PADDY FIELD FARMER FERTILIZERS SYSTEM

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BORANG PENGESAHAN STATUS TESIS

JUDUL: PADDY FIELD FARMER FERTILIZERS SYSTEM

SESI PENGAJIAN: 2015/2016

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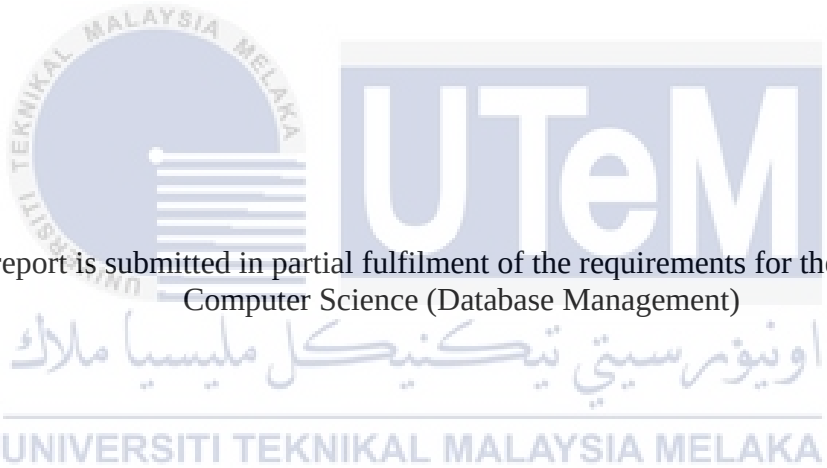
KHAIRULAIZZAD BIN MD JELAINI



This report is submitted in partial fulfilment of the requirements for the Bachelor of Computer Science (Database Management)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2016

DECLARATION

I hereby declare that this project report entitled

PADDY FIELD FARMER FERTILIZERS SYSTEM

is written by me and is my own effort and no part has been plagiarized without citations.

STUDENT : _____ Date: 15/3/2016

(KHAIRULAIZZAD BIN MD JELAINI)

SUPERVISOR : _____ Date: 15/3/16

(PUAN NOOR AZILAH BINTI DRAMAN@MUDA)

DEDICATION

Alhamdullilah, I have done complete this project successfully.

Dear my beloved parents Md. Jelaini Bin Kadir and Katijah Binti Bari, thank you for your support, encourage and inspire me during my difficult time to complete this project.

To my beloved supervisor, Pn. Noor Azilah Binti Draman@Muda, thank you very much for everything, your advice always inspire me for all time. So many knowledge that I learned from you about the process of system development and also for making a good project report.

To all my friends of BITD, who always give me support and knowledge to complete this project successfully.

Thank you so much.

ACKNOWLEDGEMENT

First of all, Alhamdulillah the system complete successfully without facing any problems.

I also wish to express our appreciation and gratitude to the supervisor of this project, Puan Noor Azilah Binti Draman@Muda for her advice, guidance, motivation, knowledge, patience and encouragement given during the period of project development.

My sincere thanks also go to all my friends for their continuing supports and encouragement all the way to accomplish my project especially my course mate at UTeM. I am grateful to my beloved family for their patience, and always supporting me throughout my life.

ABSTRACT

Paddy Field Farmer Fertilizers System are develop to ease the farmers of paddy field in Kuala Selangor area to make application of fertilizers and pesticides through online system and also admin who handle the application of fertilizers and pesticides every season of rice planting. The system is develop based on web application which require the farmers to register to the system and get the personal ID to use the system and all the online functions. This system are developed to replace the current system that are used manually by farmer and admin at Pertubuhan Peladang Kecil (PPK). Paddy Field Farmer Fertilizers System is a system that allow the primary user (farmer) to make application for fertilizers and pesticides through online system. It will also help the secondary user (admin) to manage the application from farmers and manage stocks of fertilizers and pesticides for each seasons. This system will help especially for managing the application of fertilizers and pesticides to be more systematic, and can also save the times. Agile development model is used as the project methodology for project development. Software involved in the project development of this system is Adobe Dreamweaver CS3, WampServer, Hypertext Preprocessor (PHP) and Oracle 11g, Windows 8.1 and Google Chrome as web browser.

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LIST OF ABBREVIATIONS

DBA	-	Database Administrator
DCL	-	Data control language
DDL	-	Data dictionary language
ERD	-	Entity relationship diagram
LAN	-	Local area network
PSM	-	Projek Sarjana Muda
RAM	-	Random access memory
PFFFS	-	Paddy Field Farmer Fertilizers System
SCM	-	Software configuration management
SDLC	-	Software development life cycle
PPK	-	Pertubuhan Peladang Kecil
SQL	-	Structure query language

CHAPTER I

INTRODUCTION

1.1 Project Background

Agriculture Department is a department that manages all agricultural activities it is devoted to each state. The Department of Agriculture has established one organization called the Pertubuhan Peladang Kecil (PPK) which manages all activities of local agriculture by the town in the district. Under this organization, there is a special section for rice farmers who manage the application of fertilizers and pesticides, which are funded by the federal government. This system is develop to ease the farmers of paddy field in Kuala Selangor area to make application of fertilizers and pesticides through online system and also admin who handle the application of fertilizers and pesticides every season of rice planting. The system is develop based on web application which require the farmers to register to the system and get the personal ID to use the system and all the online functions.

1.2 Problem Statement

For current system, paddy field farmer have to apply for every new season rice cultivation to obtain fertilizer and pesticides from Pertubuhan Peladang Kecil (PPK). Paddy field farmer have to fill a form provided to fill in information such as rice acreage owned , state block of rice fields and farmers need to update this information every time the application for the new season rice cultivation. Through written application form always face the problem of the delay in submitting the application form to the farmer's leader, had lost form and also delays the management update the information obtained.

1.3 Objective

i. To develop an online system for paddy field farmer in Kuala Selangor district to make application of fertilizers and pesticides through online system.

ii. To ease admin of Pertubuhan Peladang Kecil (PPK) to manage the application from the paddy field farmer.

iii. To ease admin to manage stock of fertilizers and pesticides by seasons.

iv. To prevent paddy field farmer's data from lost.

1.4 Scope

1.4.1 System User

The system is an online system and have two users:

a. Paddy Field Farmer
   i. As internal users who need to register to the systems.
   ii. Able to insert, update, delete information data and information about paddy field that have.
   iii. Can make application of fertilizers and pesticides through system.
   iv. Can check the status of application where success or rejected.

b. Admin
   i. As external users that manage the several functions of system.
   ii. Able to process the paddy field farmer data where to update or delete.
   iii. Can manage the application of fertilizers and pesticides from paddy field farmer for every new season rice cultivation.
   iv. Can process the application where accept or rejected the application of fertilizers and pesticides from paddy field farmer based on regulations.
   v. Can manage and records the total stock of fertilizers and pesticides that are apply by the farmers through system.

1.4.2 System Module

a. Registration Module

i. Farmer need to register before using this system.

ii. Farmer need to login after registration success to able farmer use the systems. Username and Password will be used for login into the system.

iii. The system will be able to store, update and delete the information of paddy field farmer registration.

b. Application of Fertilizers and Pesticides Module

i. Farmer can made the online application of fertilizers and pesticides.

ii. Every application need action from farmer to state acreage owned and state block of rice fields.

iii. Every application have a status to inform back farmer whether every application success or failed.

c. Management Module.

i. Admin will handle every application of fertilizers and pesticides from the farmers.

ii. Admin will state the status application for every farmer.

iii. Admin will state all the information in receipt or form to paddy field farmer about fertilizers and pesticides that will receive.

d. Agriculture Module

i. Provide information about date rice cultivation, date of fertilizers and pesticides and date of harvest in Kuala Selangor district.

1.5 Project Significance

Paddy Field Farmer Fertilizers System is a system that allow the primary user (farmer) to make application for fertilizers and pesticides through online system. It will also help the secondary user (admin) to manage the application from farmers and manage stocks of fertilizers and pesticides for each seasons. This system will help especially for managing the application of fertilizers and pesticides to be more systematic, and can also save the times. It can also prevent from data lost.

1.6 Expected Output

At the end of the project, there is some expected findings that may be discovered. This system will help the farmer to make apllication of fertilizers and pesticides through online system and will hep admin of Pertubuhan Peladang Kecil (PPK) to manage farmer data by every season of rice planting.

1.7 Conclusion

In conclusion, farming systems need to develop based on online systems. It can reduce labour and can save time in any type of business such as application of fertilizers and pesticides. Paddy Field Farmer Fertilizers System will be developed with the systematic use of on-line platform to facilitate paddy field farmers apply fertilizer and pesticides as well as simplify and ease admin at Pertubuhan Peladang Kecil (PPK) to process the application of fertilizers and pesticides for each new season of cultivation.

In addition, the paddy field farmer's data who have been registered will be more secure when the data is stored in the system that is controlled by the database. Furthermore, this system can provide a module to become more then effective and efficiently services.

CHAPTER II

PROJECT METHODOLOGY

2.1 Introduction

This chapter will briefly explain on project methodology for Paddy Field Farmer Fertilizer System. Paddy Field Farmer Fertilizer System is developed based on web-based management and information system which requires the user to register the personal ID to use the system through online platform.

Paddy Field Farmer Fertilizer System is developed to ease the user, which involve admin and farmer to use the function that have in this systems. Farmer can make the application for fertilizers and pesticides through online by register into system than register the lot area of paddy field than can make an application of fertilizers and pesticides based on total area that farmer have.

Admin also have a function to manage farmer data, application data and make the data of application useful such as to count the stock of fertilizers and pesticides.

2.2 Methodology

Agile development model has phases about requirements, design, development and testing. In development phase, development team focus on new features to be developed. Consequence of it is late defect identification, reporting, fixing and re-verification of the defect. This defect cycle continues until the problems is fixed. In Database Life Cycle, there are several processes that need to be completed in order to develop Paddy Field Farmer Fertilizers System.

Agile methodologies is an alternative methodology to waterfall. It consists of a description on every steps of developing this project. There are includes Analysis, Design, Implementation, Testing, and Evaluation. Agile methodology will be used for the development of Paddy Field Farmer Fertilizers System which will give the advantage of the technology like an internet based system. Agile methodology model considered a very realistic development approach.

2.2.1 Analysis

i. At On this phase, the process of collecting and analyze information about the part of organization is needed to used and to be supported by the database system and use all the information to identify user requirements to develop a new system.

ii. Important data is collected from Pertubuhan Peladang Kecil (PPK) and then was analyze to identify the user requirements.

2.2.2 Design

i. In systems design part, the design functions and operations are described in a detail, including screen layouts of Paddy Field Farmer Fertilizers System, business rules, also process diagrams and other related documentation. The output of this part will describe the new system that will be develop as a collection of modules or subsystems of every function on Paddy Field Farmer Fertilizers System.

ii. Meanwhile, design elements describe the desired software features in detail information. Generally it include functional hierarchy diagrams, screen layout diagrams, all tables of business rules, business process diagrams, pseudo code, and a complete entity relationship diagram (ERD) with a full list of data dictionary.

2.2.3 Implementation

i. On this phase, Data Definition Language (DDL) is used to create database schemas.
ii. The focus of user is focus on Farmer and Admin of Paddy Field Farmer Fertilizers System.

2.2.4 Testing

i. The database system will works and run with intent of finding any errors for the database.
ii. In this phase, Paddy Field Farmer Fertilizers System will be test in every function depends on which user that log in into systems to see and test every function is functional or not and every testing will be recorded and then will be evaluate.

2.2.5 Evaluation

i. After all the phase completed, system ready to be delivered to the user to be evaluated.
ii. User will use this system based on their roles and user can use every function that have in the Paddy Field Farmer Fertilizers System.

2.3 Project Requirement

2.3.1 Software Requirement

Software	Purpose
Microsoft Project 2007	Project Management
Microsoft Word 2007	Project Documentation
PHP	Project Implementation
Apache	Server Connection
Oracle 11g, Xampp	Database application
Adobe Dreamweaver	Interface Designing and Implementation

2.3.2 Hardware Requirement

Hardware	Purpose
Personal Computer	Project development and documentation
LAN	Connection of the system
Cable	Intranet Connection
Printer	Print out report

2.4 Project Schedule and Milestones

Week	Activity
1 22-26 Feb	Proposal PSM : Submission & Presentation
	Proposal assessment and verification
2 29 Feb -4 Mar	Proposal Correction/Improvement Chapter 1
	List of supervisor/title
3 7-11 Mar	Chapter 1 (System Development Begins)
4 14-18 Mar	Chapter 1 & Chapter 2
5 21 - 25 Mar	Chapter 2
6 28 Mar -1 April	Chapter 2 Chapter 3

	Student Status
7 4-8 April	Project Demo & Chapter 3 Chapter 4
8	**MID SEMESTER BREAK**
9 18-22 April	Project Demo & Chapter 4
10 25 - 29 April	Project Demo & Chapter 4
	Student Status
11 2 - 6 May	Project Demo
	Determination of student status(Continue/Withdraw)
12 9 – 13 May	Project Demo & PSM Report
13 16 - 20 May	Project Demo & PSM Report
	Presentation Schedule
14 23 - 27 May	Project Demo & PSM Report
15 30 May -3 June	**FINAL PRESENTATION (PA)**
16	**REVISION WEEK**

6 - 10 June	Correction draft report based on supervisor's and evaluator's comments during the final presentation session. Submission overall marks to PSM/PD committee.
	FINAL EXAMINATION SEMESTER

2.5 Conclusion

As a conclusion, this chapter explain and focuses on project methodology that will be used to develop Paddy Field Farmer Fertilizers Management System. Agile methodology will be used to develop this system which the progress is start from the first phase until the end phase. Divided by 3 main phase which start from Requirement Phase and follow to next phase known as Design Phase then ended by Implement Phase. Every phase have several important tasks. It will help especially in develop this system.

Focusing on the repetition of work cycles as well as the functional product they yield, agile methodology are described as "iterative" and "incremental". This chapter also explains briefly on the system project management which include the software requirement and hardware requirement that will be used in developing this system, and every requirement is suitable based on project required. Besides that, this chapter also mention about schedule and milestones as guide while developing the system.

CHAPTER III

ANALYSIS

3.1 Introduction

System analysis mostly focus on identifying the problems that come from the system, implementation and the technical feasibility. The analysis is categorized for analysing systems that have the similar characteristics and the system to be developed. Collected all the relevant data or information is needed from many sources including experienced and new users to identify the needed of the new system.

Design and analysis is an important phase to develop the good system in order to meet the needed of the users. This process will determine the requirements of system development, and others that related. Design and analysis of system is the basis part that to ensure users to know about the system and find the appropriate inputs and outputs to the system.

The process of the analysis about Entity Relationship Diagram (ERD), Data Flow Diagram (DFD) and Flow Chart is created to obtain briefly about overview of how the database of the system is established. On producing process, the number of table that include in the database information system will be determined.

3.2 Problem Analysis

Problem analysis is the process of to understanding the real world problems and users' needs and also proposing abstract solutions to those problems. It gains better understanding, before development phase begins, and how the problem will be solved. Analysing problem is very useful for example when dealing with many technical problems or errors.

3.2.1 Current System Analysis

Analysis also performed with the aid of the Use Case and Activity Diagram. For current system, paddy field farmer have to apply for every new season rice cultivation to obtain fertilizer and pesticides from Pertubuhan Peladang Kecil (PPK). Paddy field farmer have to fill a form provided to fill in information such as rice acreage owned , state block of rice fields and farmers need to update this information every time the application for the new season rice cultivation. Through written application form always face the problem of the delay in submitting the application form to the farmer's leader, had lost form and also delays the management update the information obtained.

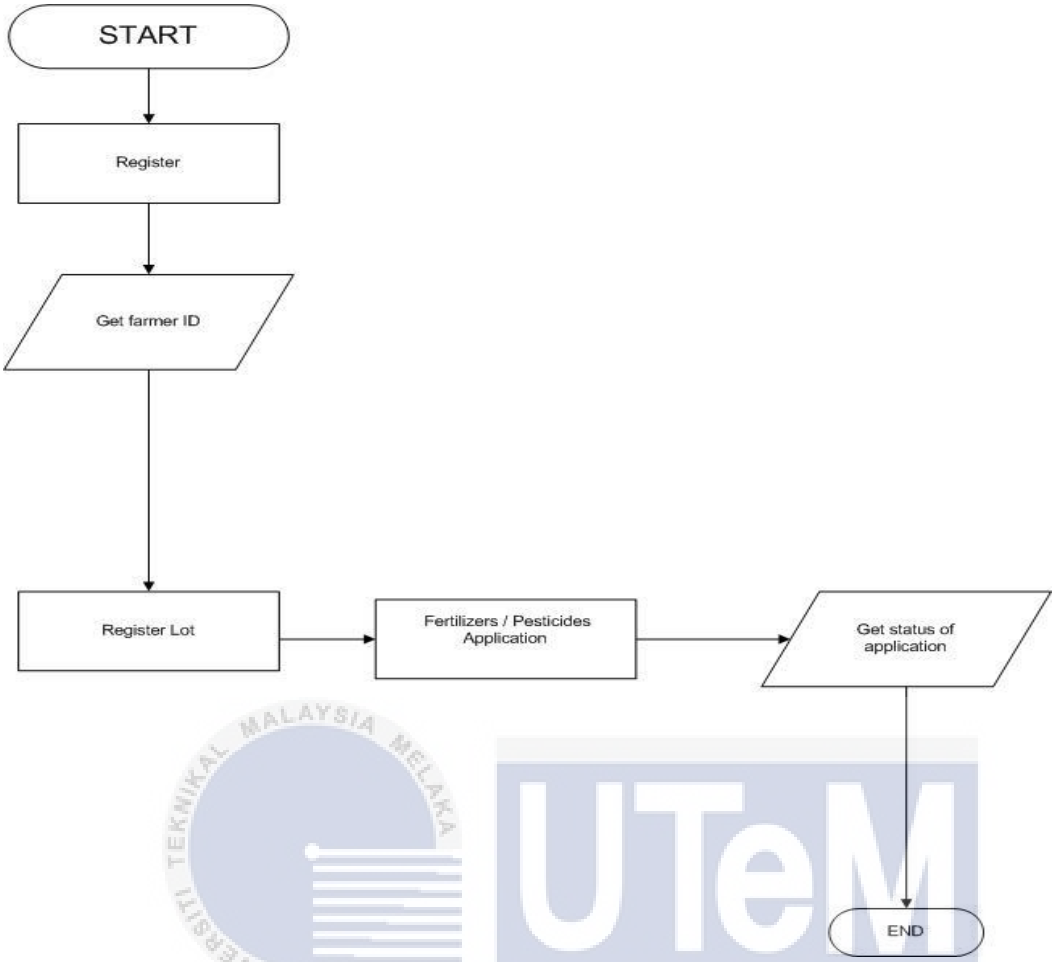


Figure 3.1: Flow Chart Current System

3.2.2 Flow Chart for the Proposed System

This section illustrates the Flow Chart and Data Flow Diagram (DFD) for the system to be developed. The flow chart below shows the users which include farmer and administrator activities regarding the system.

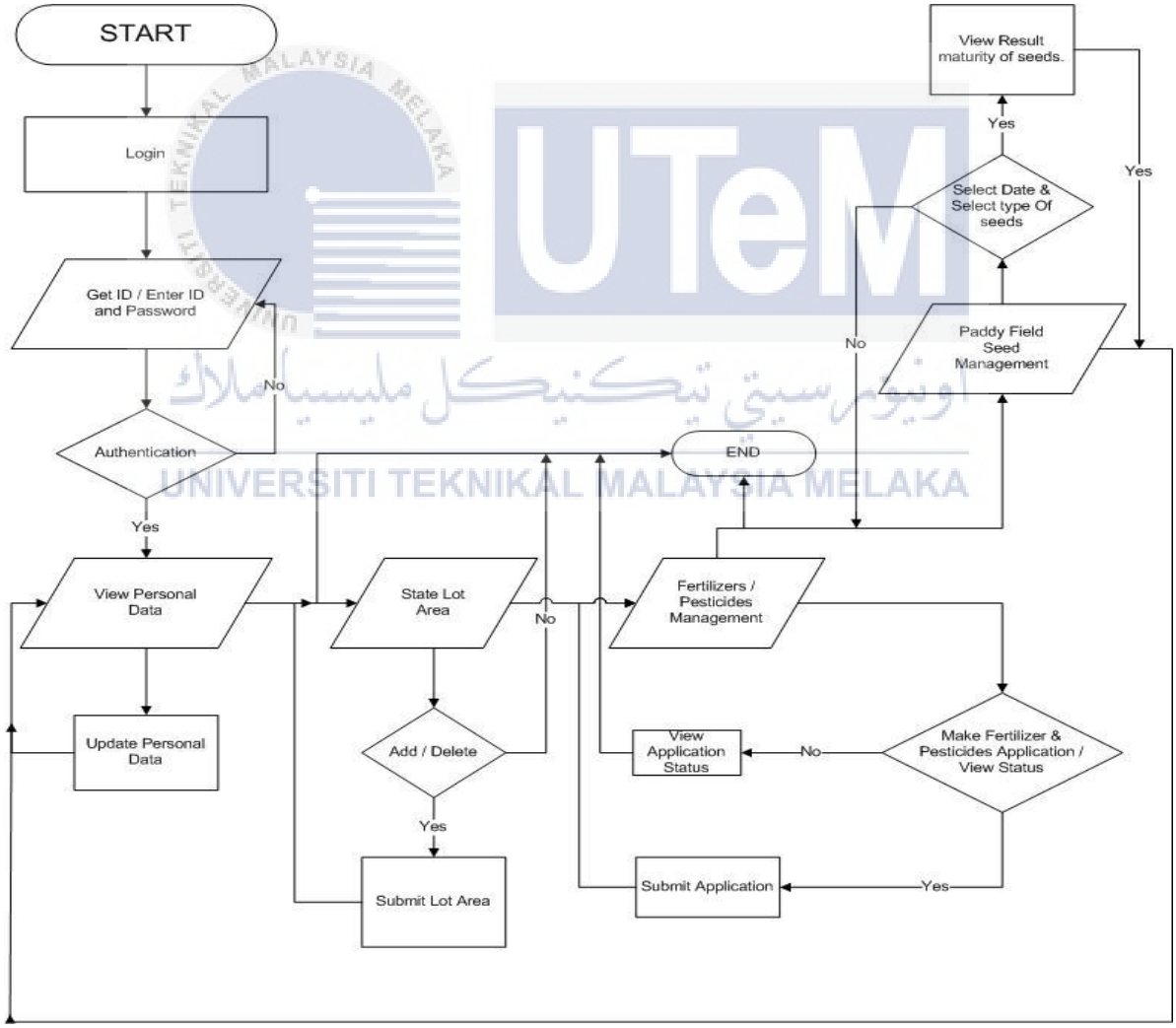


Figure 3.2: Flow Chart for Farmer

Figure 3.2 show the activity flow done by the farmer, farmer need to register for the first time to get a user ID. After farmer have their own user ID they can enter into system (login) and use all function that have.

