IT BASE STUDENT INFORMATION MANAGEMENT SYSTEM

SITI AMIRAH BINTI MUHAMAD TERMIDI

BORANG PENGESAHAN STATUS TESIS

JUDUL: IT BASE STUDENT INFORMATION MANAGEMENT SYSTEM
SESI PENGAJIAN: 2016/2017

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(TANDATANGAN PENULIS)	(TANDATANGAN PENYELIA)
Alamat tetap: Lot 9384 Batu 7 ½	Noor Azilah Bt Draman@Muda
Jalan Besar 45300 Sg. Besar	Nama Penyelia
Selangor Darul Ehsan.	
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I hereby declare that this project report entitled

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I hereby that I have read this project report and found

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Bachelor of Computer Science (Database Management) with Honors.

STUDENT: _____ Date: 18/8/2016

(PUAN NOOR AZILAH BINTI DRAMAN @ MUDA)

IT BASE STUDENT INFORMATION MANAGEMENT SYSTEM (ISIMS)

SITI AMIRAH BINTI MUHAMAD TERMIDI

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

DEDICATION

To Almighty, Allah S.W.T

To Beloved Parents

My lovely parents Muhamad Termidi Bin Yabani,Jamilah Bt Din
Thank you because always support me with love, caring and give the motivations throughout my Projek Sarjana Muda (PSM).

To Supervisor and Lectures

My kind supervisor, Madam Noor Azilah Muda
Thank you for guidance, patience, and supervision to make sure that this project implemented smoothly and enable finish this project until the end.

To Lovely Friend

Thank you for the all sharing knowledge and always support to complete this project.

Thank you very much.

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First of all, I would like thank to Allah for giving me the ideas, strength, knowledge, good health and chance to finish this project until the end.

Special thanks to my beloved supervisor Madam Noor Azilah Bt Draman@Muda for all the guidance, motivation support, and for being really understanding of my Final Year Project and very helpful that assist me to complete this project successfully.

I would like to thank my beloved parents, Muhamad Termidi Bin Yabani ,Jamilah Binti Din, and all my siblings who have been giving me support with love and motivation throughout my project either mentally or physically to finish this project.

Lastly, I would also like thank to PM Norhaziah Binti Md Sallehh as my evaluator and all my fellow friends who have contributed in my project. All that contribution and encouragement from them throughout this project from start to the end will always be remembered in UTeM and appreciated.

ABSTRACT

IT Base Student Information Management System is developing to replace the current system that is used manually by security officer in IT Base. In other words, it is aim to be computerized the manual system of the current system which is now using the receipt. This system is built for IT Base staff and student. For IT Base staff, it helps them to manage student record systematically and effectively. While for student, it is easier for them to check either they have success registered the course or not. The overall system is using the Hypertext Processor (PHP), Xampp Server and Oracle 10g Express Edition. Entity relational diagram (ERD) and data flow diagram (DFD) are the design that is designed to make the flow of the system more understandable. The purpose of the system is to reduce the response time for searching record, easier for student to choose course offer, keep record more secure and decrease the use of papers (paperless). This system is developing to solve the encountered problem. While completing the system, some strength and weaknesses are identified and the suggestion on how to enhance this system in future is given at the end of the project report.

ABSTRAK

IT Base Student Information Management System ini dibangunkan bagi menggantikan sistem sedia ada yang digunakan secara manual oleh pegawai keselamatan di IT Base. Dalam erti kata lain, ia adalah bertujuan untuk mengkomputerkan sistem manual iaitu sistem semasa yang kini menggunakan resit. Sistem ini dibina untuk kakitangan IT Base dan pelajar. Untuk kakitangan IT Base, ia membantu mereka untuk menguruskan rekod pelajar secara sistematik dan berkesan. Manakala bagi pelajar, ia adalah lebih mudah bagi mereka untuk memeriksa sama ada mereka sudah daftar. Sistem keseluruhan adalah menggunakan Pemproses Hiperteks (PHP), Xampp Server dan Oracle 10g Express Edition. Entiti hubungan rajah (ERD) dan rajah aliran data (DFD) adalah reka bentuk yang direka agar aliran sistem lebih mudah difahami. Tujuan sistem ini adalah untuk mengurangkan tindak balas masa untuk mencari rekod, memudahkan pelajar menyemak kursus yang ditawarkan, menyimpan rekod lebih selamat dan mengurangkan penggunaan kertas (paperless). Sistem ini bertujuan untuk menyelesaikan masalah yang dihadapi. Semasa menyiapkan sistem ini, beberapa kekuatan dan kelemahan dikenal pasti dan beberapa cadangan untuk menambahbaik sistem ini pada masa akan datang diberi pada akhir laporan projek.

