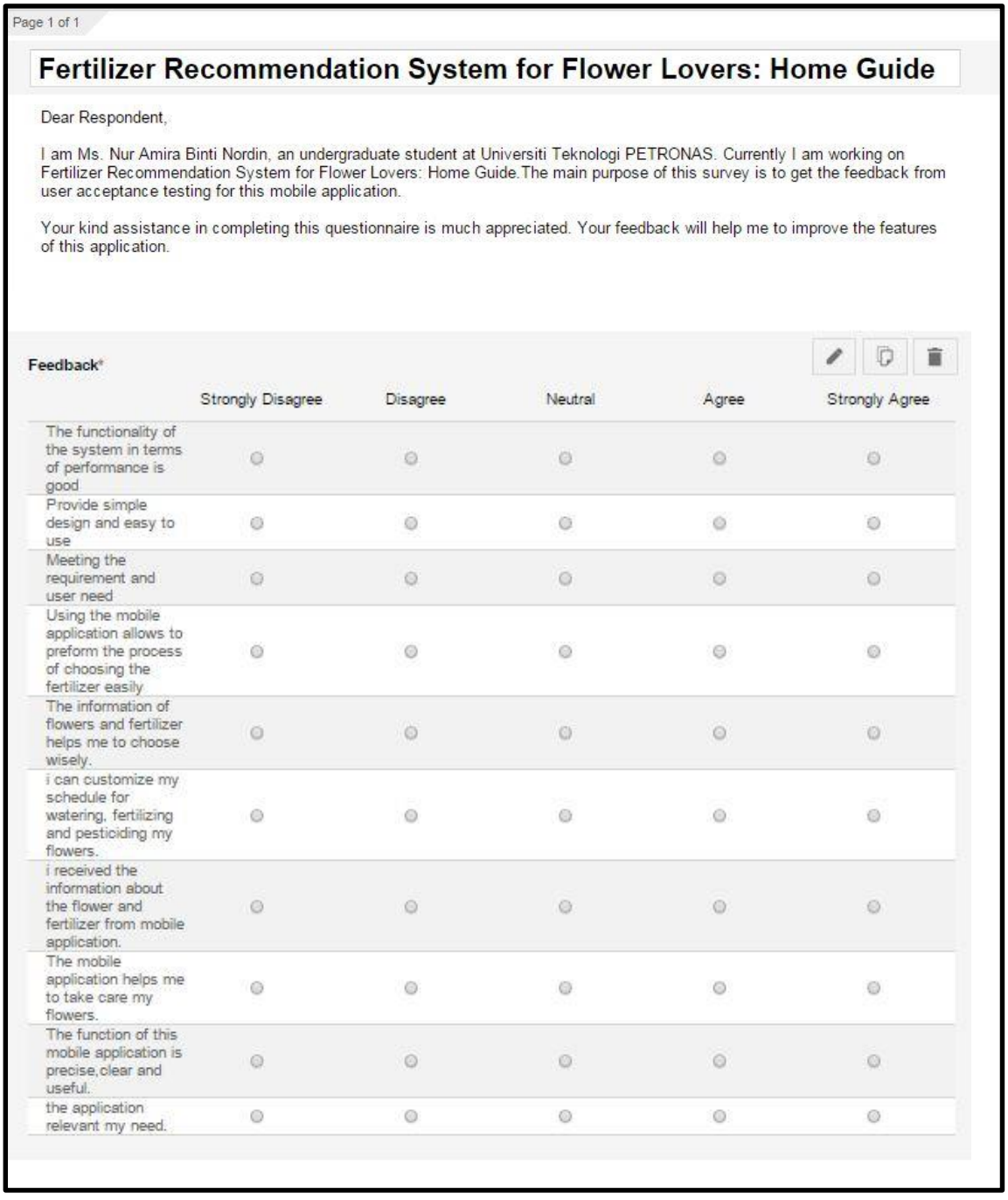
APPENDICES

User Acceptance Test Form



Page 1 of 1

Fertilizer Recommendation System for Flower Lovers: Home Guide

Dear Respondent,

I am Ms. Nur Amira Binti Nordin, an undergraduate student at Universiti Teknologi PETRONAS. Currently I am working on Fertilizer Recommendation System for Flower Lovers: Home Guide.The main purpose of this survey is to get the feedback from user acceptance testing for this mobile application.

Your kind assistance in completing this questionnaire is much appreciated. Your feedback will help me to improve the features of this application.

Feedback*

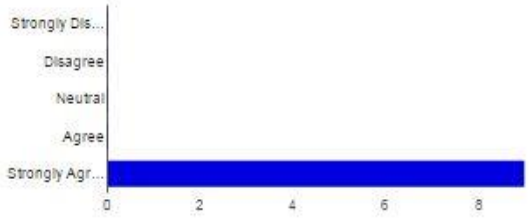
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The functionality of the system in terms of performance is good					
Provide simple design and easy to use					
Meeting the requirement and user need					
Using the mobile application allows to preform the process of choosing the fertilizer easily					
The information of flowers and fertilizer helps me to choose wisely.					
i can customize my schedule for watering, fertilizing and pesticiding my flowers.					
i received the information about the flower and fertilizer from mobile application.					
The mobile application helps me to take care my flowers.					
The function of this mobile application is precise,clear and useful.					
the application relevant my need.					