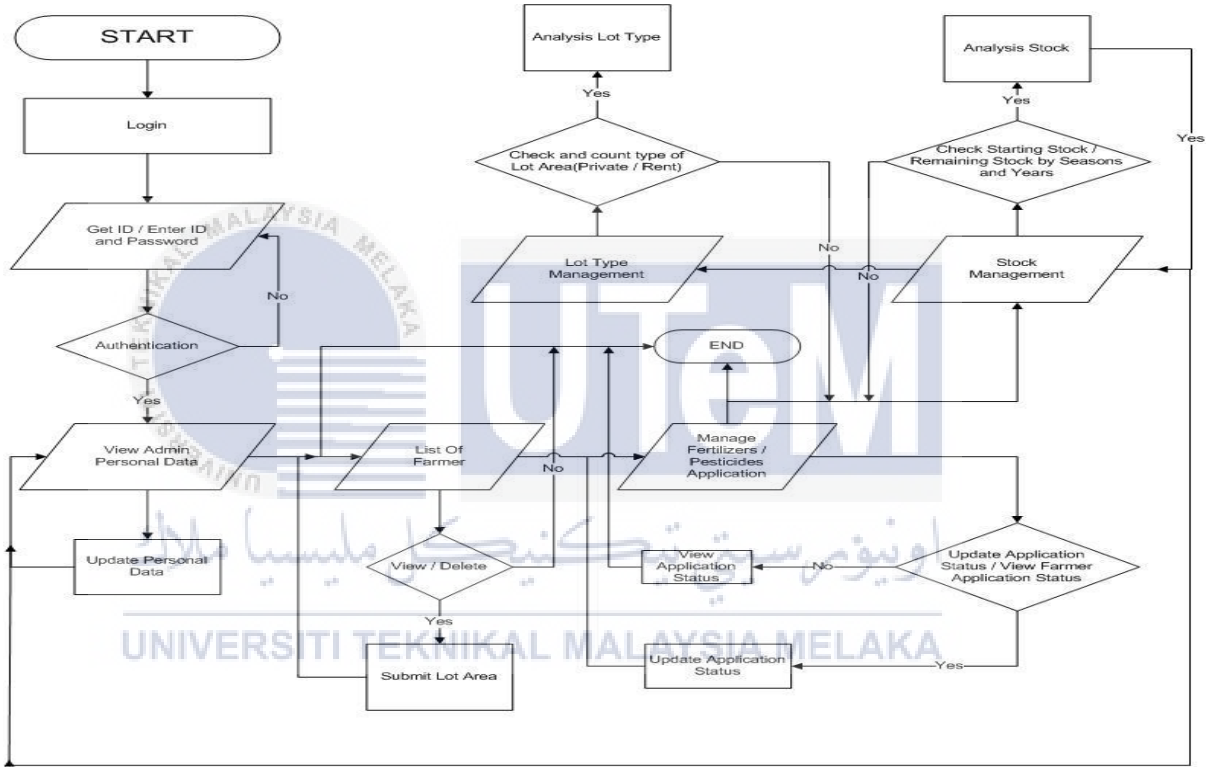


Figure 3.3: Flow Chart for Admin

Figure 3.3 show the activity flow done by the admin that registered to the system. By login to the system, they can manage farmer's data such as view list of farmer's that registered in system, manage fertilizers/pesticides application that made by farmer, manage stock and manage paddy field lot.

3.3 Data Flow Diagram (DFD) for the Proposed System

Data flow diagram (DFD) is the movement of data between external entities and also the processes and data stores within a system. Figure 3.4 shows the context diagram that overview the Paddy Field Farmer Fertilizers System. Figure 3.5 shows the DFD level 0 while figure 3.6 to figure 3.10 shows the DFD level 1 of the Paddy Field Farmer Fertilizers System.

3.3.1 Context Diagram of Paddy Field Farmer Fertilizers System

Context Diagram is an overview of an organizational system that shows the system boundaries, external entities that interact with the system, and the major information flows between the entities and the system.

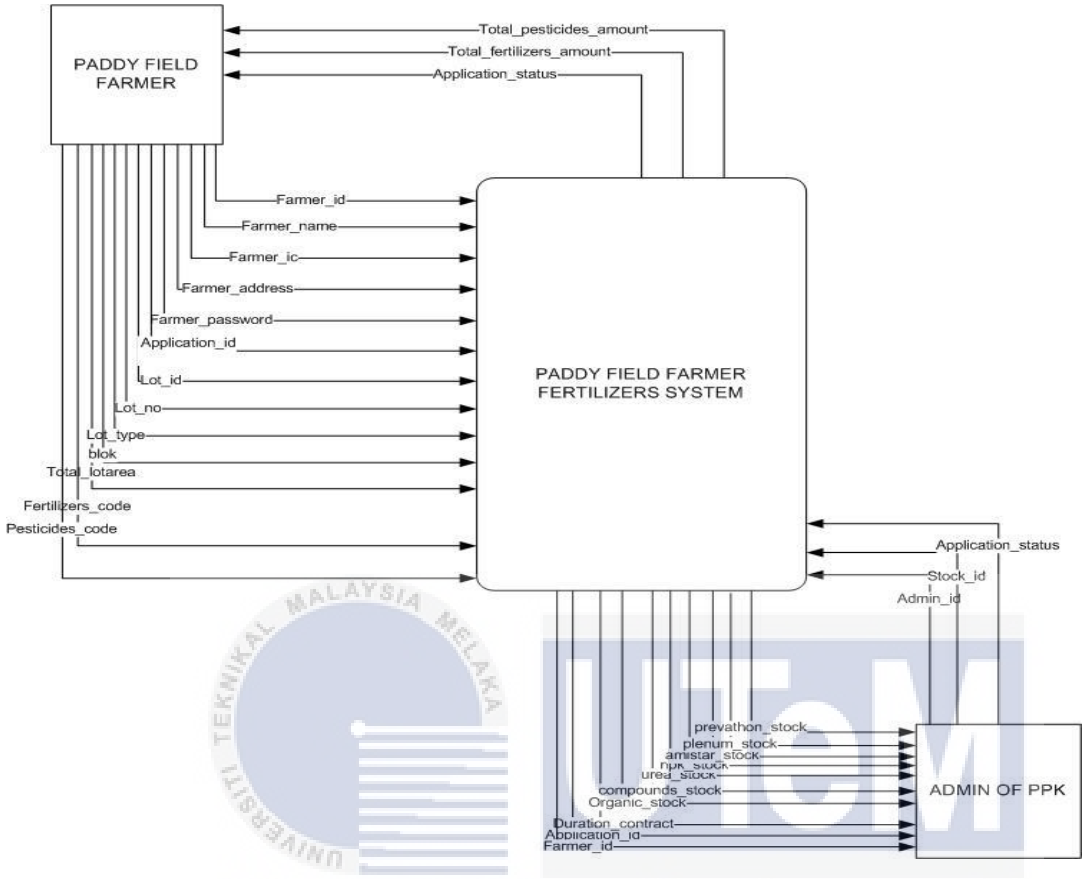


Figure 3.4: Context Diagram of Paddy Field Farmer Fertilizers System

3.3.2 Data Flow Diagram (DFD) Level-0

DFD level 0 represents a major processes of a system, data flows, and data stored at a high level of detail of the Paddy Field Farmer Fertilizers System.

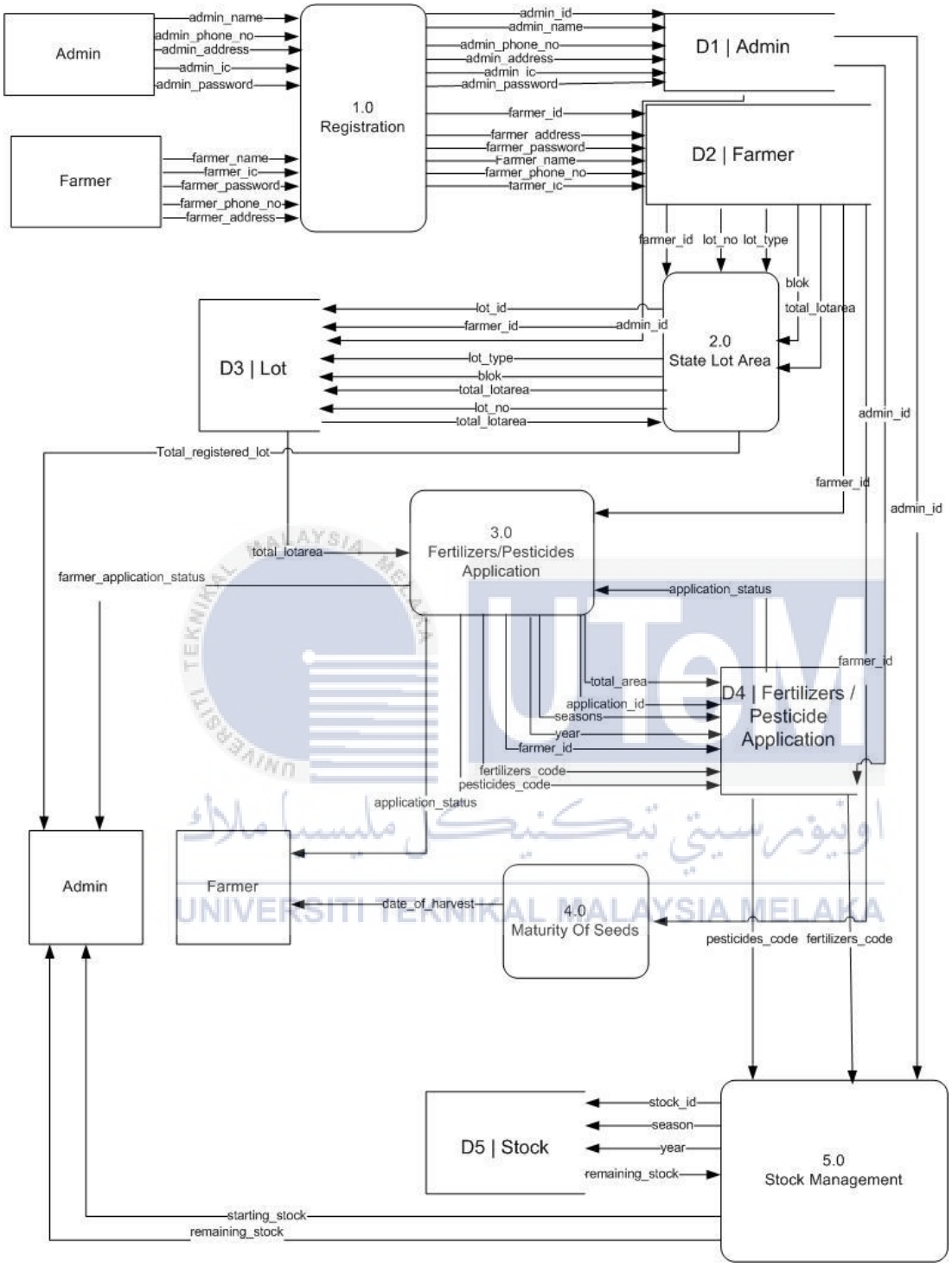


Figure 3.5: Data Flow Diagram (DFD) Level-0

3.3.3 Data Flow Diagram (DFD) Level-1 for Farmer Activity Process

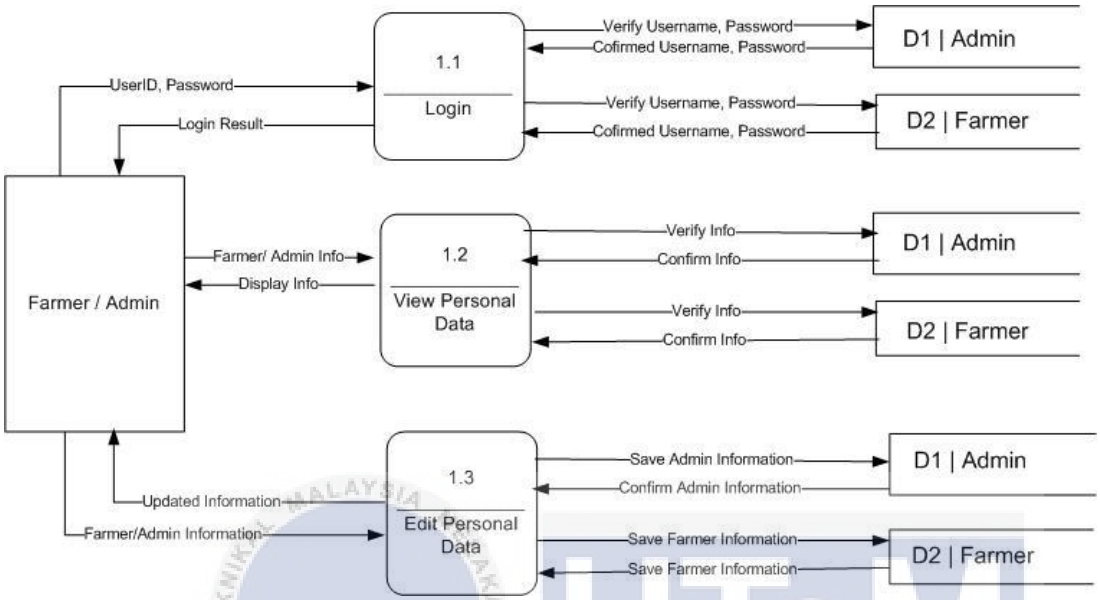


Figure 3.6: Data Flow Diagram (DFD) Level-1 for Farmer Activity Process

DFD level 1 for farmer activity process, shows the decomposition of process 1.0 from the level 0 diagram for Paddy Field Farmer Fertilizers System.

3.3.4 Data Flow Diagram (DFD) Level-1 for Farmer State Lot Activity Process

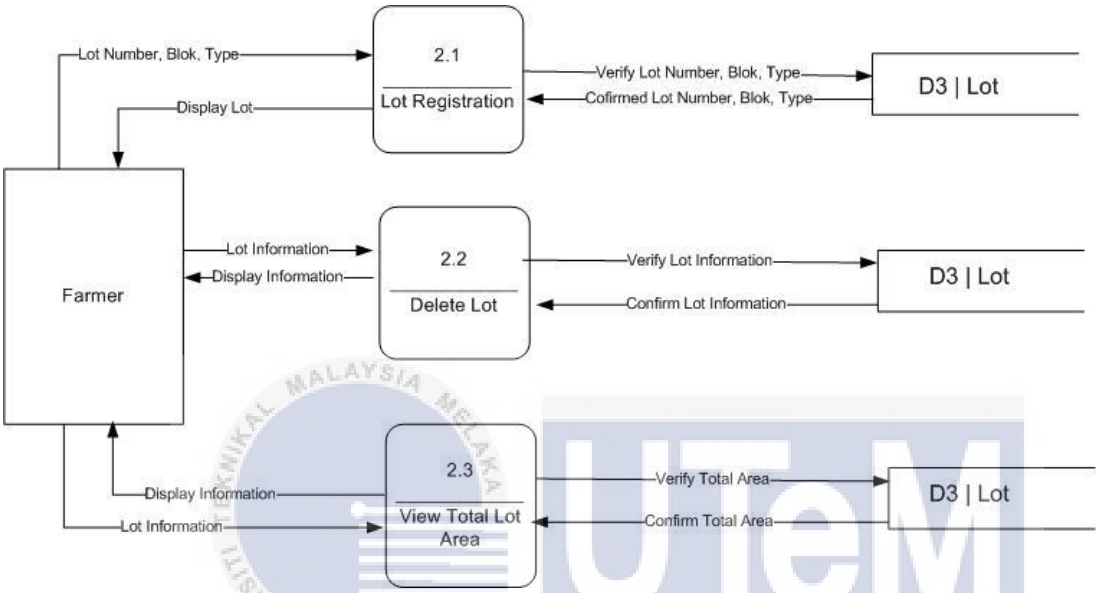


Figure 3.7: Data Flow Diagram (DFD) Level-1 for Farmer State Lot Activity Process

DFD level 1 for farmer state lot activity process, shows the decomposition of Process 2.0 from the level 0 diagram for Paddy Field Farmer Fertilizers System.

3.3.5 Data Flow Diagram (DFD) Level-1 for Farmer Fertilizers/Pesticides Application Activity Process

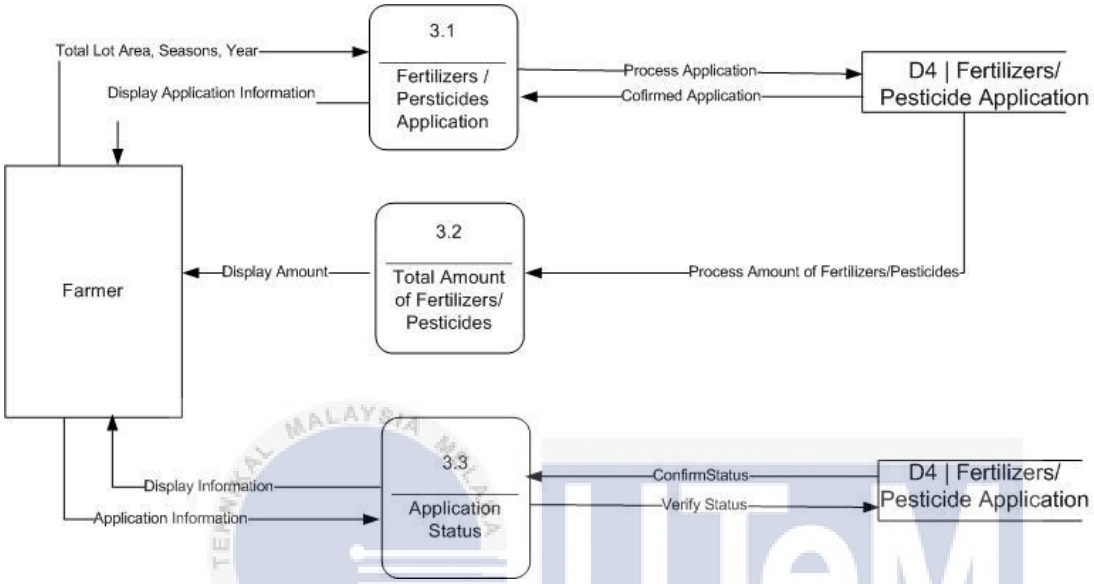


Figure 3.8: Data Flow Diagram (DFD) Level-1 for Farmer Fertilizers/Pesticides Application Activity Process

DFD level 1 for farmer fertilizers/pesticides application activity process, shows the decomposition of process 3.0 from the level 0 diagram for Paddy Field Farmer Fertilizers System.

3.3.6 Data Flow Diagram (DFD) Level-1 for Farmer Maturity Seeds Activity Process

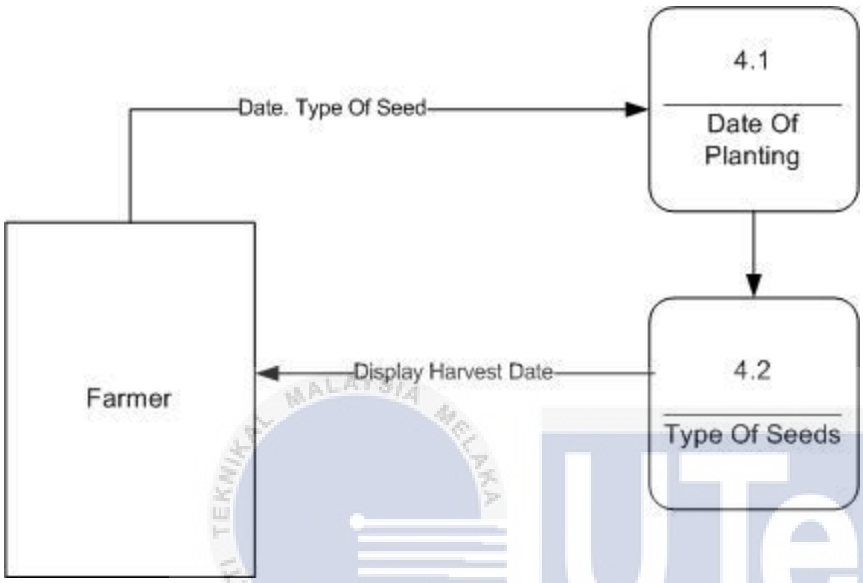


Figure 3.9: Data Flow Diagram (DFD) Level-1 for Farmer Maturity Seeds Activity Process

DFD level 1 for farmer maturity seeds activity process diagram, shows the decomposition of Process 4.0 from the level 0 diagram for Paddy Field Farmer Fertilizers System.