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DECLARATION	**ii**
	DEDICATION	**iii**
	ACKNOLEDGEMENTS	**iv**
	ABSTRACT	**v**
	ABSTRAK	**vi**
	TABLE OF CONTENTS	**vii**
	LIST OF TABLES	**xi**
	LIST OF FIGURES	**xii**
	LIST OF ABBBREVIATIONS	**xiv**
	LIST OF ATTACHMENTS	**xiv**
CHAPTER I	**INTRODUCTION**	
	1.1 Project Background	1-2
	1.2 Problem Statements	2
	1.3 Objectives	3
	1.4 Project Scope	3
	1.5 Project Significance	4
	1.6 Expected Output	4
	1.7 Conclusion	5
CHAPTER II	**PROJECT METHODOLOGY AND PLANNING**	
	2.1 Introduction	7
	2.2 Project Methodology	8

2.2.1 Planning Phase 7
2.2.2 Analysis Phase 8
2.2.3 Design Phase 8
2.2.4 Implementation Phase 9
2.2.5 Testing Phase 9
2.3 Project Schedule and Milestones 11-12
2.4 Conclusion 12

CHAPTER III ANALYSIS

3.1 Introduction 13
3.2 Problem Analysis 13
3.3 The Proposed Improvements/ Solutions 13
3.4 Requirement Analysis of the to-be system 14
3.4.1 Functional Requirement (Process Model) 20
3.4.2 Non-functional Requirement 21
3.4.3 Other Requirements 21
3.4.3.1 Software Requirement 22
3.4.3.2 Hardware Requirement 23
3.4.3.3 Client- Side 23
3.4 Conclusion 23

CHAPTER IV DESIGN

4.1 Introduction 24-25
4.2 System Architecture Design 25
4.3 Database Design 26
4.3.1 Conceptual Design 26
4.3.1.1 Entity Relationship Diagram 2-27
4.3.1.2 Business Rules 27-28
4.3.2 Logical Design 28-30

4.3.2.1 Query Design 30-33
4.3.3 Physical Design 33

4.3.3.1 Selection of DBMS 33
4.3.3.2 The usage of store procedure and trigger 33-34
4.3.3 Security Mechanism 34
4.4 Graphical User Interface (GUI) Design 34
4.4.1 Navigation Design 34
4.4.2 Input Design 35
4.4.3 Output Design 35
4.4.4 System Interfaces 35-38
4.5 Conclusion 39

CHAPTER V **IMPLEMENTATION**
5.1 Introduction 40
5.2 System Development Environment Setup 40
5.2.1 Software Development Setup 40-41
5.2.1.1 Oracle 10g
5.2.2 Database Development Setup 41-48
5.3 Database Implementation 49
5.4 Conclusion 50

CHAPTER VI **TESTING**
6.1 Introduction 51
6.2 Test Plan 52
6.2.1 Test Organization 52
6.2.2 Test Environment 53
6.2.3 Test Schedule 53
6.3 Test Strategy 54
6.3.1 Classes of tests 55

6.3.1.1 Unit Testing 55

6.3.1.2 User Acceptance Testing 55

6.3.1.3 System Integration Testing 56

6.4 Test Design 56

6.4.1 Test Description 56

6.4.2 Test Data 60

6.5 Test Result and Analysis 61

6.6 Conclusion 62

CHAPTER VII CONCLUSION

7.1 Introduction 64

7.2 Observation on Weaknesses and Strengths 65

7.2.1 Strengths System 65

7.2.2 Weaknesses System 65

7.3 Proposition for Improvement 65

7.4 Contribution 66

7.5 Conclusion 66

REFERENCES 67

LIST OF TABLES

TABLE	TITLE	PAGE
2.3.1	Project Schedule and Milestone	12
3.1	Software Requirement for server side	22
3.2	Hardware Requirement Specification	23
3.3	Software Requirement for Client- Side	23
3.4	Hardware Requirement	25
4.1	Table Student	28
4.2	Table Staff	28
4.3	Table Course	29
4.4	Table Payment	30
4.5	Table StaffCourse	30
4.6	Table StudentCourse	30
5.1	Client, server, and hardware requirement	41
6.1	Individual Involved in Testing Phases	52
6.2	Test Environment Schedule	53
6.3	Test Schedule	54
6.4	Test Strategy	55
6.5	Test Case for Login Module	57
6.6	Test Case for Student	58
6.7	Test Case for Admin	60
6.8	Test Data for ISIMS.	61

LIST OF FIGURE

FIGURE	TITLE	PAGE
3.1	Context Diagram for ISIMS	15
3.2	Data Flow diagram for ISIMS Activity Process Level-0	16
3.3	Data Flow diagram for ISIMS Activity Process Level-1	17
3.4	Data Flow diagram for ISIMS Activity Process Level-1	18
3.5	Data Flow diagram for ISIMS Activity Process Level-1	18
3.6	Data Flow diagram for ISIMS Activity Process Level-1	19
3.7	Data Flow diagram for ISIMS Activity Process Level-1	19
4.1	System Architecture Design in ISIMS	26
4.2	Entity Relationship Diagram ISIMS.	27
4.3	DDL for Student Table	31
4.4	DDL for Staff Table	31
4.5	DDL for Payment Table	32
4.6	DDL for studentCourse Table	33
4.7	Navigation Design	35
4.8	Student Homepage	36
4.9	Admin or Staff Login	36
4.10	Login Success	37
4.11	Login with wrong Password	37
4.12	Admin Menu	37
4.13	Add Student	38
4.14	Display Student	38
4.15	Input Design for Payment	46
4.16	View student demerit record	48
4.17	View of payment record	48
5.1	Configuration of Database Connection	47
5.2	Assigning Staff Login	48