9 responses

Publish analytics

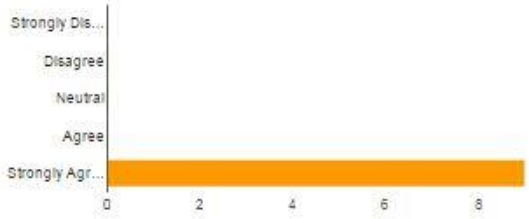
Summary

The functionality of the system in terms of performance is good [Feedback]



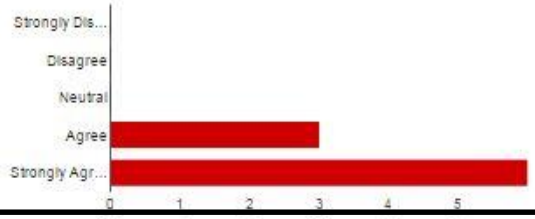
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	0	0%
Strongly Agree	9	100%

Provide simple design and easy to use [Feedback]



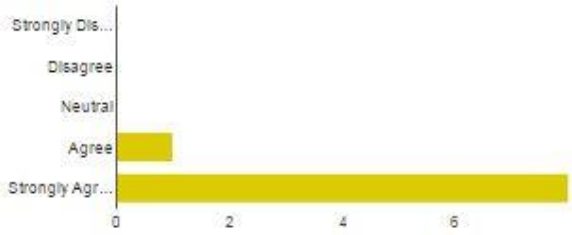
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	0	0%
Strongly Agree	9	100%

Meeting the requirement and user need [Feedback]



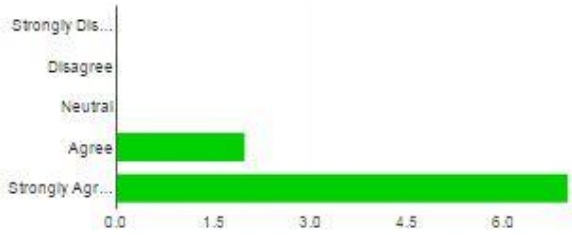
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	3	33.3%
Strongly Agree	6	66.7%

Using the mobile application allows to preform the process of choosing the fertilizer easily [Feedback]



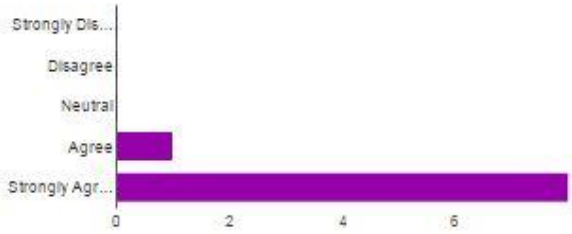
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	1	11.1%
Strongly Agree	8	88.9%

The information of flowers and fertilizer helps me to choose wisely. [Feedback]



Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	2	22.2%
Strongly Agree	7	77.8%

i can customize my schedule for watering, fertilizing and pesticiding my flowers. [Feedback]

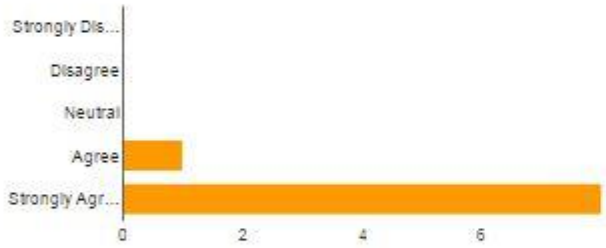


Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	1	11.1%
Strongly Agree	8	88.9%

i received the information about the flower and fertilizer from mobile application. [Feedback]

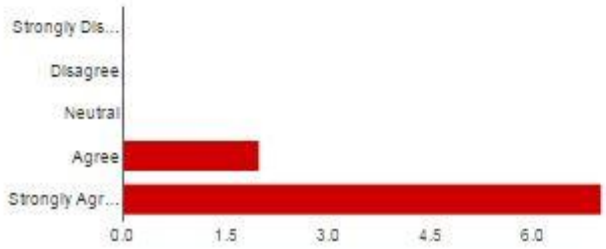
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	1	11.1%
Strongly Agree	8	88.9%

The mobile application helps me to take care my flowers. [Feedback]



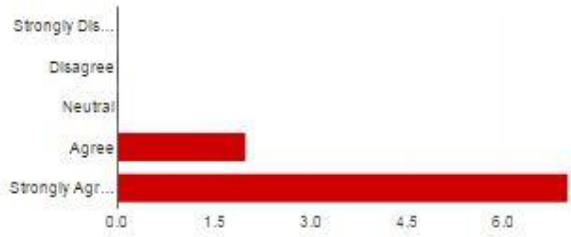
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	1	11.1%
Strongly Agree	8	88.9%

The function of this mobile application is precise,clear and useful. [Feedback]



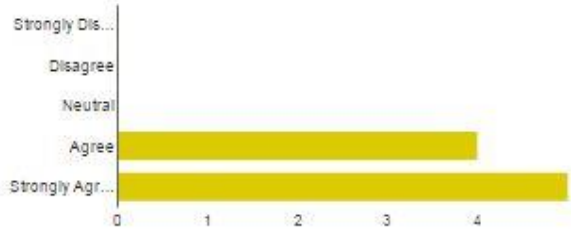
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	2	22.2%
Strongly Agree	7	77.8%

The function of this mobile application is precise,clear and useful. [Feedback]



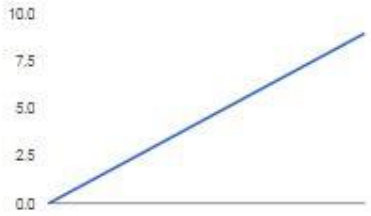
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	2	22.2%
Strongly Agree	7	77.8%

the application relevant my need. [Feedback]



Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	4	44.4%
Strongly Agree	5	55.6%

Number of daily responses



Example of common flower plants

Adenium

Orchid

Rose

Ixora

Hibiscus

Bougainvillea

Example of fertilizer