3.3.7 Data Flow Diagram (DFD) Level-1 for Admin Activity Process

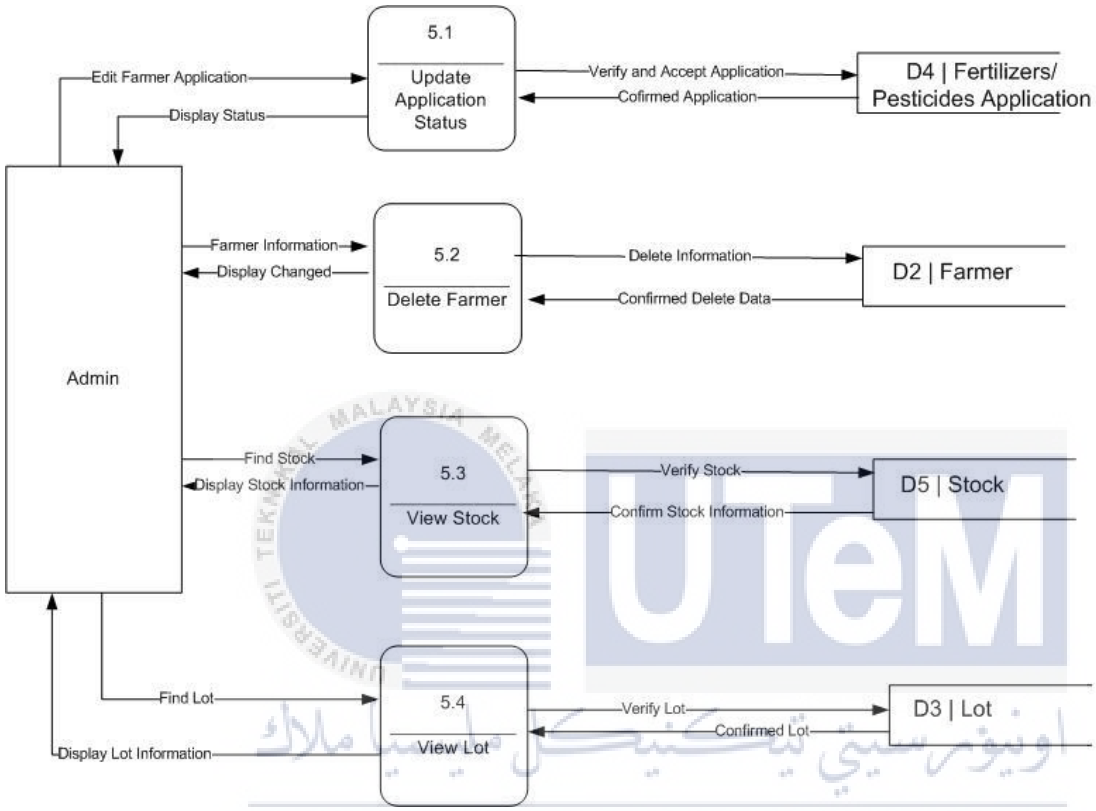


Figure 3.10: Data Flow Diagram (DFD) Level-1 for Admin Activity Process

DFD level 1 for admin activity process diagram, shows the decomposition of Process 5.0 from the level-0 diagram for Paddy Field Farmer Fertilizers System.

3.4 Requirement Analysis

Requirements analysis is involves of defining farmer needs and all objectives in the context of planning, real environments and identified the characteristics of the system to determine requirements for system functions. Prior analyses are reviewed and updated, refining mission and environment definitions to support system definition.

Requirement analysis is used on developing this system is by interview several farmer that have a paddy field and collect related requirement that farmer needed for every fertilizers/pesticides application for each seasons.

Table 3.1: Data Requirement

TABLE	DATA
admin	admin_id, admin_name , admin_phone_no , admin_address , admin_ic , admin_password
application	application_id, total_area, seasons, f_year, application_status, farmer_id, fertilizers_code, pesticides_code
farmer	farmer_id, farmer_name , farmer_phone_no , farmer_address , farmer_ic , farmer_password , farmer_applicant_status
fertilizers	fertilizers_code, start_area, end_area, organic, compounds, urea, npk
lot	lot_id, lot_no, lot_type, blok, total_lotarea, farmer_id
lot_admin	lotadmin_id , total_lot_private, total_lot_rent
pesticides	pesticides_code, start_area, end_area, amistar, plenum, prevathon
stock	stock_id, s_year, seasons, oraganic_stock, compounds_stock, urea_stock, npk_stock, amistar_stock, plenum_stock, prevathon_stock
Admin_stock	adminstock_id, stock_id, admin_id

3.4.1 Data Requirement

System requirement analysis is about the organized methodology or structured that use to identify an appropriate set of resource to satisfy or completed a system needed and all the requirements for those resources.

The main purpose of data requirement is used to identify and document all the entities within the project scope and the preliminary data.

There are several things that should be focus when defining data requirement. For example is such as define entities and their attributes with relationship between entities, also determining the size and volume of each entity and lastly is defining about data security for some of the attributes.

3.4.2 Others Requirement

For others requirement, it describe about a justification of usage of software, hardware and all network requirements that will be used in this system development.

3.4.2.1 Software Requirement

This entire software is divide into two parts which is for client and server software requirements. Table 3.2 shows the description each of software used in this system development.

Table 3.2: Software Requirement

SERVER	
Software	**Description**
Adobe Dreamweaver CS3	Platform to do the web based. Easier to coded and easier to design interface for the web based system. Dreamweaver CS3 has incorporated support for web technologies such as CSS, JavaScript and various server-side scripting languages and frameworks including PHP. It allows users to preview websites in locally installed web browsers helps in design and coding process.
Adobe Photoshop CS3	Adobe Photoshop is a graphic editor developed and published by Adobe Systems which is devoted to editing photos and making photo effects. In this system, it is used to create buttons and banners.

Microsoft Windows 8.1	Operating system as a platform for DBMS and system development installed on it.
WAMP Server	Wampp is free open source apps and a web server like Apache HTTP server, Mysql, FileZilla, Mercury, and Tomcat servers and written in PHP and Perl programming language.
Mozilla Firefox / Google Chrome	Mozilla Firefox/Internet Explorer used as web browser to preview the website. It is recommended for user to using latest version of it.
Microsoft Office 2007	Microsoft Office Word 2007 for document writing. Microsoft Visio 2007 for drawing the Entity Relationship Diagram which is for database design. Meanwhile Context Diagram and Data Flow Diagram are to show functional requirement of the system. Microsoft Office Project 2007 is for making Gantt chart to showing the timeline or milestones for the project development.

3.4.2.2 Hardware Requirement

Hardware requirements are very low requirements. Nowadays, the hardware for client and server is much better than these minimum requirements.

Table 3.3: Hardware Requirement

HARDWARE	DESCRIPTION	SERVER	CLIENT
Hard disk	Hard disk is main storage in a computer where all the software installed on it.	Minimum 100 GB free disk space	Minimum 300 MB free disk space
Memory (RAM)	Memory is defined as Random Access Memory (RAM) provides space for the computer to read and write data to be accessed by the CPU (central processing unit) or processor.	Minimum requirement of memory required is 2 GB, though 3 GB is recommended.	Minimum 512 MB of memory, though 1 GB is recommend

Processor	Processor is the electronic component which is act as ‘brain’ for of a computer. The higher the processing speed is much better.	Minimum 2.27 GHz speed of CPU processor	Minimum 1.3 GHz speed of CPU processor

3.5 Conclusion

This chapter is mostly focus on analysis of problems in the current system that has the similar characteristics with the developed system. Requirement analysis usually related to the software and hardware. Collection of information relating to the system associated with the system requirements can be used to improve the system requirements that are related to the Paddy Field Farmer Fertilizers System.

CHAPTER IV

DESIGN

4.1 Introduction

This chapter will discuss about system design for Paddy Field Farmer Fertilizers System after all requirements of the system have been identified. . The main objective of the design phase is to develop a design based on application requirements. The system design is explains the system based on the flow of the system, that are system architecture, input design, output design, user interface design and navigation design,

The results that produce from the analysis of the design will be used to produce computer specifications and to solve this problem. All the results are representative of the system design, including software specification for each function in the Paddy Field Farmer Fertilizers System.

4.2 High -Level Design

High level design is an overview of each model that set out in the requirements analysis phase. It will explains the overall view of how the system should work and will study the users functional and non-functional requirements and design an overall solution architecture of the application which can handle those needs.

4.2.1 System Architecture

The important part in system architecture is designing the system. System architecture was identified during the first phase on the project development phase and identifies the needs to be analysis.

The system architecture of Paddy Field Farmer Fertilizers System is using three-tier architecture, it consists of three layers that are client computers, application server and database servers. The three-tier architecture is shown in Figure 4.1.

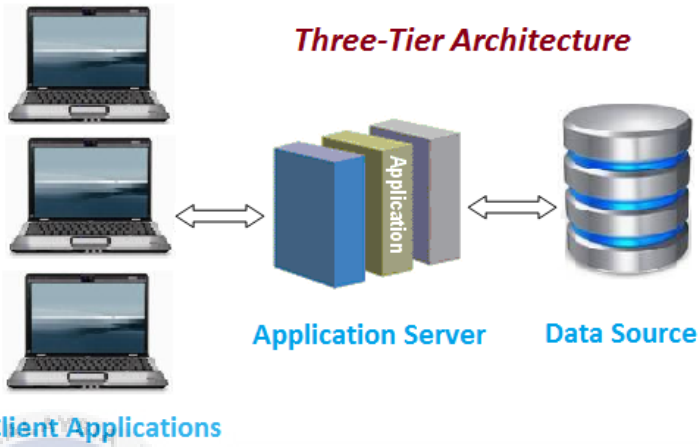


Figure 4.1: Three-Tier Architecture

4.2.2 User Interface Design

User interface allows the users to communicate with the system. It is one of the most important parts because the good interfaces are depending on how many user can understand the way or the step to use the system. User interface must be designed appropriately in order to make the interaction between the user and the system effective.

There are three main parts of the interface design that are navigation mechanism, input mechanism and output mechanism. The interfaces of this system are divided into two views of users that consists the Farmer and the

Admin. The description of each the user interface will explain and state in Appendix.

4.2.2.1 Navigation Design

Navigation design is for describing how the user gives instructions to the system by using the buttons from each menu to enable the user to use every function in the system. The navigation design represents the user interfaces in the system.

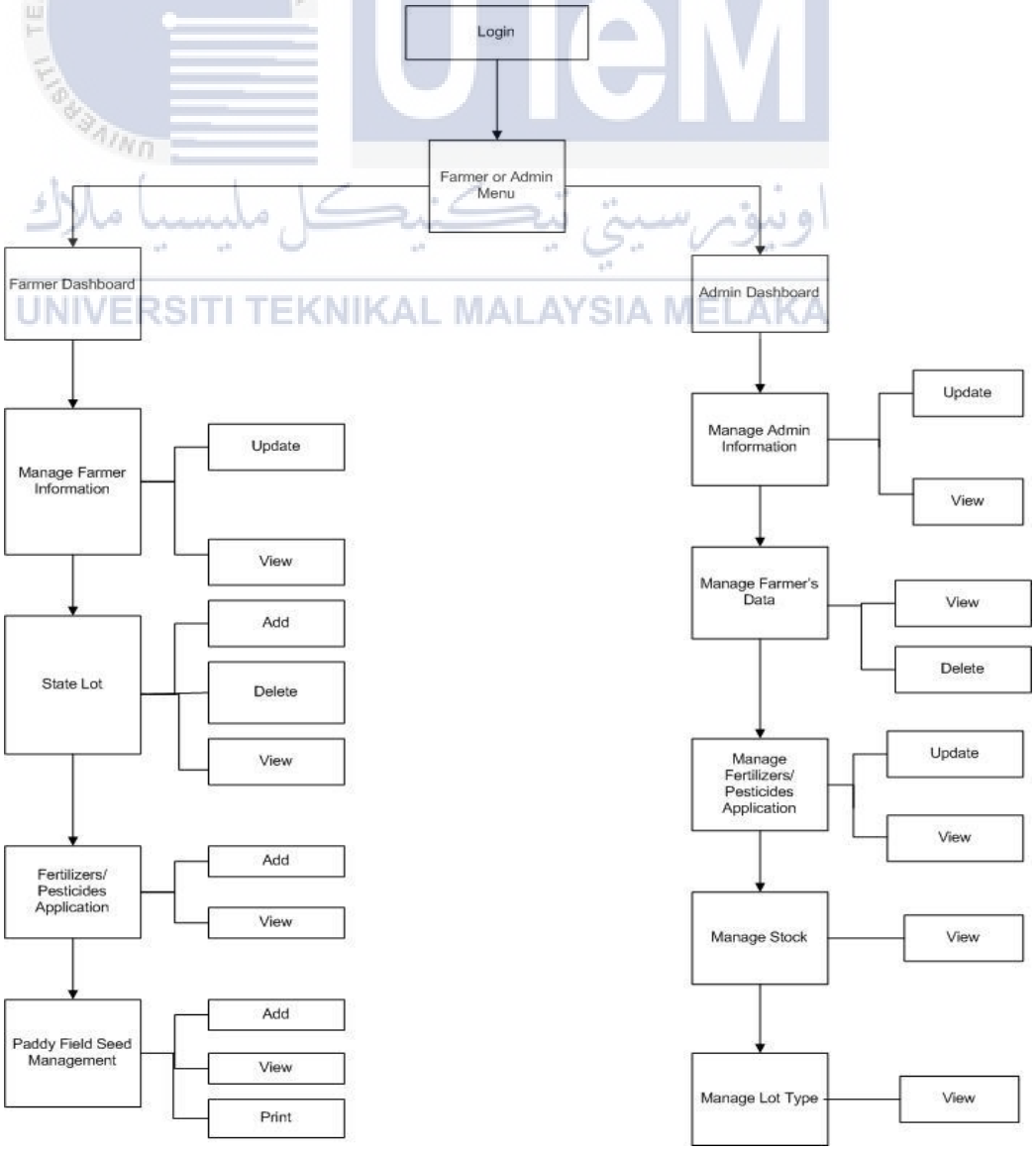


Figure 4.2: Navigation Design for Paddy Field Farmer Fertilizers System

Figure 4.2 shows the navigation design for farmer and admin in using the system. Both users had difference design of methods of finding one's way around the information structure of the Paddy Field Farmer Fertilizers System. Navigation design is a part of information architecture.

4.2.2.2 Input Design

Input design is a types of input that will be used at user interface. For example of input types text, numbers, alphabet, symbol and many more. Some input is very important and the validation is needed to make sure the data entered by user will be save to the database.

Table 4.1: Input Design of Login Module

Form	Field Name	Input Type	Validation Rules
Login	User ID (Farmer/Admin ID)	Text Box	• Required field • Correct values will allow user to access main page of PFFFS. • Error message will pop up if null or incorrect values insert.
	Password	Text Box	

Table 4.2: Input Design of Farmer Registration

Form	Field Name	Input Type	Validation Rules
Farmer Registration	Name	Text Box	• Required field
	Phone No.	Text Box	• Required field • Must not more than 12 characters
	Address	Text Box	• Required field
	IC Number	Text Box	• Required field • Must not more than 12 characters
	Password	Text Box	• Required field • Must not more than 8 characters

Table 4.3: Input Design of Admin Registration

Form	Field Name	Input Type	Validation Rules
Admin Registration	Name	Text Box	• Required field
	Phone No.	Text Box	• Required field • Must not more than 12 characters
	Address	Text Box	• Required field
	IC Number	Text Box	• Required field • Not more than 12 characters

	Password	Text Box	• Required field

Table 4.4: Input Design for Lot Registration

Form	Field Name	Input Type	Validation Rules
Add Lot Registration	Lot Type	Drop Down	• Required field • Must select one from list
	Blok	Drop Down	• Required field • Must select one from list
	Lot Number	Drop Down	• Required field • Must select one from list
	Total Area	Text Box	• Required field • Only accept number

Table 4.5: Input Design for Fertilizers/Pesticides Application

Form	Field Name	Input Type	Validation Rules
Fertilizers/Pesticides Application	Total Paddy Field Area	Text Box	• Required field
	Seasons	Drop Down	• Required field • Must select one from list
	Year	Drop Down	• Required field • Must select one from list
	Application	Text Box	• Default

	Status		"PENDING" Status.
	Farmer ID	Text Box	• Default to who Login (Farmer)

Table 4.6: Input Design for Paddy Field Seeds Management

Form	Field Name	Input Type	Validation Rules
Maturity Of Seeds	Select Date	Datepicker Calendar	• Required field
	Types Of Seeds	Radio Button	• Required field • Must select one from list

Table 4.7: Input Design for Stock Management

Form	Field Name	Input Type	Validation Rules
Starting Fertilizers Stock	Seasons	Drop Down	• Required field • Must select one from list
	Year	Drop Down	• Required field • Must select one from list
Remaining Fertilizers Stock	Seasons	Drop Down	• Required field • Must select one from list
	Year	Drop Down	• Required field • Must select one from list

4.2.2.3 Output Design

The output design is the design of the reports will produced by the system. The main purpose is to deliver the information in a clear way and easy to understand. The output design result will be shown in the following Table 4.8.

Table 4.8: Output Design of Each Form

Form Name	Output Name	Description
Login	Login Error Message	The login error message will appear when the farmer/admin had entered the wrong user ID and Password
Farmer Registration	Validation Message	Farmer must enter all information required
Admin Registration	Validation Message	Admin must enter all information required
Add Lot Registration	Validation Message	Farmer must enter all information required
Fertilizers/Pesticides Application	Validation Message	Farmer must enter all information required
Maturity Of Seeds	Validation Message	Farmer must enter all information required

Starting Fertilizers Stock	Validation Message	Admin must enter all information required
Remaining Fertilizers Stock	Validation Message	Admin must enter all information required

4.2.3 Conceptual and Logical Database Design

Conceptual database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

4.2.3.1 Conceptual Database Design

In this phase, Business Rules and Entity Relationship Diagram (ERD) for this system is used to show the flow of the data conceptually.

1. Business Rules

In this phase, Business Rules and Entity Relationship Diagram (ERD) for this system is used to show the flow of the data conceptually.

i. A farmer can register many lot.
A lot can be registered by one farmer.

ii. A farmer can have one or many application of fertilizers/pesticides.
An application of fertilizers/pesticides can be made by one or many farmer.

iii. An admin can manage one or many application of fertilizers/pesticides.
An application of fertilizers/pesticides can be managed by one or many admin.

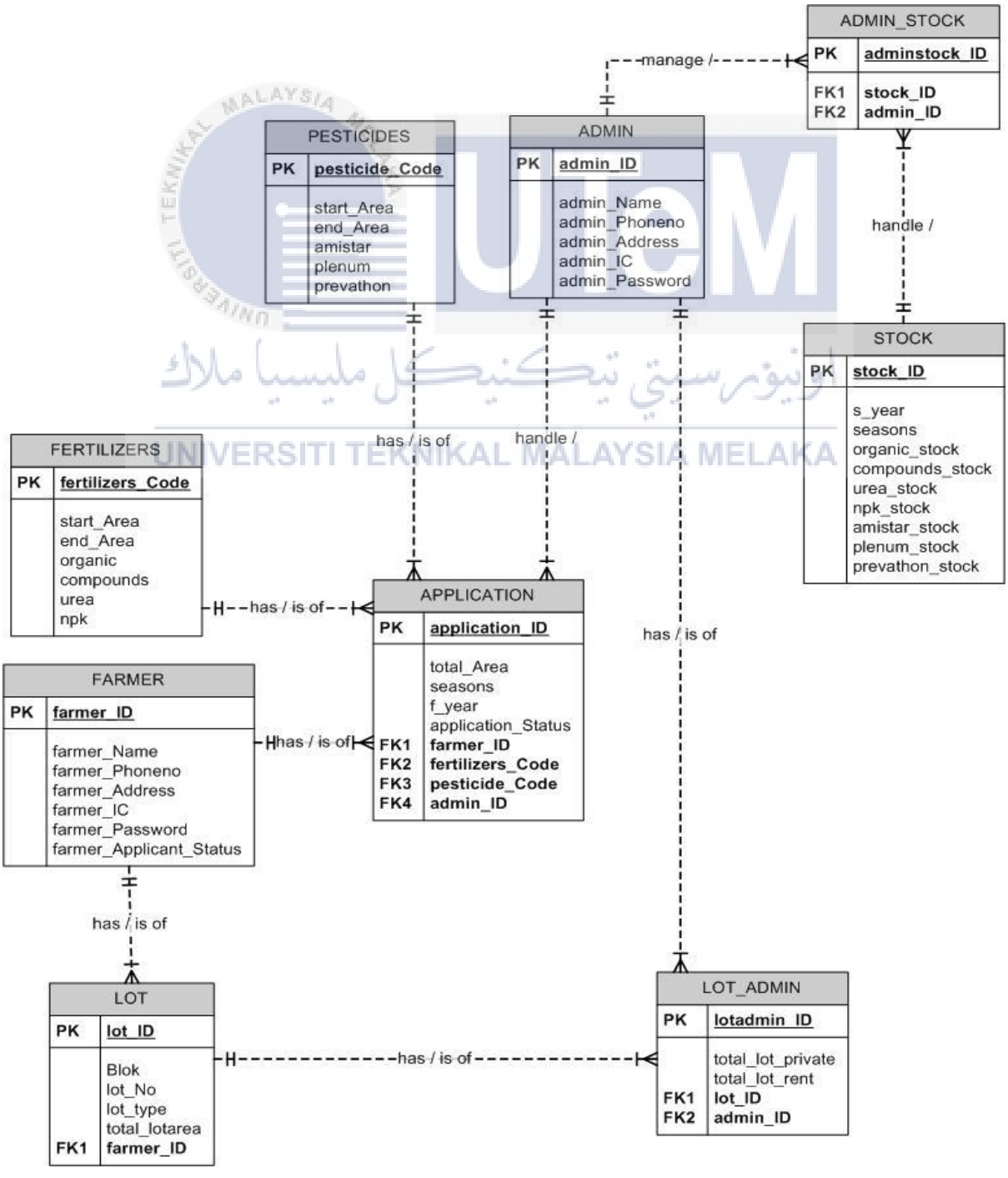
iv. An admin can control one or more fertilizers/pesticides.
A fertilizers/pesticides can be controlled by one or many admin.

v. An admin can manage one or more fertilizers/pesticides stock.
A fertilizers/pesticides stock can be managed by one or many admin.

vi. A lot can be manage by one or more admin.
An admin can manage one or more lot.

2. Entity Relationship Diagram (ERD)

The Entity Relationship Diagram (ERD) is a way of graphically representing the logical relationships of data in order to create a database by showing the relationships among the entities and the attributes in each entity.



4.2.4 Logical Database Design

Logical Database Design is a process to translate the conceptual representation to the logical structure of the database. It represents about data normalization and data dictionary. The logical entity relationship model contains more detail than the conceptual entity relationship model.

1. Data Dictionary

Data Dictionary is the data about the data of tables that consist in a database. It is used as references for maintenance if has any problem. Table 4.9 until table 4.11 shows the data dictionary of the system.

Table 4.9: Data Dictionary for Farmer

Attribute Name	Data Type	Length	Key	Description
farmer_id	varchar2	10	PK	Farmer ID
farmer_name	varchar2	50		Farmer name
farmer_phone_no	varchar2	12		Farmer phone number
farmer_ic	number			Farmer IC
farmer_password	varchar2	8		Farmer Login Password
farmer_applicant	varchar2	20		Farmer application

Figure 4.3: Entity Relationship Diagram (ERD) for Paddy Field Farmer Fertilizers System

_status				status

Table 4.10: Data Dictionary for Admin

Attribute Name	Type	Length	Key	Description
admin_id	varchar2	10	PK	Admin ID
admin_name	varchar2	50		Admin Name
admin_phone_no	varchar2	10		Admin Phone Number
admin_address	varchar2	100		Admin Address
admin_ic	number			Admin IC
admin_password	varchar2	8		Admin Login Password

Table 4.11: Data Dictionary for Lot

Attribute Name	Type	Length	Key	Description
lot_id	varchar2	6	PK	Lot ID
lot_no	varchar2	4	FK	Lot number
lot_type	varchar2	8	FK	Lot type
Blok	varchar2	4		Blok area
total_lotarea	number			Total lot area
farmer_id	varchar2	10		Farmer ID

Table 4.12: Data Dictionary for Fertilizers

Attribute Name	Type	Length	Key	Description
fertilizers_code	varchar2	8	PK	Fertilizers Code
start_area	number			Start Area of paddy field
end_area	number			End area of paddy field
organic	number			Fertilizers type 1
compounds	number			Fertilizers type 2
Urea	number			Fertilizers type 3
Npk	number			Fertilizers type 4

Table 4.13: Data Dictionary for Pesticides

Attribute Name	Type	Length	Key	Description
pesticides_code	varchar2	8	PK	Pesticides Code
start_area	number			Start Area of paddy field
end_area	number			End area of paddy field
amistar	number			Pesticides type 1
plenum	number			Pesticides type 2
prevathon	number			Pesticides type 3

Table 4.14: Data Dictionary for Application

Attribute Name	Type	Length	Key	Description
application_id	varchar2	7	PK	Application ID
total_area	number			Total area of paddy field
seasons	number			Season of rice planting
f_year	number			Year of rice planting
application_status	varchar2	15		Application status
farmer_id	varchar2	10	FK	Farmer ID
fertilizers_code	varchar2	8	FK	Fertilizers Code
pesticides_code	varchar2	8	FK	Pesticides Code
admin_id	varchar2	10	FK	Admin ID

Table 4.15: Data Dictionary for Stock

Attribute Name	Type	Length	Key	Description
stock_id	varchar2	10	PK	Stock ID
s_year	number			Year of rice planting
seasons	number			Season of rice planting
organic_stock	number			Fertilizers type 1
compounds_stock	number			Fertilizers type 2
urea_stock	number			Fertilizers type 3
npk_stock	number			Fertilizers type 4
amistar_stock	number			Pesticides type 1

plenum_stock	number			Pesticides type 2
prevathon_stock	number			Pesticides type 3

Table 4.16: Data Dictionary for Lot_Admin

Attribute Name	Type	Length	Key	Description
lotadmin_id	varchar2	7	PK	Lot admin ID
total_lot_private	number			Total private lot
total_lot_private	number			Total rent lot
lot_id	varchar2	6	FK	Lot ID
admin_id	varchar2	10	FK	Admin ID

Table 4.17: Data Dictionary for Admin_Stock

Attribute Name	Type	Length	Key	Description
adminstock_id	varchar2	7	PK	Admin Stock ID
stock_id	varchar2	10	FK	Stock ID
admin_id	varchar2	10	FK	Admin ID

4.3 Data Definition Language (DDL)

DDL is used to define data structures within a database and the main purpose of DDL is to create, alter or drop database and database objects. The database objects consist of schemas, tables, views, sequences and indexes. DDL statement will be created and compiled to show the output.

i) Table Farmer

```
create table farmer
(
farmer_id varchar2(10) primary key,
farmer_name varchar2(50),
farmer_phone_no varchar2(10),
farmer_address varchar2(100),
farmer_IC number,
farmer_password varchar2(8)
);
```

ii) Table Admin

```
create table admin
(
admin_id varchar2(10) primary key,
admin_name varchar2(50),
admin_phone_no varchar2(10),
admin_address varchar2(100),
admin_IC number,
admin_password varchar2(8)
);
```

iii) Table Lot

```
create table lot
(
lot_id varchar2(6) primary key,
lot_no varchar2(4),
lot_type varchar2(8),
blok varchar2(4),
total_lotarea number,
farmer_id references farmer(farmer_id),
UNIQUE (lot_no,blok)
);
```

iv) Table Fertilizers

```
create table fertilizers
(
fertilizers_code varchar2(8) primary key,
start_area number,
end_area number,
organic number,
compounds number,
urea number,
NPK number
);
```

v) Table Pesticides

```
create table pesticides
(
pesticides_code varchar2(8) primary key,
start_area number,
end_area number,
amistar number,
plenum number,
prevathon number
);
```

vi) Table Application

```
create table application
(
application_id varchar2(7) primary key,
total_area number,
seasons number,
f_year number,
application_status varchar2(15),
farmer_id references farmer (farmer_id),
fertilizers_code references fertilizers (fertilizers_code),
pesticides_code references pesticides (pesticides_code),
admin_id references admin (admin_id),
UNIQUE (seasons, f_year, farmer_id)
);
```

vii) Table Stock

```
create table stock
(
stock_id varchar2(10) primary key,
s_year number,
seasons number,
organic_stock number,
compounds_stock number,
urea_stock number,
npk_stock number);
```

viii) Table Lot_Admin

```
create table lot_admin
(
lotadmin_ID varchar2(7) primary key,
total_lot_private number DEFAULT 0,
total_lot_rent number DEFAULT 0,
lot_id references lot (lot_id),
admin_id references admin (admin_id)
);
```

ix) Table Admin_Stock

```
create table admin_stock
(
adminstock_ID varchar2(7) primary key,
admin_id references admin (admin_id),
stock_id references stock (stock_id)
);
```


4.3.1 Query Design

There are several way of designing queries can be shows to produce the output. Each query must meet the main requirements of proposed user. Examples of query design proposed is as follows:

4.3.1.1 Simple SQL Query

The SELECT statement is used to choose information from a database. The WHERE clause is utilized to choose just those records that satisfy a predefined model. The AND operator shows a record if both the first condition AND the second condition are valid. The OR operator shows a record if either the first condition OR the second condition is valid. The ORDER BY keyword word is utilized to sort the outcome set by one or more criteria. The ORDER BY keyword is used to sorts the records where in increase order as a matter of course. DESC keyword can be used to sort the records in a decrease order.

Table 4.18: Simple SQL Query

Select * from farmer where farmer_id = 'F1005'	Select data from table with specific id.

4.3.1.2 Join Multiple Table SQL Query

SQL JOIN statement is to consolidate lines from two or more tables, in perspective of a typical field between them. At the point when information from more than one table in the database is obliged, a join condition is utilized. Lines in one table can be joined to lines in another table as indicated by regular qualities existing in relating sections, that is, normally primary key and foreign key columns.

Table 4.19: Join Multiple Table SQL Query

select a.farmer_id, a.seasons, a.f_year, f.organic, f.compounds,f.urea,f.NPK,p.amistar, p.plenum, p.prevathon, a.application_status FROM application a , fertilizers f , pesticides p where a.fertilizers_code = f.fertilizers_code and a.pesticides_code= p.pesticides_code and farmer_id = farmer_id1 ;	Select specific multiple data with word choosing.

4.3.2 Trigger

As a requirement and part of final year project for database management student, a number of trigger before, trigger after should be constructed. For full trigger code please refer to Appendix A.

Table 4.20: Trigger

create or replace trigger farm_trig
 	
before insert on farmer
 	
for each row
 	
begin
 	
select 'F' || farm_seq.nextval into :new.farmer_id from dual;
 	
end;
	Trigger before insert

create or replace trigger stock_afte after insert on application for each row declare o number; c number; u number; n number; o1 number; c1 number; u1 number; n1 number;	Trigger after insert

```
CURSOR curs_stock IS

select organic_stock, compounds_stock,
urea_stock, npk_stock

from stock

where s_year=:new.f_year and
SEASONS=:new.seasons

order by organic_stock desc;

BEGIN

select organic, compounds, urea, npk
into o,c,u,n

from fertilizers f

where f.FERTILIZERS_CODE
=:new.FERTILIZERS_CODE;

OPEN curs_stock;

loop

FETCH curs_stock into o1,c1,u1,n1;

EXIT WHEN curs_stock%NOTFOUND;

end loop;

CLOSE curs_stock;

o:= o1-o; c:=c1-c; u:=u1-u; n:=n1-n;

insert into stock (s_year,
seasons,organic_stock, compounds_stock,
```

urea_stock, npk_stock) values (:new.f_year,:new.seasons,o,c,u,n); end;	

create or replace trigger bef_del_farmer
 	
before delete on farmer
 	
for each row
 	
declare
 	
begin
 	
delete application where farmer_id =:old.farmer_id;
 	
end;
	Trigger before delete

create or replace trigger farm_after_update
 	
after update on application
 	
for each row
 	
DECLARE application_status varchar2(10);
farmer_applicant_status varchar2(20);
 	
BEGIN
 	
IF :new.application_status='ACCEPT'
 	
THEN update farmer
 	
SET farmer_applicant_status='ACTIVE'
 	
where farmer_id =:new.farmer_id;
END IF;
END;
	Trigger after update

4.4 Graphical User Interface (GUI) Design

User interface design is the design of the software applications and sites which concentrate on the user's experience and cooperation. The objective of user interface design is to make the user's connection as follow the flow and proficient as possible.

Figure 4.4: Main page of Paddy Field Farmer Fertilizers System

This is the main page of Paddy Field Farmer Fertilizers Systems.

Figure 4.5: Login page for farmer and admin

This is the login page for farmer and admin, users need to enter their valid user ID and password to login into system.

Figure 4.6: Farmer registration form

This is registration form for farmer before the farmer get the valid user ID that generate by system to use the Paddy Field Farmer Fertilizers System.

Figure 4.7: Admin registration form

This is registration form for admin before the admin get the valid user ID that generate by system to use the Paddy Field Farmer Fertilizers System.

Figure 4.8: Main menu for farmer

This is the main menu of farmer that have several function that will be used by farmer.

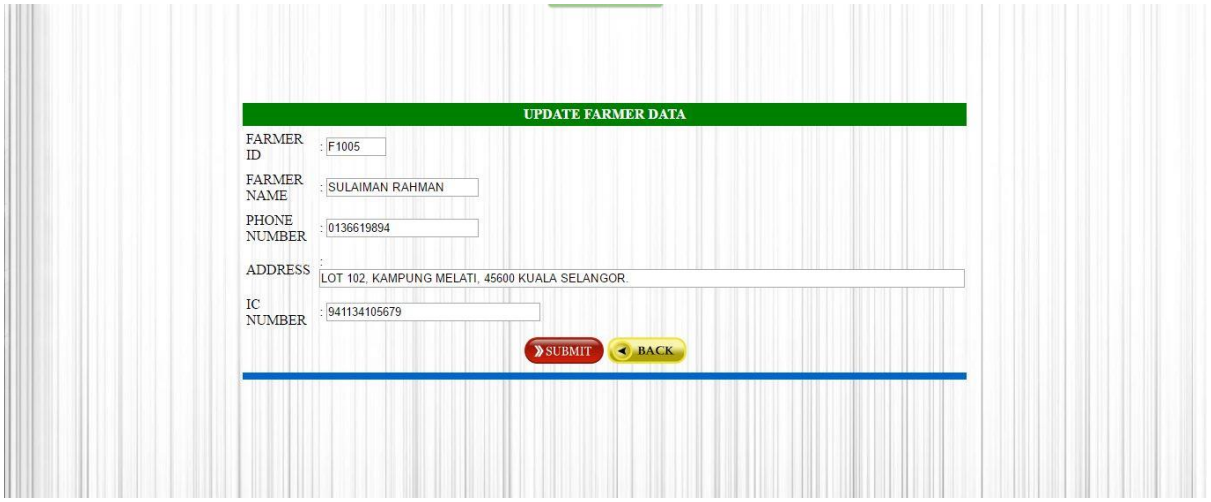


Figure 4.9: Update farmer data

This is the form for farmer to update their own personal data from system.

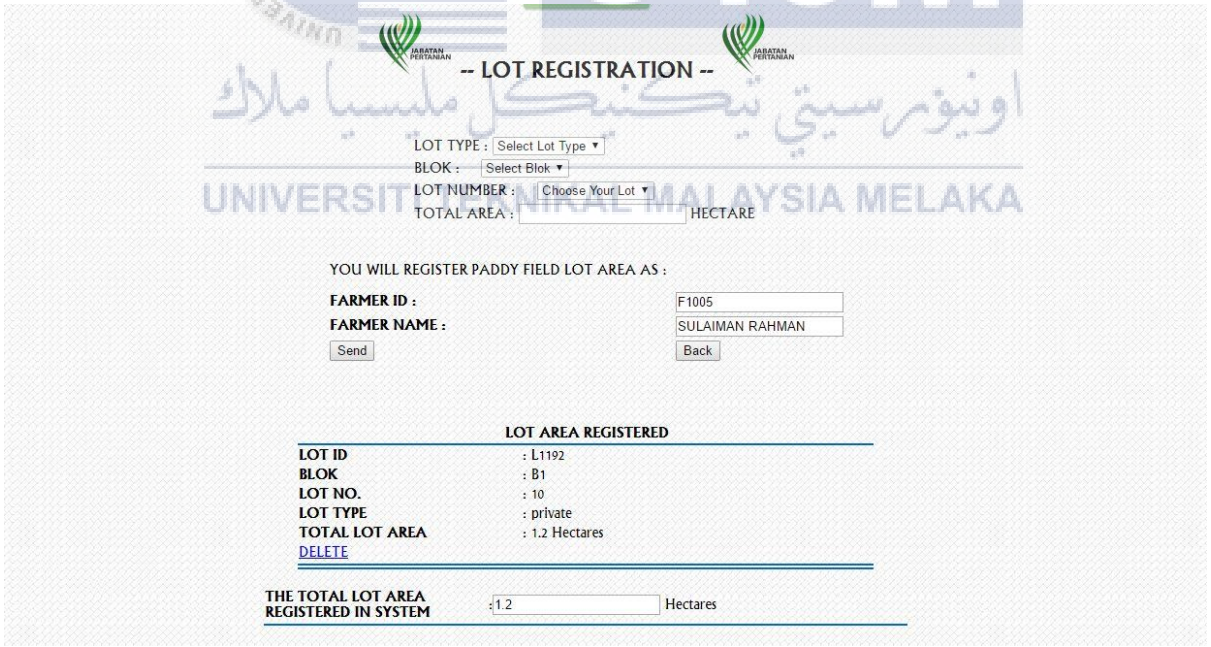


Figure 4.10: Lot Registration

This is form for farmer to state/register their paddy field lot into systems. Farmer also can delete the lot if the lot is not belong to him.

Figure 4.11: Fertilizers & Pesticides management

This is the menu page for fertilizers and pesticides management. From this menu farmer can make an application of fertilizers and pesticides and can check their application status.

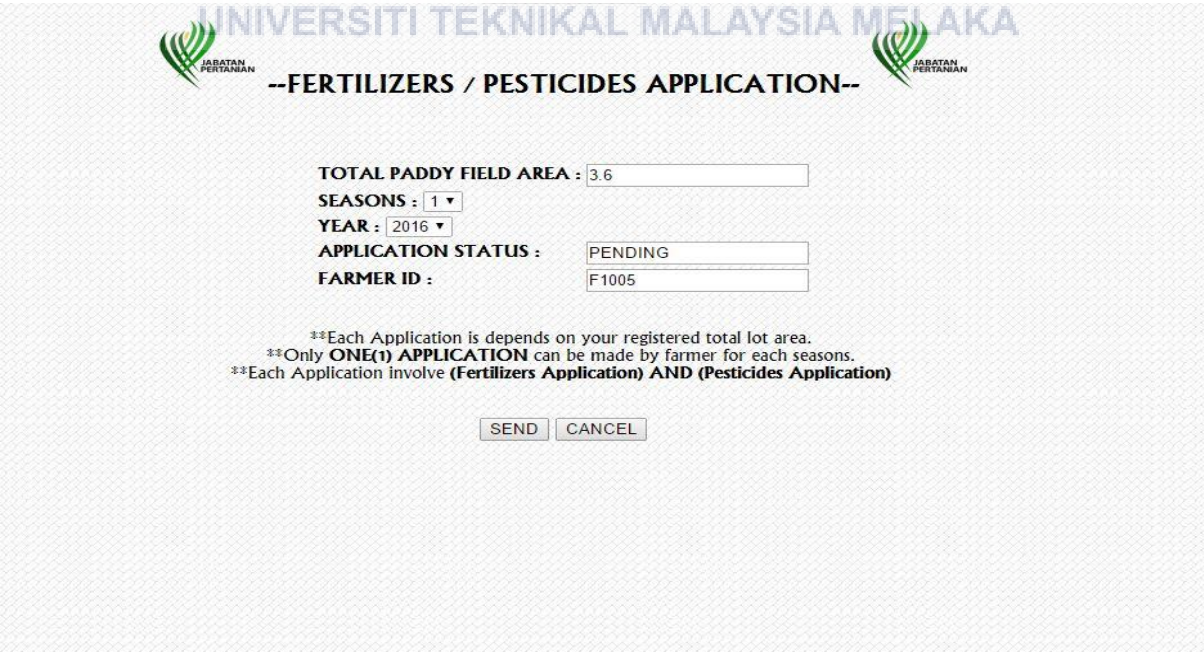


Figure 4.12: Fertilizers/Pesticides Application

This is interface for farmer made an application of fertilizers/pesticides. Farmer need to choose the seasons and year of application. Total paddy field area is depends on total lot that farmer registered into system.

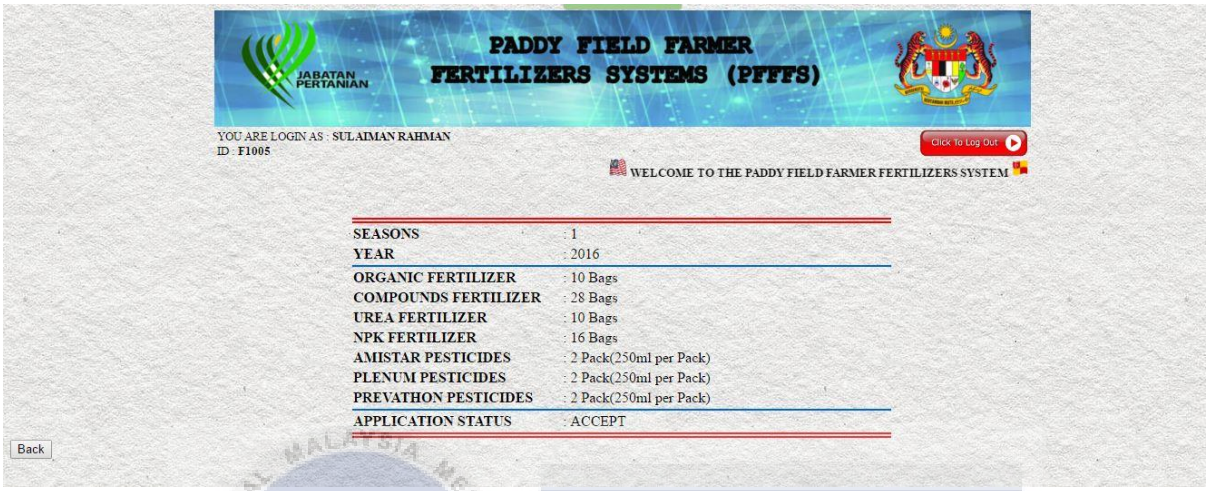


Figure 4.13: Application Status

This is the interface for application status that made by farmer. Total amount of fertilizers and pesticides that get is depends on total area that farmer registered into system.

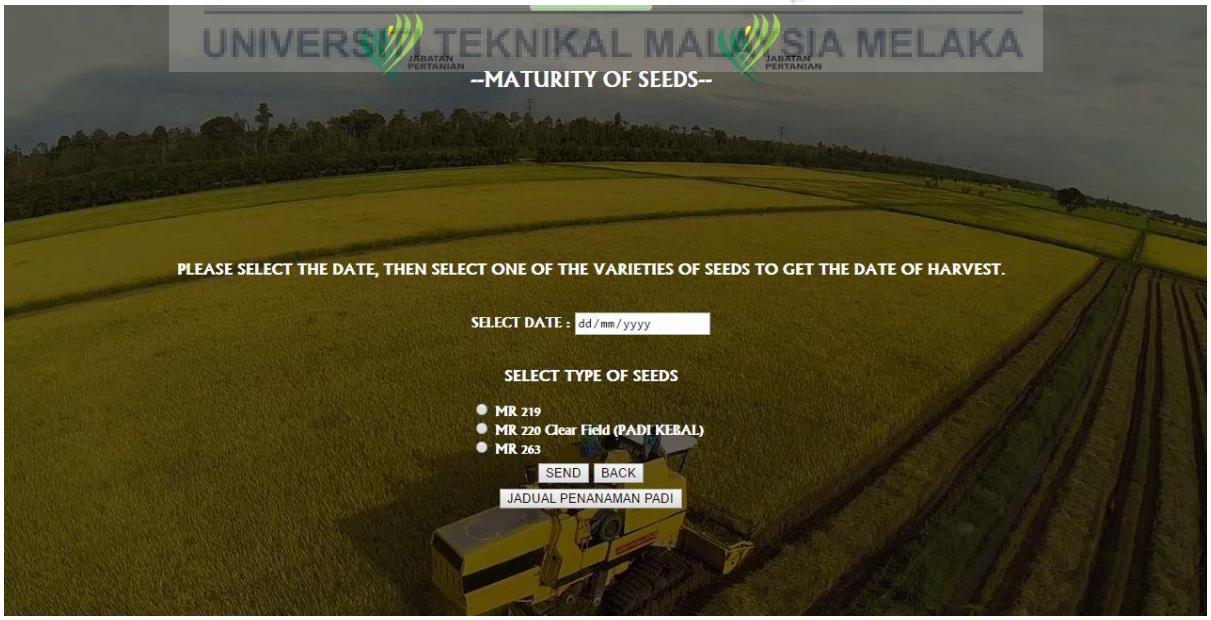


Figure 4.14: Maturity of seeds

This is the interface for farmer to get the date of harvest based on their selected date and type of seeds that farmer choose. The system will predict the date of harvest based on the maturity days of every seed. Farmer also can get the "*jadual penanaman padi"* in PDF format.

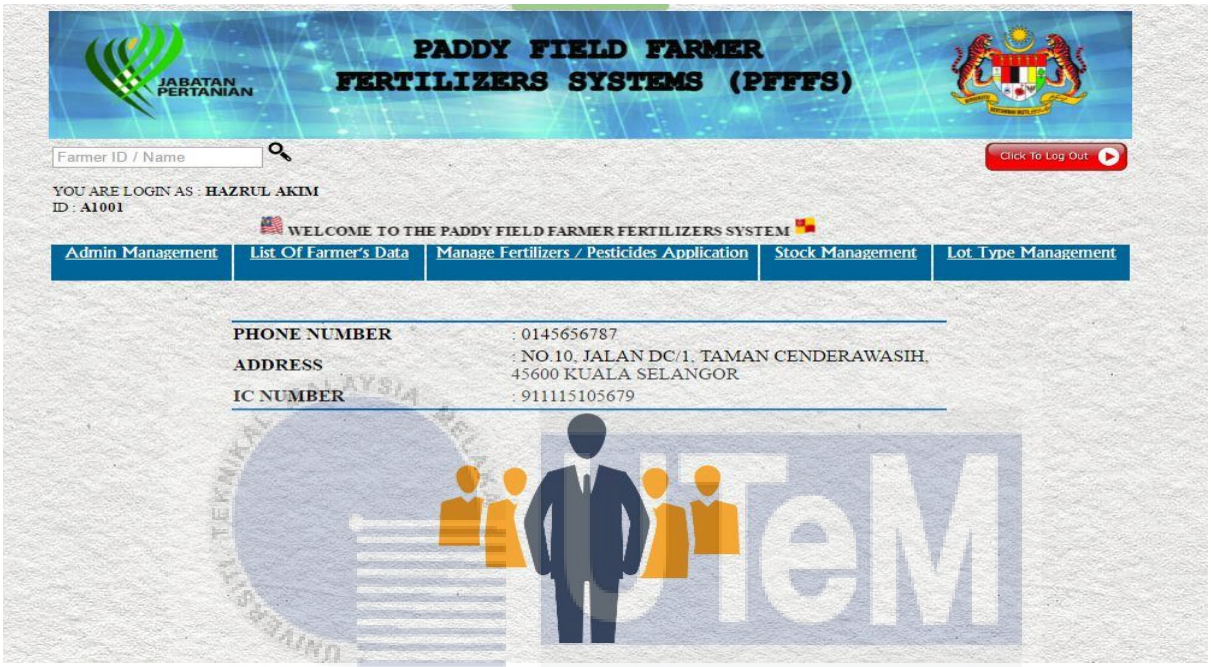


Figure 4.15: Main menu for admin

This is the main menu for admin that have several function.

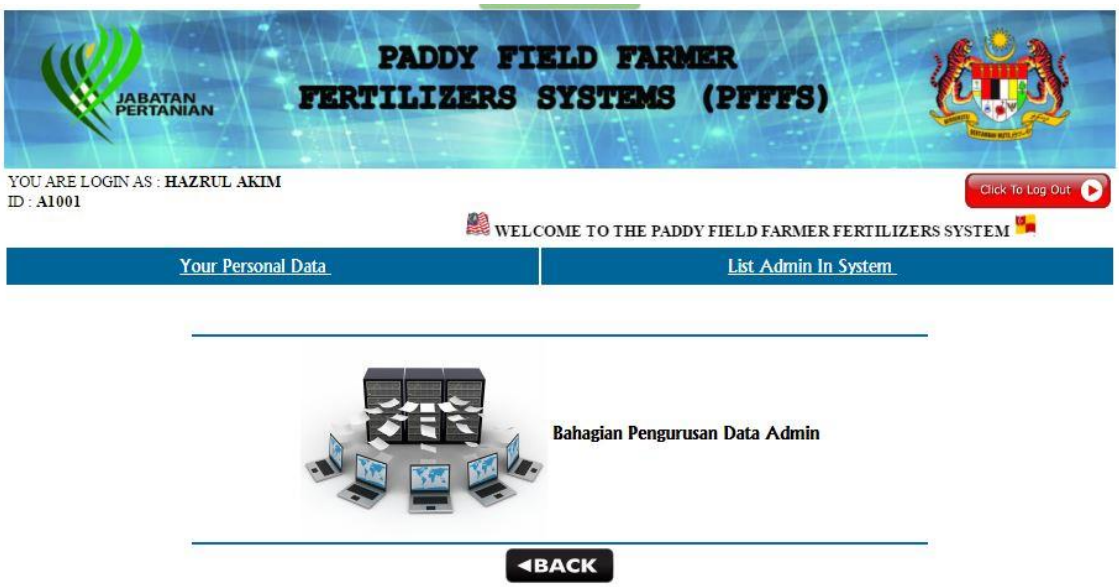


Figure 4.16: Admin management

This is the admin management menu that allow admin to update their personal data and view the list of admin that registered in the system.

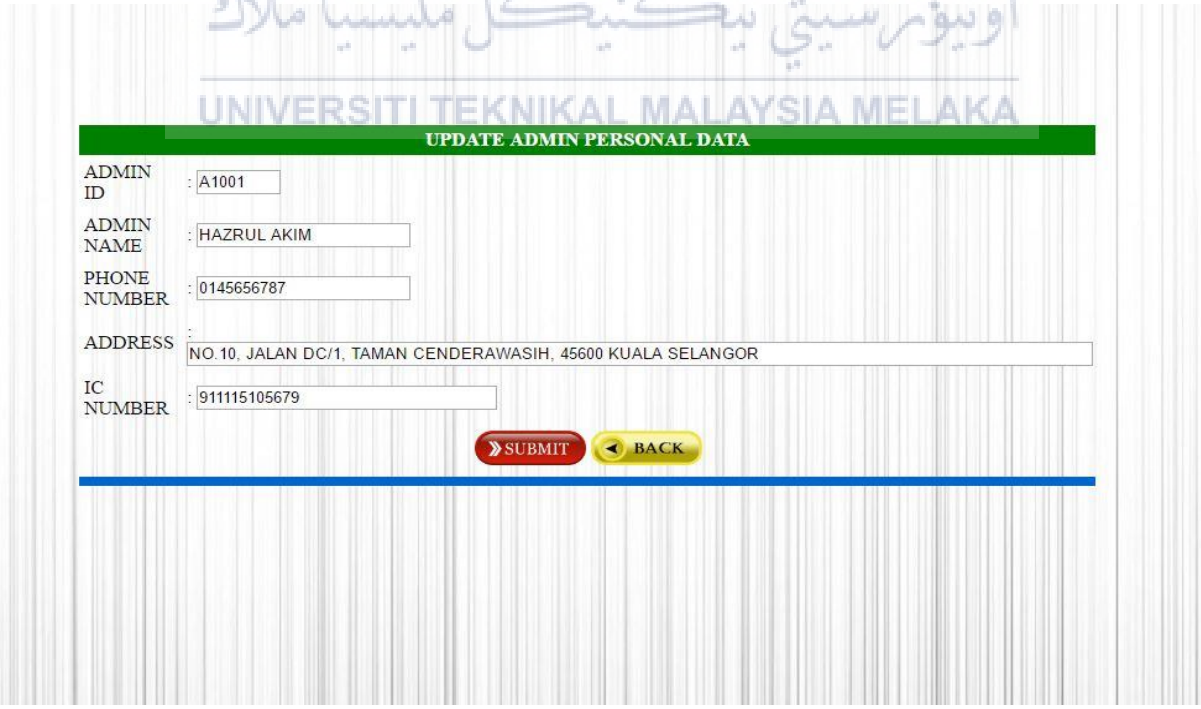


Figure 4.17: Update admin personal data

This is form for admin to update their own personal data from the system.

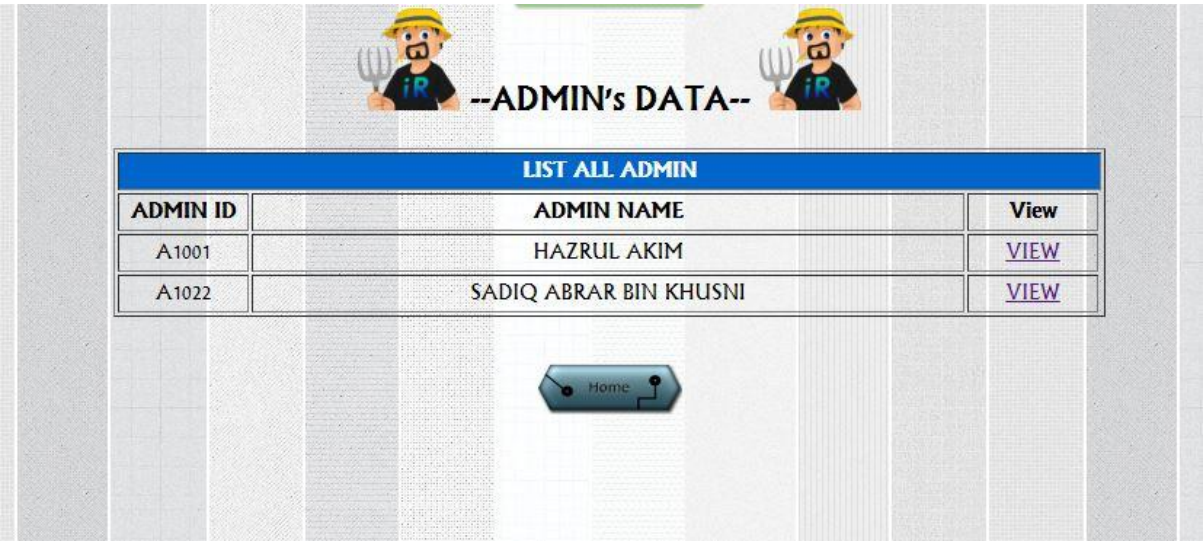


Figure 4.18: List of admin data

This is the interface that show the list of admin that have in the system.

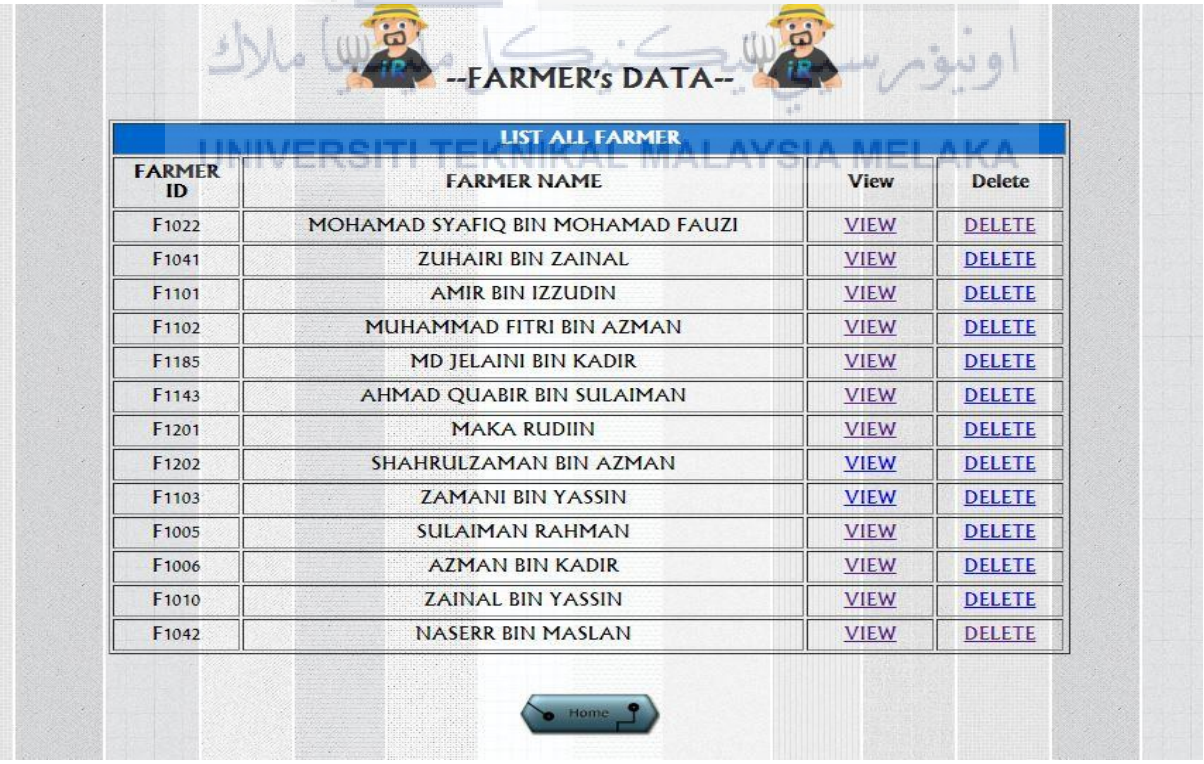


Figure 4.19: List of farmer's data

This is the interface that show the list of farmer's data that registered in the system.

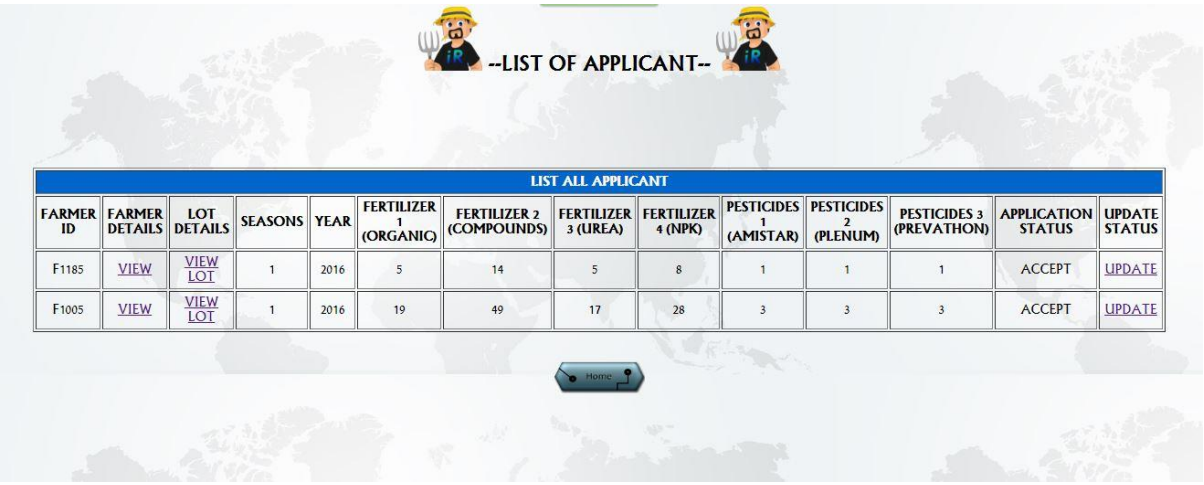


Figure 4.20: List of applicant

This is the interface that show the list of fertilizers/pesticides applicant by seasons and year. Admin also can update the status of application to farmer's that made an applicant.

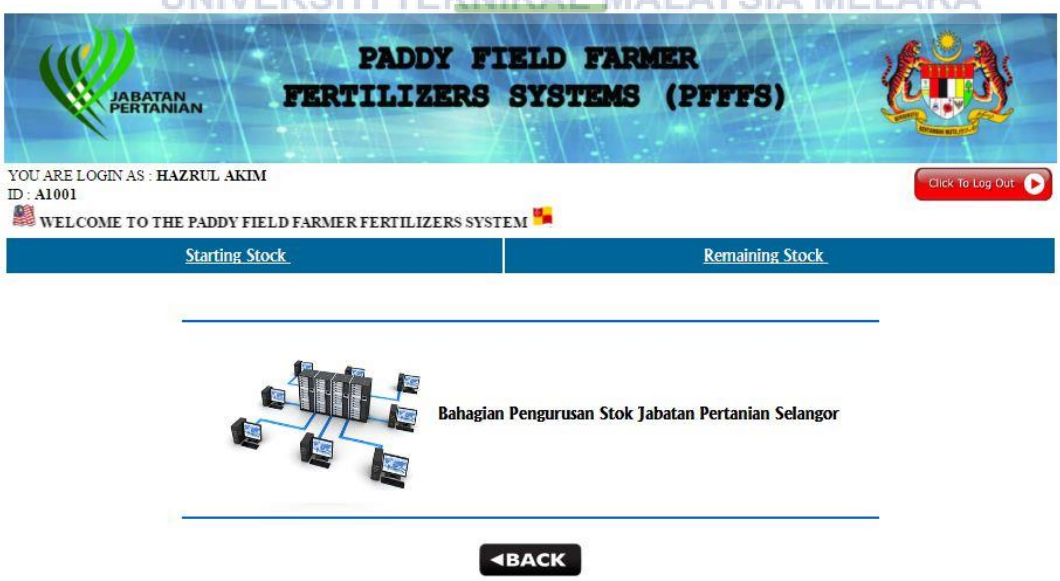


Figure 4.21: Stock Management

This is the menu for stock management. Admin can check the starting stock and remaining stock of fertilizers and pesticides by seasons and year.

Figure 4.22: Search starting stock

This is menu for admin to search the starting stock of fertilizers/pesticides by seasons and year.

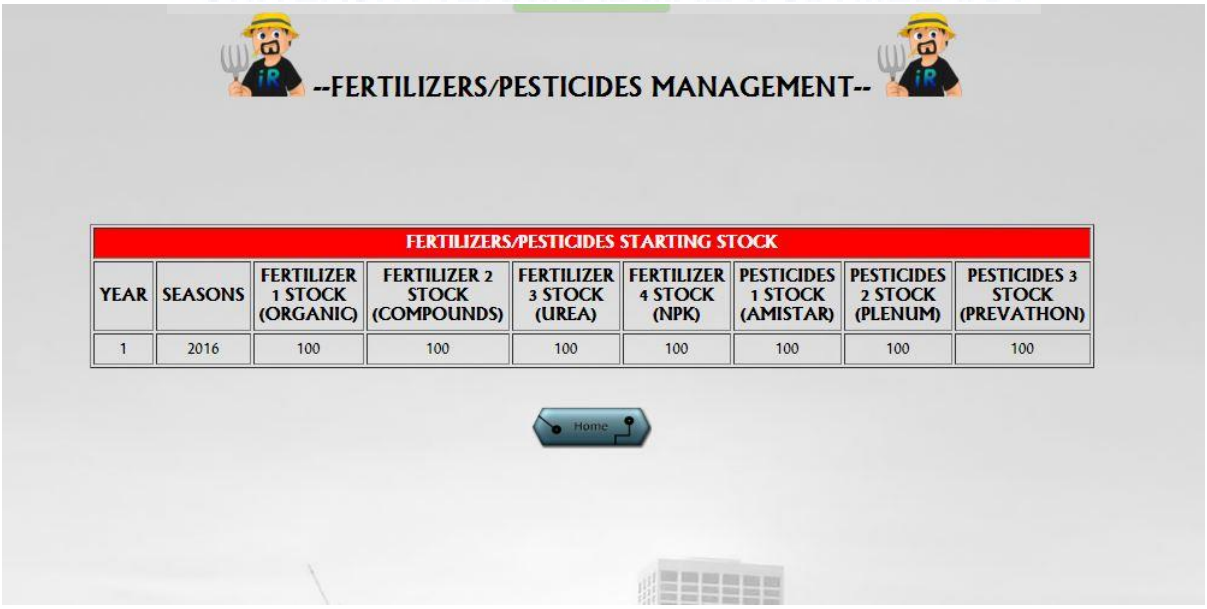


Figure 4.23: List of starting stock

This interface will state and list the starting stock of fertilizers/pesticides by year and seasons.

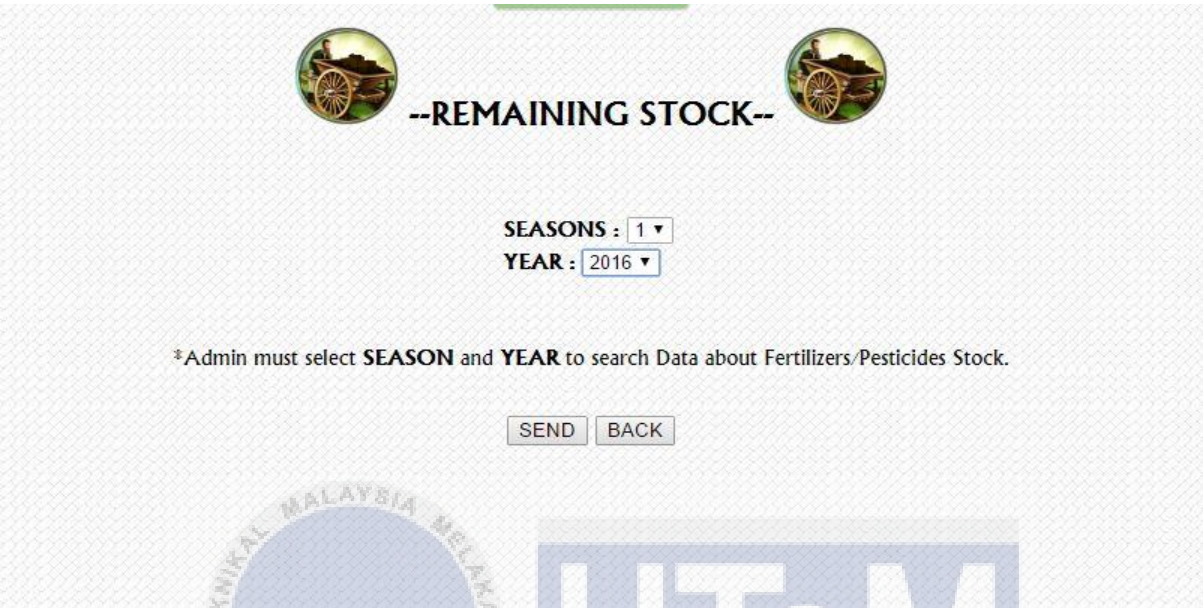


Figure 4.24: Search remaining stock

This is menu for admin to search the remaining stock of fertilizers/pesticides by seasons and year.

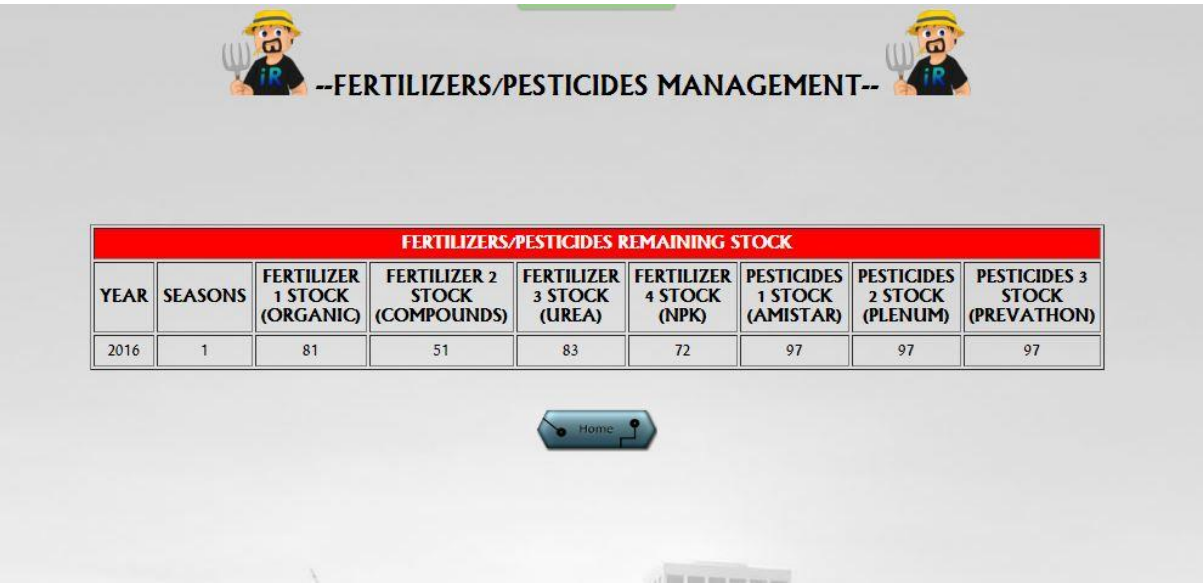


Figure 4.25: List of remaining stock

This interface will state and list the remaining stock of fertilizers/pesticides by year and seasons.

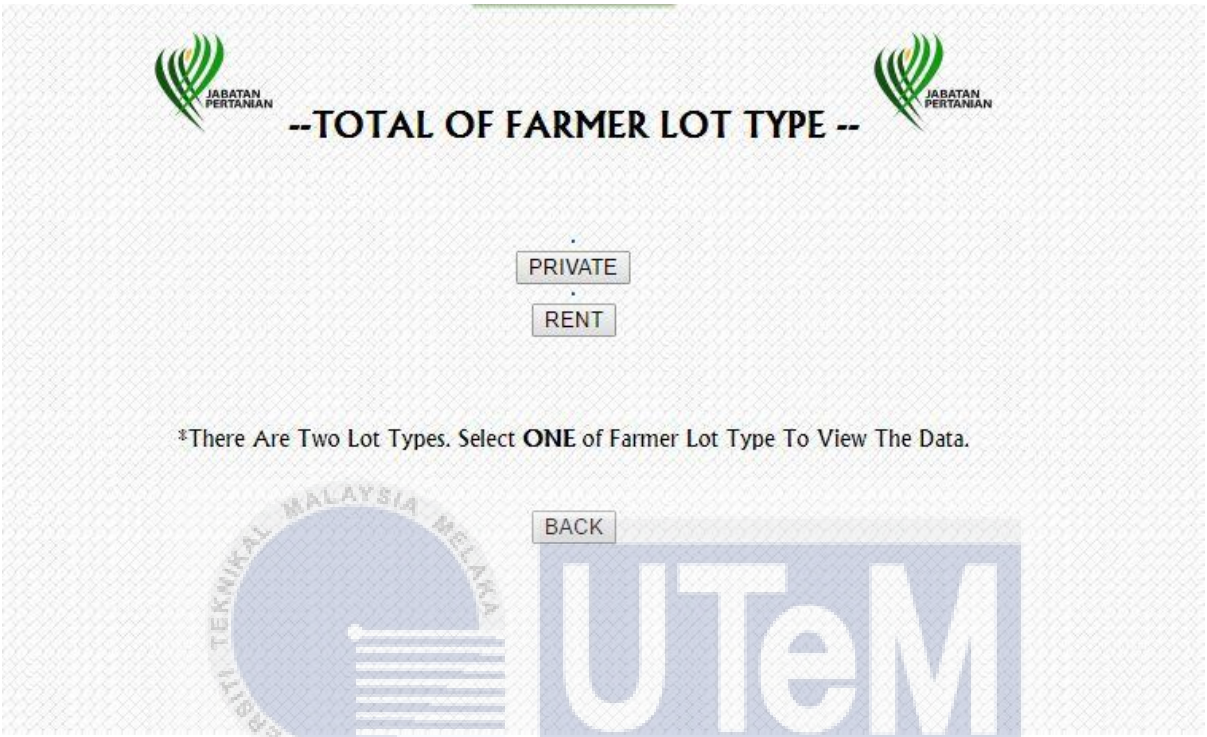


Figure 4.26: Total farmer lot type

This is menu for admin to view the total of farmer lot type. There are two types of lot.

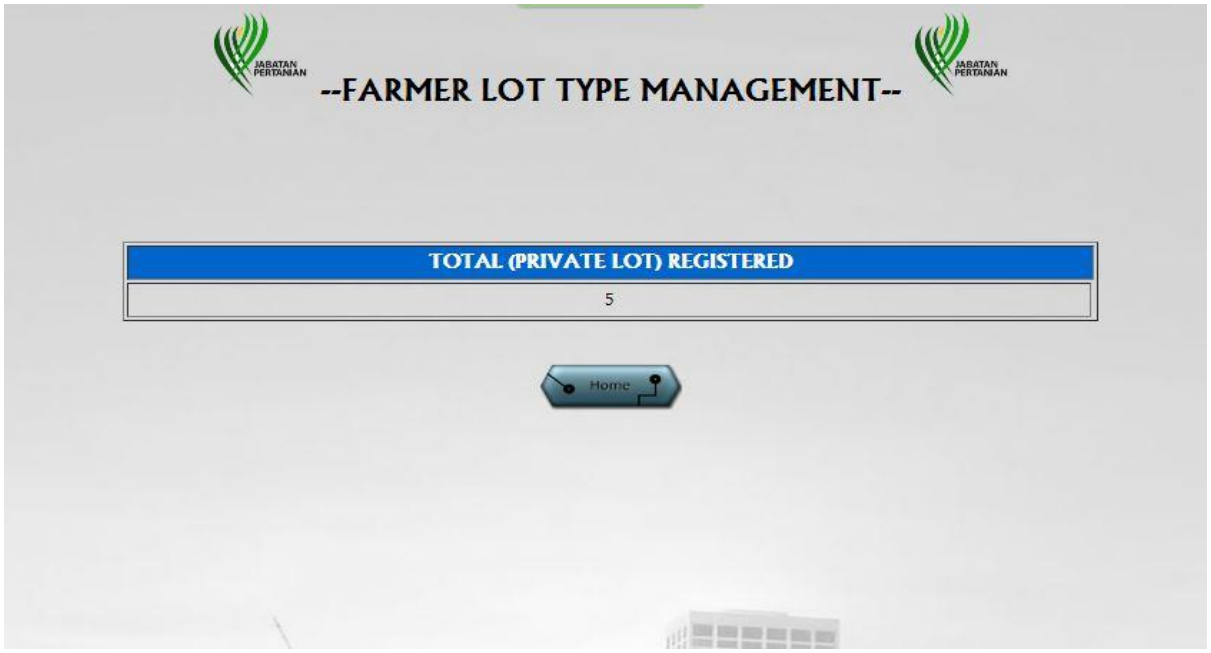


Figure 4.27: List of total private lot

Figure 4.28: List of total private lot

4.5 Conclusion

This chapter briefly explain all the process participated in Paddy Field Farmer Fertilizers Systems. During the conceptual database design phase, Entity Relationship (ERD) was created. In the logical database design phase, Data dictionary is also created. By referring to the ERD in previous design phase, this database design makes the planning of the system become easier with a specific guideline.

CHAPTER V

IMPLEMENTATION

5.1 Introduction

This chapter, is about the software development phase of the Paddy Field Farmer Fertilizers System. During the implementation phase, the application development environment needs to be managed and the environment needs to be configured. Besides that, the specified details need to be display as the status of implementation. This chapter contains the software development environment setup, the database implementation, the software configuration management, and the implementation status descriptions.

Overall, this chapter is discussing about the implementation of the SBMS that is divided into two parts which is system development and the database development. The implementation includes the software development environment setup which covers the architecture of client and server software and database that will be used for the system development. After that, software configuration management will cover about the configuration of the software to fulfil the system requirement.

5.2 Software Development Environment Setup

This software development environment setup of Paddy Field Farmer Fertilizers System is using divided into three important components which known as software, hardware and database. The following Figure 5.1 shorts that all of these components need to work together to ensure that the system will work correctly, systematically and better than the manual system.

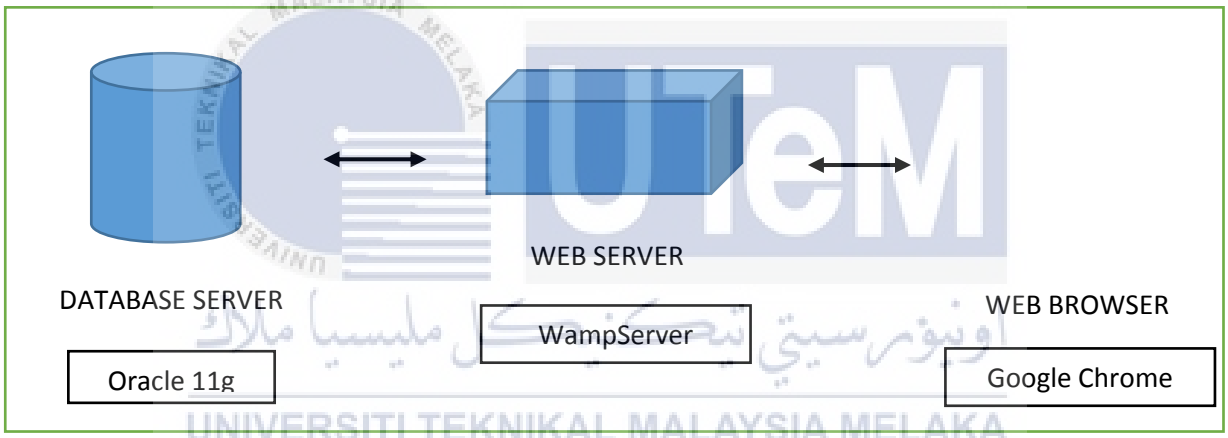


Figure 5.1: Software development environment setup architecture

5.2.1 Software Environment System

Before process development of the Paddy Field Farmer Fertilizers System can be started, a computer that used must completed with Adobe Dreamweaver CS3 authoring tool which acts as a system design. For the web server, WampServer is used because it is easy to configure and is compatible with the Windows operating system. Oracle 11g is used as a database to store the data and operate the system.

Table 5.1: Software and Hardware Requirement

Software	Hardware
• Adobe Dreamweaver CS3 • Wamp • Oracle 11g	• Computer • Server

5.2.2 Database Environment Setup

During the database environment setup, developer must configure the setting for database connection and grant some administration permission to have a full access to the database.

5.2.2.1 Configure Database Connection

The configuration of the database is done by the developer while making a connection between Oracle 11g database and Adobe Dreamweaver CS3. In this installation, it will explain step by step on how the oracle 11g and WampServer are installed. Please refer to Appendix B for step of installation WamServer.

5.3 Software Configuration Management

Software Configuration Management (SCM) is of a software used to manage the design process and control the changes in a software or system. This phase will shows about software installation, tool to configure the control application and the version control procedure.

5.3.1 Configuration environment setup

Software configuration management is about the installation and configuration of the software. WampServer is used to ease the developer to manage the system configuration. For the Graphical User Interface (GUI), Adobe Dreamweaver CS3 is used for editing which for HTML/PHP coding or interface design and can view the result of the system on its workspace both for coding and design. PHP code is used to connect the system with the server and the database. Besides that, Oracle 11g is used as source code to deliver the database information to the Adobe Dreamweaver CS3 through the database connection.

5.3.2 Version Control Procedure

Before the development process of Paddy Field Farmer Fertilizers System, all business process in Pertubuhan Peladang Kecil (PPK) is done manually using the form. Then, the form will be stored in the relevant folder. With this system, it will facilitate the management in terms of data collection, data storage, and it is safe and easy to use.

5.4 Implementation Database

This section will explains the use of Oracle code through the development of the Paddy Field Farmer Fertilizers System. Queries design are developed to access the data in the database. Few examples are as followed:

i) SELECT Statement

The SELECT statement is used to select data from a database. The result is stored in a result. Figure 5.2 show the output of the query:

select * from farmer;

Worksheet | Query Builder

```
select * from farmer;
```

Script Output | Query Result

SQL | All Rows Fetched: 11 in 0.088 seconds

	FARMER_ID	FARMER_NAME	FARMER_PHONE_NO	FARMER_ADDRESS	FARMER_IC	FARMER_...	FARMER_...
1	F1022	MOHAMAD SYAFIQ BIN MOHAMAD FAUZI	0132434532	NO 10, JALAN DC/1, TAMAN...	831110104549	1234	NOT ACTIVE
2	F1041	ZUHAIRI BIN ZAINAL	0196890676	NO 12, JALAN MASJID 2, T...	860104105679	1234	NOT ACTIVE
3	F1101	AMIR BIN IZZUDIN	0198787623	NO 103 JALAN TERATAI, TA...	830101145673	1234	NOT ACTIVE
4	F1102	MUHAMMAD FITRI BIN AZMAN	0137781232	LOT 1232,KAMPUNG HAJI JA...	850120148233	1234	NOT ACTIVE
5	F1185	MD JELAINI BIN KADIR	0192993744	NO 10 JALAN DC/1, TAMAN ...	830428108239	1234	NOT ACTIVE
6	F1143	AHMAD QUABIR BIN SULAIMAN	0143434567	NO 10, JALAN MASJID, TAM...	841001103349	1234	NOT ACTIVE
7	F1103	ZAMANI BIN YASSIN	0176653180	LOT 454, JALAN UTAMA, KA...	890512146731	1234	NOT ACTIVE
8	F1005	SULAIMAN RAHMAN	0136619894	LOT 102, KAMPUNG MELATI,...	941134105679	1234	ACTIVE
9	F1006	AZMAN BIN KADIR	0143434524	LOT 1232 JALAN HAJI MANA...	841011105645	1234	NOT ACTIVE
10	F1010	ZAINAL BIN YASSIN	0164545789	NO 103 JALAN ANGGERIK 2 ...	801009103449	1234	NOT ACTIVE
11	F1042	NASERR BIN MASLAN	0143434590	NO 23 JALAN 1, TAMAN MER...	880601104559	1234	NOT ACTIVE

Figure 5.2: The output of select statement query

ii) Retrieving Selected Columns from a Table

MySql SELECT statement that accomplishes the desired result. Figure 5.3 show the output of the query:

```
select * from farmer
where FARMER_APPLICANT_STATUS = 'ACTIVE';
```

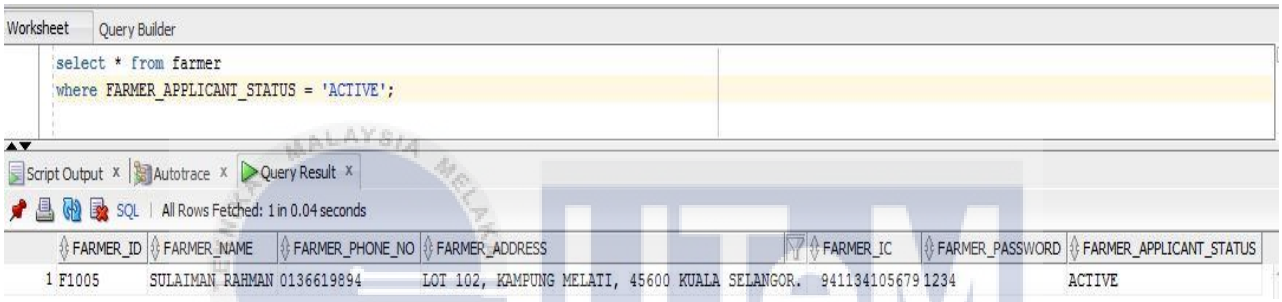


Figure 5.3: The output of retrieving selected columns from a table query

iii) Stored Procedure

Some process of the system are using stored procedure syntax/code for insert, update, view or delete. Stored procedure can be used to protect against injection attacks and will be treated as data even if an attacker inserts SQL commands. For more stored procedure coding, please refer to Appendix C.

```
create or replace PROCEDURE insertAPPLICATION(
a_totalarea IN application.total_area%TYPE,
a_seasons IN application.seasons%TYPE,
a_fyear IN application.f_year%TYPE,
a_applicationstatus IN application.application_status%TYPE,
a_farmerid IN application.farmer_id%TYPE)

IS
BEGIN

insert into application (total_area, seasons, f_year, application_status, farmer_id)
VALUES (a_totalarea,  a_seasons, a_fyear, a_applicationstatus, a_farmerid);
END;
```

Figure 5.4: Stored Procedure for insert application


```
create or replace procedure viewFARMER(
farm out sys_refcursor)
as
begin
 open farm for select * from farmer;
end;
```

Figure 5.5: Stored Procedure for view farmer

```
create or replace PROCEDURE updateFARMER(
f_farmer_id  IN farmer.farmer_id%TYPE,
f_farmer_name IN farmer.farmer_name%TYPE,
f_farmer_phone_no IN farmer.farmer_phone_no%TYPE,
f_farmer_address IN farmer.farmer_address%TYPE,
f_farmer_IC IN farmer.farmer_IC%TYPE)
AS
BEGIN
 UPDATE  farmer  SET farmer_phone_no = f_farmer_phone_no,
farmer_address=f_farmer_address
 where farmer_id = f_farmer_id;

END;
```

Figure 5.6: Stored Procedure for update farmer


```
create or replace procedure deleteLOT(
l_lotid in lot.lot_id%TYPE)
is
BEGIN
delete from lot WHERE lot_id= l_lotid;
end;
```

Figure 5.7: Stored Procedure for delete lot area

```
create or replace procedure searchfarmer
(sear varchar2,
result out sys_refcursor)
as
begin
open result for
select * from farmer
 where farmer_name ||" || farmer_id like '%'||sear||'%';
end;
```

Figure 5.8: Stored Procedure for search farmer

5.5 Implementation Status

The implementation status is the important part to know how far the percentage of the system development is complete. The progress of the development status of the module and component are describes inside the implementation status. Table 5.3 shows the implementation status for Paddy Field Farmer Fertilizers System.

Table 5.2: Implementation status of Paddy Field Farmer Fertilizers System

Module/Component	Description	Duration	Status
Login	Interface and authentication of the system access	2 weeks	Completed
Farmer and Staff Registration	Interface with the coding	1 weeks	Completed
Update Farmer and Staff Information	Interface with the coding	1 weeks	Completed
State Lot Area	Interface with the coding	2 weeks	Completed
Fertilizers/Pesticides Management	Interface with the coding	2 weeks	Completed
Paddy Field Seeds Management	Interface with the coding	3 weeks	Completed

5.6 Conclusion

This chapter describes the implementation of the system and it covers about the software development environment setup, software configuration management and status implementation.

CHAPTER VI

TESTING

6.1 Introduction

This chapter will describe about the testing phase of Paddy Field Farmer Fertilizers System. Testing part is the most important phase of developing system for developer to identify and to solve the weaknesses of the system. It will through several test that be tested by the selected users. This is to ensure that the system has been fully developed within the scope of which has been identified previously. The testing process also ensures that all component or modules in the system is working without facing any problems or error. This chapter will go through the main module of the Paddy Field Farmer Fertilizers System.

The system is tested to ensure that all components/module is work properly. The procedures will be followed by the test team. This is also to check whether the system can produce the intended output. The test design will also be carried out where it will identify each test case, and the expected results for each module are designed.

6.2 Test Plan

Test plan is about a document detail that is used to testing an application. There are three major phases elements that should be described and involved on test plan which are test organization, test environment and test schedule. In test organization, the person who involved in the testing process will be determined. The test environment consist of the location or place to carry out the testing process and test schedule is the arrangement for the duration and cycles during the testing process.

6.2.1 Test Organization

On testing organization part, it will involve the users and it describes how the testing will be conducted.

The people that are involved in this team for test organization are system developer, admin of Pertubuhan Peladang Kecil and several farmers. System developer is the person that is fully in charge to testing the system, identifying the errors and documentation the results of the test content. Admin is the tester that monitors overall system performance, while the farmers will test the system module and give their feedback that can be a guide to enhance the system. Tables 6.1 shows the table user and their task for this testing phase.

Table 6.1: User and Task for Testing Phase

User	Task
System Developer	The user who involves in testing, identify errors and documentation of the results of all test content. The person who ensure that the system will run smoothly without facing any error.
Admin	Test the systems and monitors the overall system performance
Farmer	Test the system module and give some feedback that can be as guide to enhance the system.

6.2.2.1 Environment Setup

Environment setup is to ensure the system will run without facing any errors. Table 6.2 shows the server and client for this system application workspace.

Table 6.2: Environment Setup Specification

Environment Specification	Description
Operating System	Window 8.1
RAM	4GBB DDR 2
Processor	Intel inside CORE i5
Database	Oracle 11g

6.2.2.2 Software Application

Software application shows about all the application that involves inside SBMS. Table 6.3 below shows the example of component in this application.

Table 6.3: System Application Environment

System Application	1. Admin and Farmer Registration 2. Login 3. Update Admin and Farmer Information 4. State Paddy Field Lot Area 5. Fertilizers/Pesticides Management 6. Paddy Field Seeds Management

6.2.2.3 System Software

System software consists of the software that will be implemented in this system. Table 6.4 shows the system software environment.

Table 6.4: System Software Environment

System Software	1. Windows 8.1 2. Oracle 11g 3. Adobe Dreamweaver CS3 4. WampServer

6.2.2.4 System Hardware

System hardware is the hardware that involves in this system development. The hardware used to operate the system software are listed in Table 6.5

Table 6.5: System Hardware Environment

System Hardware	1. Computer Workstation 2. Computer Server

6.2.3 Test Schedule

Test schedule purpose is to define when testing will be performed. The schedule will give a guideline to the developer to do the testing on certain time accurately along the duration of the project development. Table 6.6 shows the module or component name, activity, duration, start date and end date for testing part.

Table 6.6: Test Schedule for This System Testing Process

Module/Component	Activity	Duration	Start Date	End Date
Farmer and Admin Registration	Test unit integration and user acceptance	3 days	25/7/2016	27/7/2016
System Login	Test unit integration and useracceptance	3 days	25/7/2016	27/7/2016
Update Farmer and Admin Information	Test unit integration and user acceptance	3 days	25/7/2016	27/7/2016
State Lot Area	Test unit integration and user acceptance	4 days	25/7/2016	27/7/2016
Update Lot Area	Test unit integration and user acceptance	3 days	25/7/2016	27/7/2016
Fertilizers/Pesticides Management	Test unit integration and user acceptance	2 days	28/7/2016	29/7/2016
Paddy Field Seeds Management	Test unit integration and user acceptance	2 days	28/7/2016	29/7/2016

6.3 Test Strategy

Testing strategy is to achieve the goal of the parties involved. The test strategies are divided into two basic testing, which are the White box testing and the Black box testing. The White box testing is the structural base testing for this system application. The advantage of the white box testing is the testing is done by the perspective in the users, and not the developer and the test cases can do after the testing specification is done. While in the black box testing, it will evaluate the system from user perspective.

6.3.1 Classes of tests

Classes of test are divided into security testing, error handling, output correctness test and user acceptance test.

i) Security Test

The security test is to ensure that the data contained in the system is secured.

ii) Error Handling Test

The error handling test to ensure that Paddy Field Farmer Fertilizers System only key-in the right input. The error messages will be pop-up if the user entered the wrong value.

iii) Output Correctness Test

The Output Correctness Test is to ensure that the input and the output are related.

6.4 Test Design

Test Design part is divided into two main parts which are the test description and the test data. The test description will cover the activities that are required and it is will be documented. It will describe about the test case and the expected result. While for test data it will cover about the user acceptance.

6.4.1 Test Description

Test description is the result of a documented output to identify the expected result. Table 6.7 to table 6.16 shows the cases and expected result for each system modules.

Table 6.7: Test Farmer and Admin Registration Module

Test ID	Action	Expected Result	Respondent Comment
	Validate Farmer/Admin registration		
	All fields blank	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.

	Unfilled certain field	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.
	Valid input for each field	New Farmer/Admin data successfully stored in database	Successfully make a registration of Farmer/Admin

Table 6.8: Test Login for Farmer Login Module

Test ID	Action	Expected Result	Respondent Comment
F1000	Login Authentication		
F1006	Enter username and wrong password	UserID or Password is wrong.	Message 'UserID or Password is wrong' will appear when the user enters incorrect username or password.
F1005	Enter username and right password	User can logon successfully into system	Login into system success.

Table 6.9: Test Login for Admin Login Module

Test ID	Action	Expected Result	Respondent Comment
A1000	Login Authentication		
A1001	Enter username and wrong password	UserID or Password is wrong.	Message 'UserID or Password is wrong' will appear when the user enters incorrect username or password.
A1041	Enter username and right password	User can logon successfully into system	Login into system success.

Table 6.10: Test Update Farmer Information

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate update farmer		
F1010	Selected fields blank	'Please field out this field' message will appear for selected field.	Message 'Please field out this field' will appear when the user does not fill in the field.
F1041	Valid input for selected field	Farmer information updated	Success to update Farmer information

Table 6.11: Test Update Admin Information

Test ID	Action	Expected Result	Respondent Comment
A1000	Validate update admin		
A1001	Selected fields blank	'Please field out this field' message will appear for selected field.	Message 'Please field out this field' will appear when the user does not fill in the field.
A1022	Valid input for selected field	Admin information updated	Success to update Admin information

Table 6.12: Test State Lot Area

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate registered farmer		
F1103	All fields blank	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.
F1143	Unfilled certain field	'Please field out this field' message will appear for unfilled field	Message 'Please field out this field' will appear when the user does not fill in the field.

F1185	Valid input for each field	New paddy field lot area successfully register into database	Successfully make a registration of paddy field lot area.

Table 6.13: Test Add Lot Area

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate registered farmer		
F1103	All fields blank	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.
F1143	Unfilled certain field	'Please field out this field' message will appear for unfilled field	Message 'Please field out this field' will appear when the user does not fill in the field.
F1185	Valid input for each field	New paddy field lot area successfully register into database	Successfully make a registration of paddy field lot area.
F1185	Valid input for each field but try to register the same lot no. or lot no. already registered.	'Blok and Lot Number has been selected' message will appear.	Lot Area registration failed.

Table 6.14: Test Delete Lot Area

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate registered farmer		
F1103	Delete own registered lot area.	'Data has been deleted from system' message will appear.	The registered lot area deleted from the system.

Table 6.15: Test Fertilizers/Pesticides Application

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate registered farmer		
F1103	All fields blank	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.
F1143	Unfilled certain field	'Please field out this field' message will appear for unfilled field	Message 'Please field out this field' will appear when the user does not fill in the field.
F1185	Valid input for each field	New fertilizers/pesticides application successfully register into database	Successfully make an application of fertilizers/pesticides.

F1185	Valid input for each field but try to register the same seasons with same year.	'You Already Made An Application For These Seasons And Year' message will appear.	Fertilizers/Pesticides application failed.

Table 6.16: Test Paddy Field Seeds

Test ID	Action	Expected Result	Respondent Comment
F1000	Validate registered farmer		
F1103	All fields blank	'Please field out this field' message will appear for each field.	Message 'Please field out this field' will appear when the user does not fill in the field.
F1143	Unfilled certain field	'Please field out this field' message will appear for unfilled field	Message 'Please field out this field' will appear when the user does not fill in the field.
F1185	Valid input for each field	The system will predict the right date of maturity of seeds based on selected type of seeds.	Successfully get a predicted date of maturity of seeds.

6.4.2 Test Data

The test data for each test description documented in previous section are attached the following in Table 6.17 to table 6.25:

Table 6.17: Test Farmer Registration Module

COMPONENT:FARMER REGISTRATION		
TEST NO	**ATTRIBUTE**	**DATA**
TEST01	**Farmer:**	
	User ID	*Auto Increment*
	Name	SULAIMAN RAHMAN
	Phone No.	0136619894
	Farmer Address	LOT 102, KAMPUNG MELATI, 45600 KUALA SELANGOR.
	Farmer IC	941134105679
	Farmer Password	1234

Table 6.18: Test Admin Registration Module

COMPONENT:ADMIN REGISTRATION		
TEST NO	**ATTRIBUTE**	**DATA**
TEST02	**Admin:**	
	User ID	*Auto Increment*
	Name	HAZRUL AKIM
	Phone No.	0145656787
	Admin Address	NO.10, JALAN DC/1, TAMAN CENDERAWASIH, 45600 KUALA SELANGOR
	Admin IC	911115105679
	Admin Password	1234

Table 6.19: Test Farmer Login Module

COMPONENT:LOGIN		
TEST NO	**ATTRIBUTE**	**DATA**
TEST03	**Farmer:**	
	User ID	F1005
	Password	1234

Table 6.20: Test Admin Login Module

COMPONENT:LOGIN		
TEST NO	**ATTRIBUTE**	**DATA**
TEST04	**Admin :**	
	User ID	A1001
	Password	1234

Table 6.21: Test Update Farmer Information

COMPONENT:UPDATE FARMER INFORMATION MODULE		
TEST NO	**ATTRIBUTE**	**DATA**
TEST05	**Farmer:**	
	User ID	F1005
	Name	SULAIMAN RAHMAN
	Phone No.	0332412076
	Farmer Address	NO 10, JALAN MASJID, TAMAN KASAWARI, 45600 KUALA SELANGOR.
	Farmer IC	941134105679

Table 6.22: Test Update Admin Information

COMPONENT:UPDATE ADMIN INFORMATION MODULE		
TEST NO	**ATTRIBUTE**	**DATA**
TEST06	**Admin:**	
	User ID	A1001
	Name	HAZRUL AKIM
	Phone No.	0332412065
	Admin Address	NO.11 JALAN MASJID 1, TAMAN RIA 2, 45400 SEKINCHAN, SELANGOR.
	Admin IC	911115105679

Table 6.23: Test Update Admin Information

COMPONENT:UPDATE ADMIN INFORMATION MODULE		
TEST NO	**ATTRIBUTE**	**DATA**
TEST06	**Admin:**	
	User ID	A1001
	Name	HAZRUL AKIM
	Phone No.	0332412065
	Admin Address	NO.11 JALAN MASJID 1, TAMAN RIA 2, 45400 SEKINCHAN, SELANGOR.
	Admin IC	911115105679

Table 6.24: Test State Lot Area

COMPONENT:STATE LOT AREA MODULE		
TEST NO	**ATTRIBUTE**	**DATA**
TEST07	**Farmer:**	
	Lot ID	*Auto Increment*
	Farmer ID	F1005
	Name	SULAIMAN RAHMAN
	Lot Type	PRIVATE
	Blok	B1
	Lot Number	2
	Total Area	1.1

Table 6.25: Test Paddy Field Seeds

COMPONENT: MATURITY OF SEEDS MODULE		
TEST NO	**ATTRIBUTE**	**DATA**
TEST08	**Farmer:**	
	Select Date	09/02/2016
	Type Of Seeds	MR 219

6.5 Test Results and Analysis

The success and the failure when using the actual data for testing process can be an appropriate factor to measure the successful of system whether the system can be run efficiently or needs to be improve for next testing until the user are satisfied with the system performance. Table 6.26 describes the test result and analysis.

Table 6.26: Test Result and Analysis for this system

TEST NO	COMPONENT	RESULT
TEST01	**Farmer Registration Module** • Farmer Registration	**OK**
TEST02	**Admin Registration Module** • Admin Registration	**OK**
TEST03	**Farmer Login** • Paddy Field Farmer	**OK**
TEST04	**Admin Login** • Admin of Paddy Field Farmer Fertilizers System	**OK**
TEST_05	**Update Farmer Information Module** • Edit Farmer Information	**OK**
TEST_06	**Update Admin Information Module** • Edit Admin Information	**OK**
TEST_07	**State Lot Area Module** • State Paddy Field Lot Area - Add Lot Area - Delete Lot Area	**OK**
TEST_08	**Paddy Field Seeds Module** • Maturity Of Seeds - Predict the maturity of seeds	**OK**

6.6 Conclusion

Testing part is the important part and required to ensure the system developed is tested before it can be used by a user. In this phase the interaction with several users, received inputs from and produced result for them. All the data of the database had been discussed in this testing chapter.

The testing phase involved various forms of testing to ensure that the system can operate without facing any errors. After that, the test plan was prepared to identify the item, environment and the schedule of the testing was held.

CHAPTER VII

CONCLUSION

7.1 Observation on Weaknesses and Strengths

Paddy Field Farmer Fertilizers System is developed to provide a web application system to facilitate paddy field farmers to make an application of fertilizers and pesticides as well as simplify and ease admin at Pertubuhan Peladang Kecil (PPK) to process the application of fertilizers and pesticides for each new season of cultivation.

This system is also easy for admin of Pertubuhan Peladang Kecil to manage farmer's information, paddy field information, and pesticides/fertilizers stock by each seasons of cultivation. The observation of the system strengths and weaknesses is identified and will be discussed in this chapter.

The observed strength of this system is Pertubuhan Peladang Kecil is able to reduce the use of paper to record the registration, an application of fertilizers/pesticides for every seasons. Besides that, admin of Pertubuhan Peladang Kecil can save time without need to go and check the stock of fertilizers/pesticides every time the farmer made an application

The weakness of the system is it does not have a module to display the detail information about the status of paddy field lot area. It is because, all the information about lot area ownership, rental rates is private and all the information is between tenants and owners.

7.2 Propositions for Improvement

Based on the advantages and disadvantages that are identified, there are several things should be considered for improving the system. This will make it easier for the farmer to see the available lot area of paddy field to ease them to deal with owner of lot for rental process.

7.3 Contribution

Paddy Field Farmer Fertilizers System contributes to:

a) Admin

- Easy to manage the stock of fertilizers/pesticides using this system.
- Easy to manage all application of fertilizers/pesticides by seasons and year.
- System can be accessed anywhere.

b) Farmer

- Easy access to the system and can be accessed anywhere for application of fertilizers/pesticides.

7.4 Conclusion

Overall, the system is developed and has already achieved the main objectives and scope. The first objective is to develop an online system for paddy field farmer in Kuala Selangor district to make an application of fertilizers and pesticides through online system.

The system includes the modules of registration farmer/admin, application of fertilizers and pesticides and paddy field seeds management. The second objective is to ease admin of Pertubuhan Peladang Kecil (PPK) to manage the application from the paddy field farmer. Third objective is to ease admin to manage stock of fertilizers and pesticides by seasons and years. Lastly, the system developed is to minimize the redundancy and loss of data.

All the objectives of this system are already achieved on develop the Paddy Field Farmer Fertilizers System, it can be enhanced by improving the module so that the system will become more efficient than manual system.

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APPENDIX A

1. Trigger Before Insert Coding

This is a coding for trigger before insert of table farmer.

```
create or replace trigger farm_trig
before insert on farmer
for each row
begin
select 'F' || farm_seq.nextval into :new.farmer_id from dual;
end;
```

This is a coding for trigger before insert of table admin.


```
create or replace trigger admin_trig
before insert on admin
for each row
begin
select 'A' || admin_seq.nextval into :new.admin_id from dual;
end;
```

This is a coding for trigger before insert of table fertilizers.

```
create or replace trigger fert_trig
before insert on fertilizers
for each row
begin
select 'FER' || fert_seq.nextval into :new.fertilizers_code from dual;
end;
```

This is a coding for trigger before insert of table pesticides.

```
create or replace trigger pest_trig
before insert on pesticides
for each row
begin
select 'PEST' || pest_seq.nextval into :new.pesticides_code from dual;
end;
```


2. Trigger After Insert Coding

This is a coding for trigger after insert of table Lot..

```
CREATE OR REPLACE TRIGGER lot_after_insert
AFTER INSERT ON lot
FOR EACH ROW

DECLARE
  tlp number;
```

```
    tlr number;

    BEGIN

    select total_lot_private, total_lot_rent into tlp, tlr from lot_admin;

    IF :new.lot_type ='private' THEN
    UPDATE lot_admin
    SET total_lot_private = tlp +1;



    ELSE
    UPDATE lot_admin
    SET total_lot_rent = tlr +1;


    END IF;
END;
```


3. Trigger Before Delete Coding

This is a coding for trigger before delete of table farmer.

```
create or replace trigger bef_del_farmer
before delete on farmer
for each row
declare
begin

delete application where farmer_id =:old.farmer_id;
end;
```

This is a coding for trigger before delete of table lot.

```
CREATE OR REPLACE TRIGGER bef_del_lot
before delete ON lot
FOR EACH ROW



DECLARE
  tlp number;
  tlr number;

BEGIN

select total_lot_private, total_lot_rent into tlp, tlr from lot_admin;

IF :old.lot_type ='private' THEN
UPDATE lot_admin
SET total_lot_private = tlp -1;


ELSE
UPDATE lot_admin
SET total_lot_rent = tlr -1;



END IF;
END;
```

4. Trigger After Update Coding

This is a coding for trigger after update of table application.

```
create or replace trigger farm_after_update
after update on application
for each row

DECLARE
application_status varchar2(10);
farmer_applicant_status varchar2(20);

BEGIN



IF :new.application_status='ACCEPT'
THEN update farmer
SET farmer_applicant_status='ACTIVE'
where farmer_id =:new.farmer_id;

END IF;
END;
```

APPENDIX B

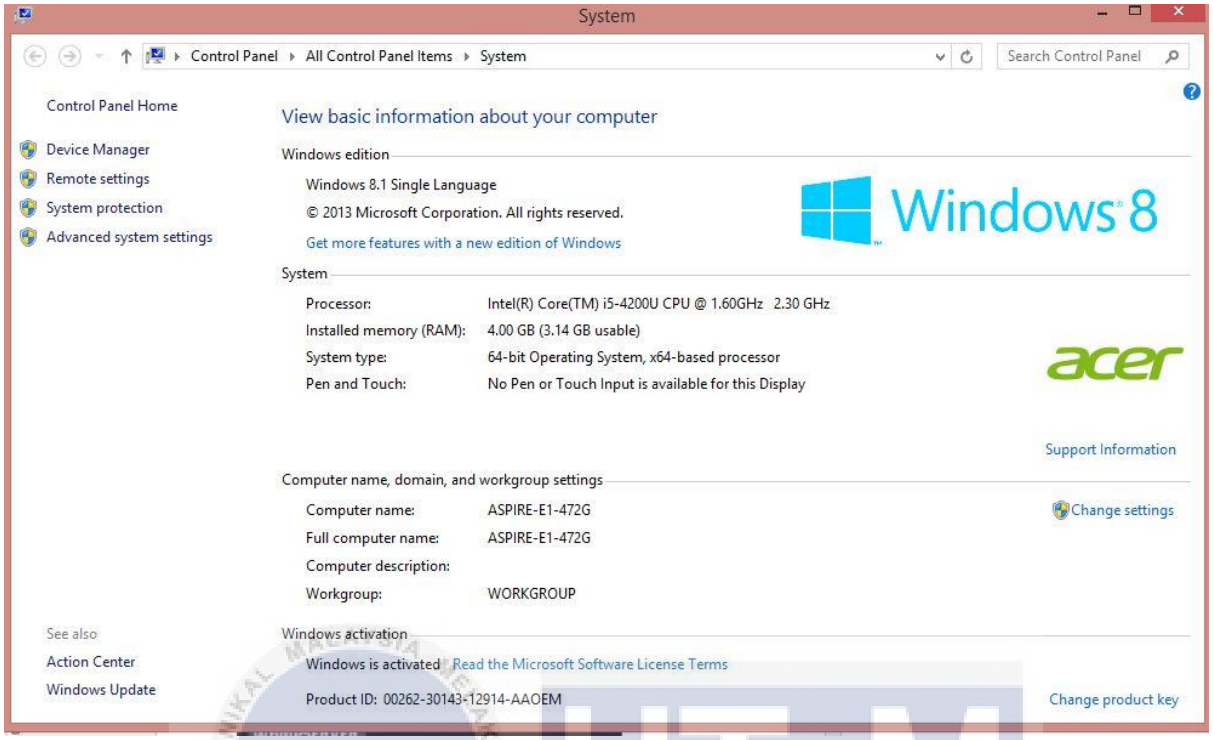
1. Downloading WampServer

Download the latest version of WampServer installer, and save the file into the computer directory.

Identify the version of Windows, and select the correct installer file suitable for Windows.

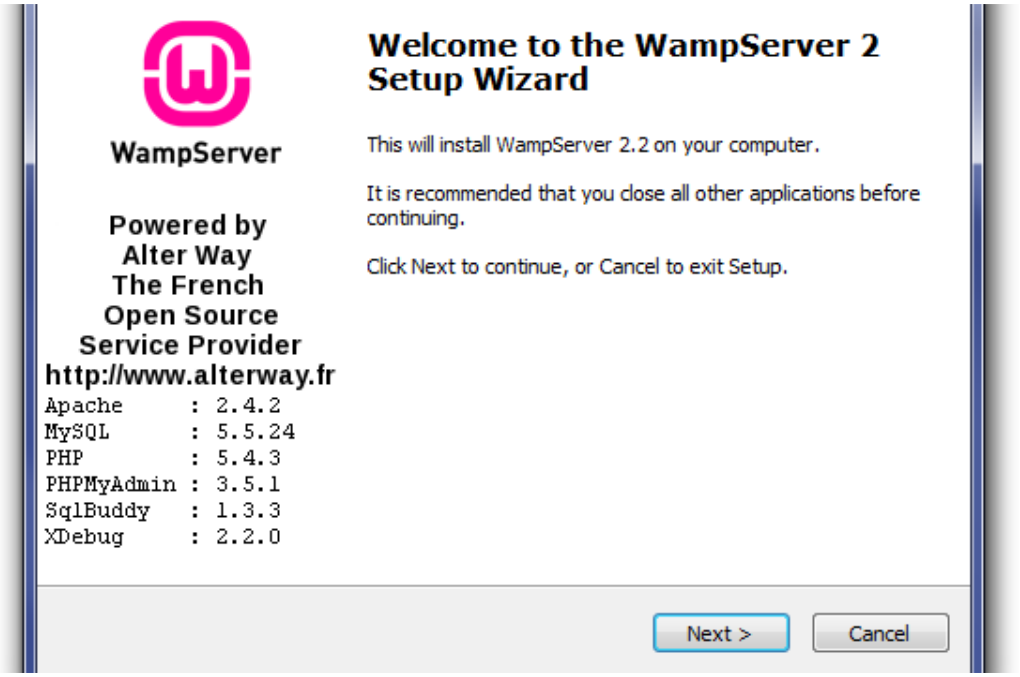
Check the Windows system is either 32-bit or 64-bit.

Right-click on My Computer, and then click Properties.

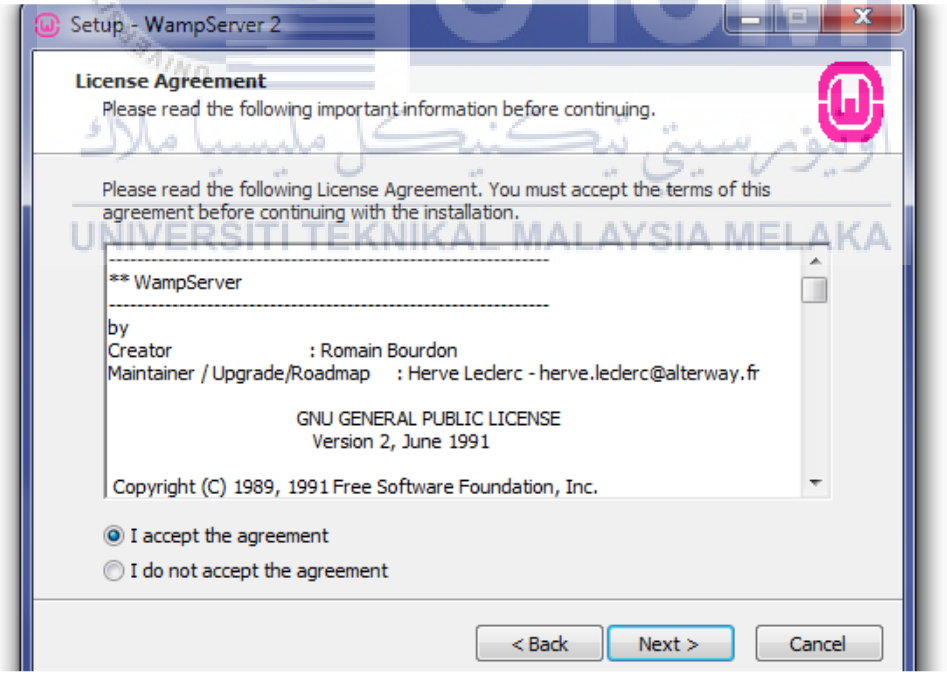


2. Installing WampServer

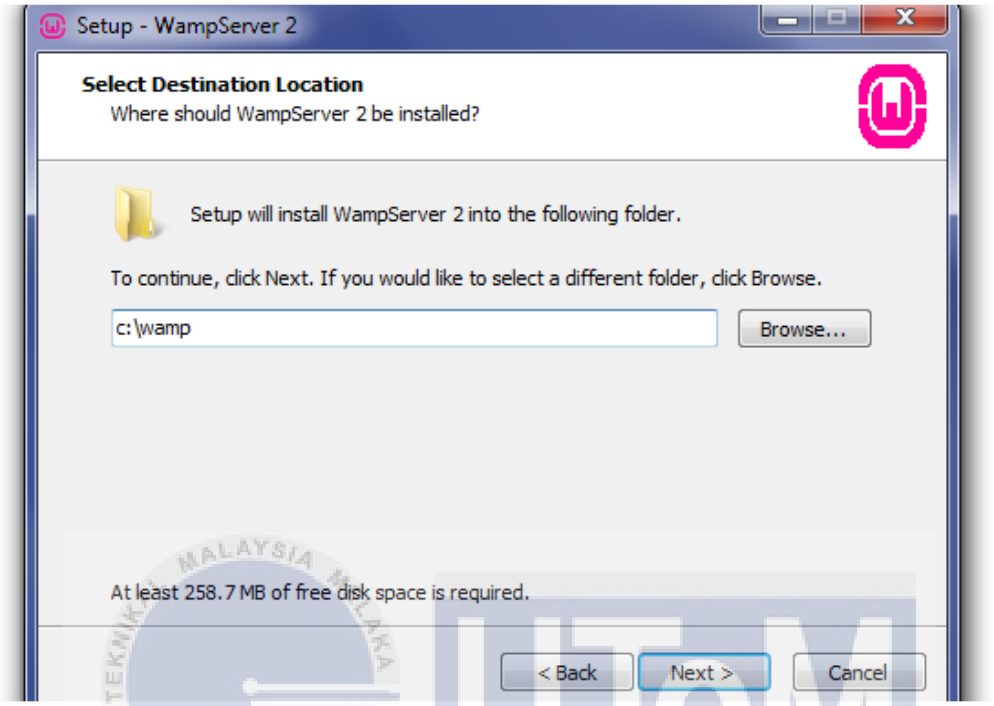
- To start the installation process, open the folder where the file was saved, and **double-click the installer file**. A security warning window will open, ask confirmation to run the installation file.
- **Click Run** to start the installation process.
- The "Welcome to the WampServer Setup Wizard" screen was pop-pup. **Click Next** to continue the installation.



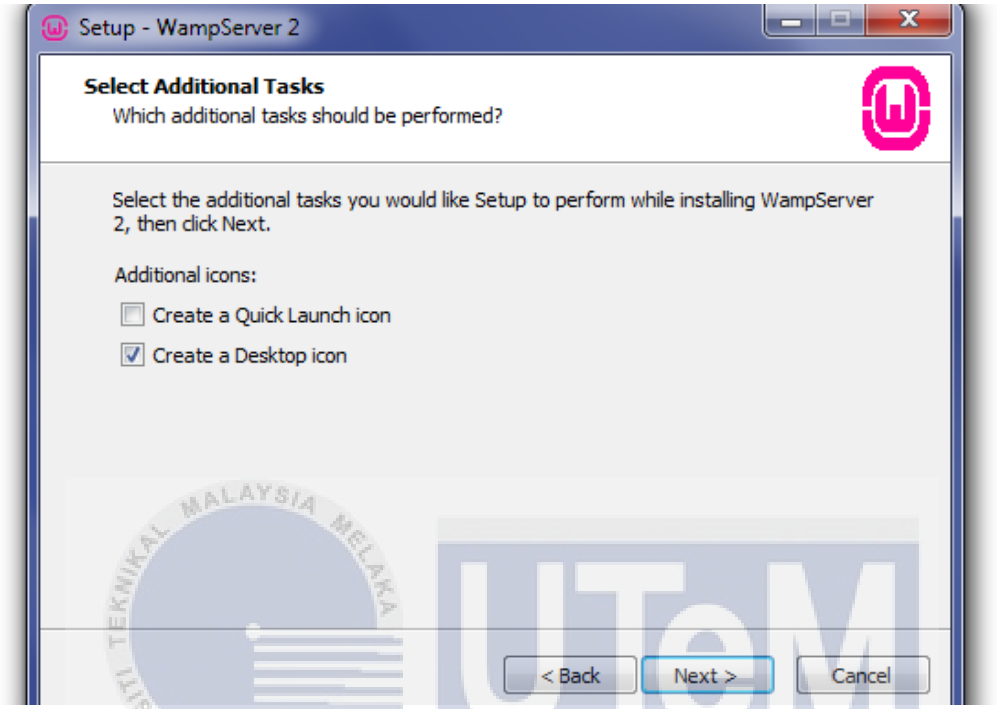
Read the agreement, check the radio button next to **accept the agreement**, then **click Next** to continue the step of installation.



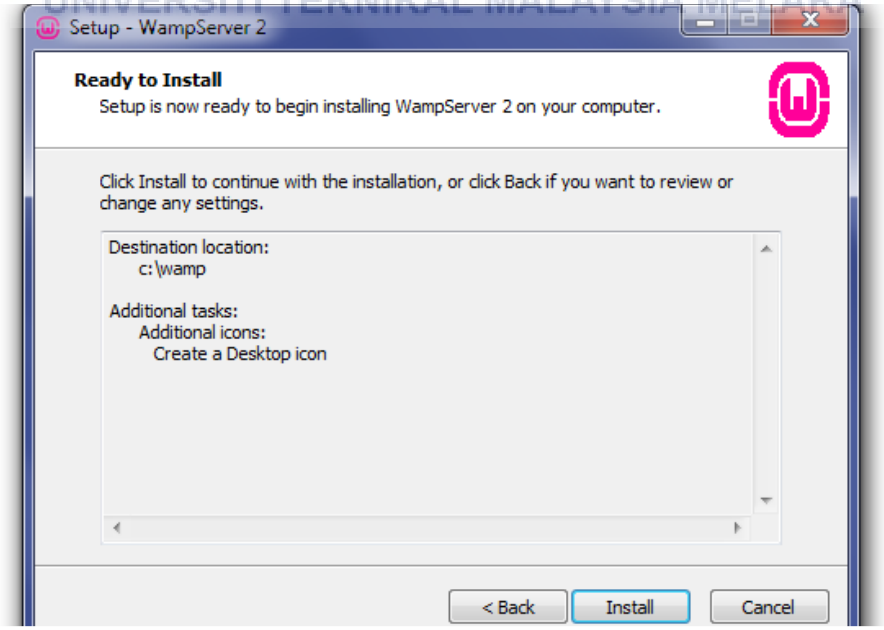
Select Destination Location screen. Unless you would like to install WampServer on another drive, you should not need to change anything. **Click Next** to continue.



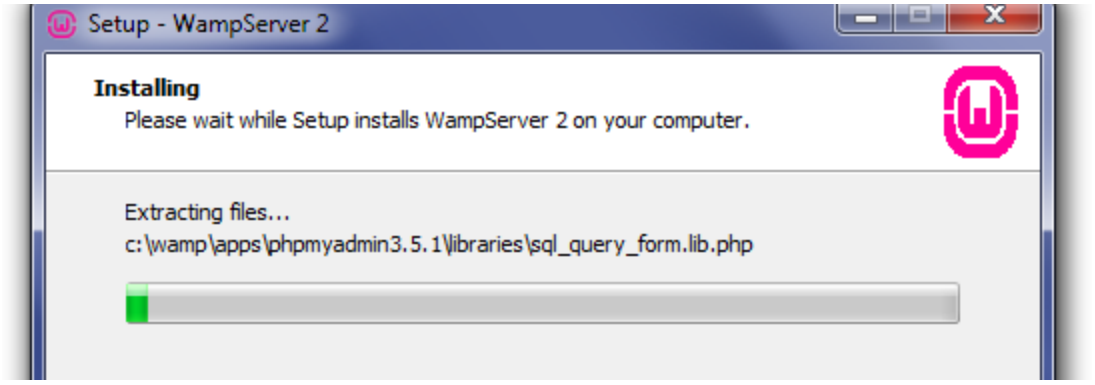
Select Additional Tasks screen will be able to select whether you would like a Quick Launch icon added to the taskbar or a Desktop icon created once installation is complete. Make a selections, then **click Next** to continue.



Review setup choices, and change any of them by **clicking Back** to the appropriate screen, if you choose to. Once have reviewed the choices, **click Install** to continue.



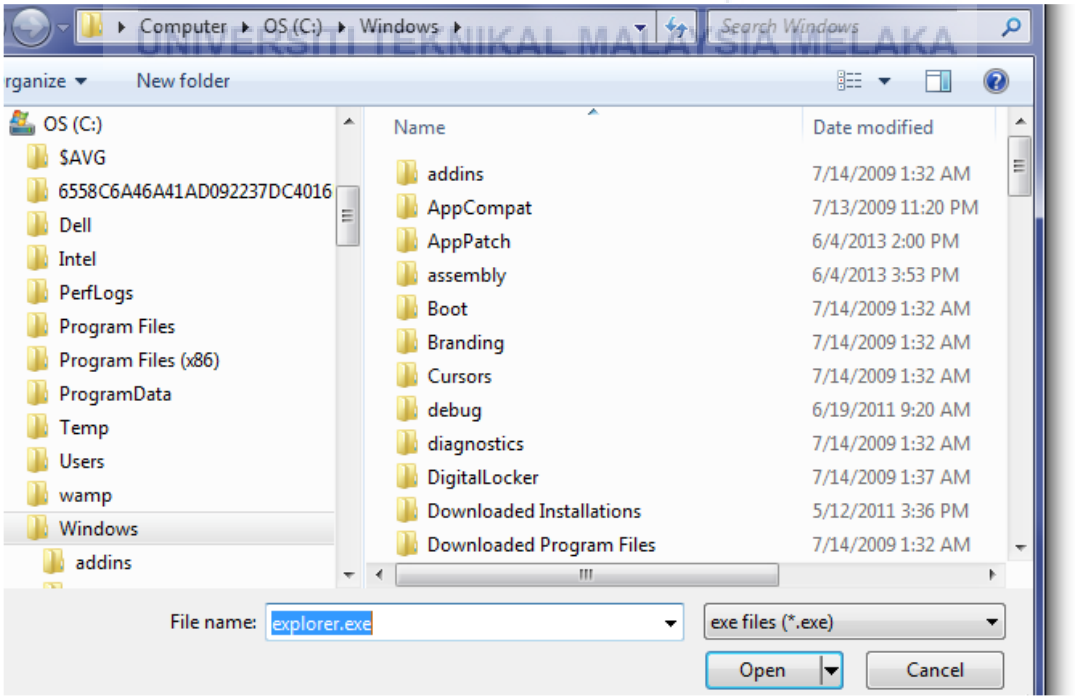
WampServer will begin extracting files to the location that been selected.



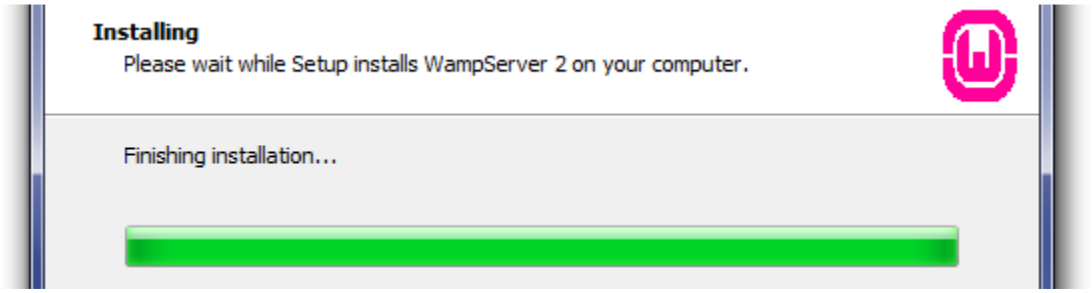
Once the extracted files, then select the default browser. WampServer defaults to Internet Explorer upon opening the local file browser window. If the default browser isn't IE, then look in the following locations for the corresponding .exe file:

- **Firefox:** C:\Program Files (x86)\Mozille Firefox\firefox.exe
- **Chrome:** C:\Users\xxxxx\AppData\Local\Google\Chrome\Application\chrome.exe

Select the default browser's .exe file, then **click Open** to continue.

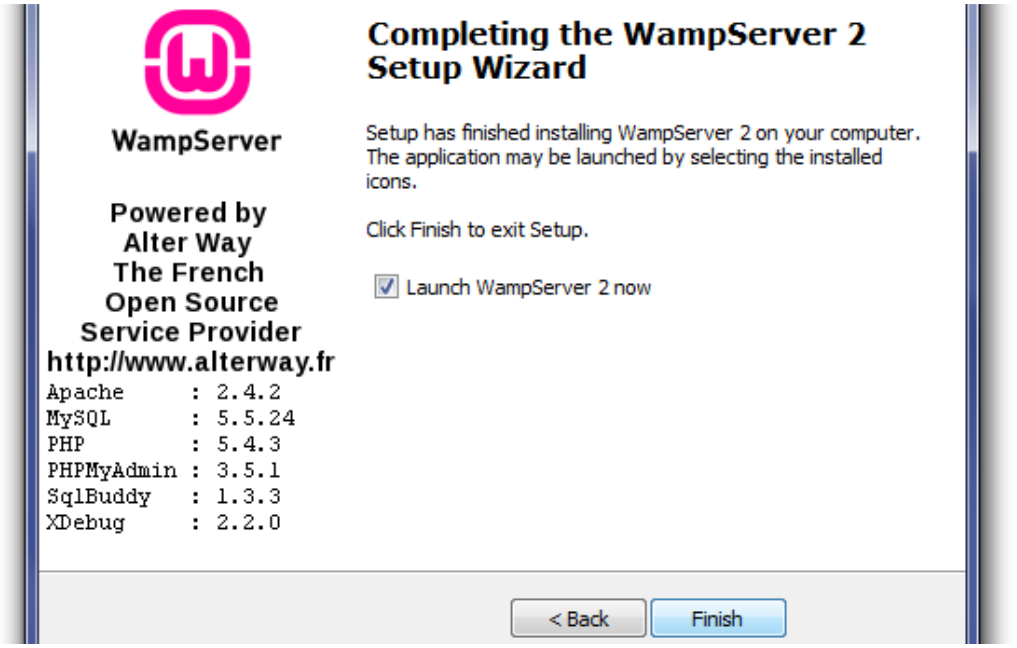


The Setup screen will appear next, showing the status of the installation process.



Once the progress bar is completely green, the PHP Mail Parameters screen will appear. Leave the SMTP server as **local host**, and change the email address to one that had been choose. **Click Next** to continue.

Check the Launch WampServer Now box, then **click Finish** to complete the installation.



The WampServer icon appear in the stray on the right side of the taskbar.

- If the icon is green, then everything is working properly.
- If the icon is orange, then there are issues with one of the services.
- If the icon is red, then both Apache and MySQL services aren't running.

3. Testing WampServer

Once installation process is completed, test the installation is working properly by going to http://localhost/ in web browser.

4. Configuring WampServer

After had installed and tested WampServer, adjust some configuration options to complete the local setup.

APPENDIX C

Stored Procedure to view fertilizers info.

```
create or replace procedure fertilizersinfo (farmer_id1 in varchar2, curs_fert out
sys_refcursor)

AS
BEGIN

open curs_fert for

select farmer_id from farmer where farmer_id= farmer_id1;

select a.farmer_id, a.seasons, a.f_year, f.organic, f.compounds,f.urea,f.NPK,p.amistar,
p.plenum, p.prevathon, a.application_status
FROM application a,fertilizers f , pesticides p
where a.fertilizers_code = f.fertilizers_code and a.pesticides_code= p.pesticides_code and
farmer_id = farmer_id1 ;
end;
```

Stored Procedure to view fertilizers info.

```
create or replace procedure fertilizersinfo (farmer_id1 in varchar2, curs_fert out
sys_refcursor)

AS
farm1 varchar2(6);
BEGIN

select farmer_id into farm1 from farmer where farmer_id= farmer_id1;

open curs_fert for
select a.farmer_id, a.seasons, a.f_year, f.organic, f.compounds,f.urea,f.NPK,p.amistar,
p.plenum, p.prevathon, a.application_status
FROM application a,fertilizers f , pesticides p
where a.fertilizers_code = f.fertilizers_code and a.pesticides_code= p.pesticides_code and
farmer_id = farm1 ;
end;
```


Stored Procedure to view list data of application.

```
create or replace procedure listdata_application1(
app out sys_refcursor)
as
begin
 open  app for

select a.farmer_id, a.seasons, a.f_year, f.organic, f.compounds,f.urea,f.NPK,p.amistar,
p.plenum, p.prevathon, a.application_status
FROM application a,fertilizers f , pesticides p
where a.fertilizers_code = f.fertilizers_code and a.pesticides_code= p.pesticides_code;
end;
```

Stored Procedure to count maturity of seed.

```
create or replace procedure countseed (tarikh in varchar2,type1 in varchar2, matang out
varchar2)

AS
BEGIN
if type1='MR 219' then
matang :=to_date(tarikh,'yyyy-mm-dd')+110;

elsif type1='MR 220' then
matang :=to_date(tarikh,'yyyy-mm-dd')+100;

elsif type1='MR 263' then
matang :=to_date(tarikh,'yyyy-mm-dd')+105;

end if;

end;
```


Stored Procedure to insert farmer data.

```
CREATE OR REPLACE PROCEDURE insertFARMER(
        p_farmName IN farmer.farmer_name%TYPE,
        p_farmTelno IN farmer.farmer_phone_no%TYPE,
        p_address IN farmer.farmer_address%TYPE,
        p_ic IN farmer.farmer_IC%TYPE,
        p_fpassword IN farmer.farmer_password%TYPE)
IS
BEGIN

  insert into farmer (farmer_name, farmer_phone_no, farmer_address, farmer_IC,
```

```
farmer_password)
  VALUES (p_farmName,  p_farmTelno, p_address, p_ic, p_fpassword);


END;
```

Stored Procedure to update farmer data.

```
create or replace PROCEDURE updateFARMER(
 f_farmer_id  IN farmer.farmer_id%TYPE,
 f_farmer_name IN farmer.farmer_name%TYPE,
 f_farmer_phone_no IN farmer.farmer_phone_no%TYPE,
 f_farmer_address IN farmer.farmer_address%TYPE,
 f_farmer_IC IN farmer.farmer_IC%TYPE)
AS
BEGIN
UPDATE  farmer  SET farmer_phone_no = f_farmer_phone_no,
farmer_address=f_farmer_address
where farmer_id = f_farmer_id;
END;
```

Stored Procedure for login.

```
create or replace procedure login_proc(username varchar2, pass varchar2, who out varchar2)
as
cc int;
ch int;
begin
select count(*) into cc from farmer
where farmer_id = username and farmer_password = pass;
select count(*) into ch from admin
where admin_id = username and admin_password = pass;
if cc = 1 then
who := 'FARMER';
elsif ch = 1 then
who := 'ADMIN';
end if;
end;
```


Stored Procedure for search farmer.

```
create or replace procedure searchfarmer
(sear varchar2,
result out sys_refcursor)
as
begin
open result for
select * from farmer
 where farmer_name ||" || farmer_id like '%'||sear||'%';
end;
```