LIST OF ABBREVIATIONS

ISIMS	-	IT Base Student Information Management System
ERD	-	Entity Relationship Diagram
DFD	-	Data Flow Diagram
DBMS	-	Database Management System
DDL	-	Data Definition Language
DML	-	Data Manipulation Language
GUI	-	Graphical User Interface
PHP	-	Hypertext Pre-processor
RAM	-	Random Access Memory
CPU	-	Control Processor Unit
UTeM	-	Universiti Teknikal Malaysia Melaka

LIST OF ATTACHMENT

ATTACHMENT	TITLE	PAGE
Appendix A	Turnitin	

CHAPTER 1

INTRODUCTION

1.1 Project Background

As is well known, in this era of globalization, to do a variety of jobs quickly and systematically are needed. Job done manually considered inefficient and require renewal. This system will be developed on the IT Base Student Information Management Student (ISIMS) in which the system will be used by IT Base Company.

This system allows the user to register student. Staff and can search all the information or data about student. The main purpose of this system developed was to substitute from manual method of storage information to computerized system.

Furthermore, IT Base Student Information Management System is a new product that is part of a larger, more complete product for our customer. It will provide the way of viewing all of the student information that is necessary to replace the manual data storage system. This system will help students to store the data into database, making storage, retrieval and removal data and make calculations for payments made by students, and also to displaying financial report on the profit and loss of the company.

1.2 Problem Statements

Based on research that has been done, the current method of data registration of new students is done manually by using a stack of paper and stored on cabinet file in an archiving or paper file where there so many student data. The employer had to gather all the records manually to get the full report especially at the end of the year. The problem statement that has been found is:

1) Require a long time to find the data in a stack of paper or file, especially for the old data.
2) Require a lot of space to place a file and may involve additional cost to provide a space for file cabinet when the company is expanding.
3) The data will easy vulnerable to loss, damage and theft where the data is should be in private confidential.
4) Difficult for the staff to gather all the report with fast and accurate as the records need to found manually especially for audit process at the end of each month or year.

1.3 Objectives

Objective of this system is to develop a database of management system for IT Base Student Information System (ISIMS). This system is to substitute from manual method of storage information to computerized system. As specified, the objective of system is:

1) To register new students and staff as well as keep all data in the database.
2) To make a calculation of the payments made by students.
3) To minimize the redundancy and loss of data.
4) To generate financial report on profit and loss of the company.

1.4 Project Scopes

The scopes for IT Base Student Information Management System are:

1.4.1 System (User Authentication)

User's authentication in another word known as login system, only the authorized administrator, staffs and students can login to the system. This login system is important to prevent unauthorized login.

1.4.2 Calculation

I. This module is used to calculate a student fee depending on what course the student takes.

1.4.3 Add/Update /Delete/Search

I. Administrator can add the new course information into the database.

II. Administrator can add new course, staff, and student.

III. Fill out the information on the registration of new students and workers. Update and delete data.

1.4.4 Searching

I. Administrator can search and check the information about the course, student, and staff.

1.4.5 Produce report

I. Allows administrators who are required to update and generate the report.

Users (Admin or staff)

- Can enter new course into database.
- Can enter new staff into database.
- Can enter new students into database.
- Has full admin-right to view, insert, update and delete all data.

Student

- Can register a course.
- Can print their registered courses.
- Can view their status of payment.

1.5 Project significance

The importance of database project is to build a manageable database that can store all data entered, such as students, administrator or staff. It Base Student Information Management System was developed to simplify the administration and employees in managing student information. Indirectly, this system can help the company to conduct business more strategically and systematically. In addition, this system was developed to meet the needs and specifications have been determined. Among the interest geared towards the development of this system are:

i. Allows users to record, search, and delete data.
ii. Simplify the process of calculating payments made by students.
iii. Provide and create reports easily because the information is generated by the database system.
iv. Facilitate a more systematic monitoring of students.
v. Speeds up the process of searching for information and help to make information management system more orderly and systematic.

1.6 Expected Output

At the end of the project development ,when having the management system,there will be a task that will be done by a system. The system should be easing the management of the education centre. The additional function such as report viewer and security role can be used for better data management. In order of avoiding the data replication and redundant, the integrity and consistency of the data will be keep by having the quality of database structure. User can get the data faster, but this factor depends on the user computer specifications.

Other than that, it also expected system that can generate report of the profit and loss of the company itself. This system also can be observed that the objective function can indeed be used to improve the quality of the solution

1.7 Conclusion

This chapter explained about the early view of what will be in the project and the suggested system is ISIMS. In this chapter, problems from the current system were identified and the main objectives and scope of this system were clearly defined. This chapter also explained about the suggested solution used. In the next chapter explains the project methodology and planning.

CHAPTER II

PROJECT METHODOLOGY AND PLANNING

2.1 Introduction

To develop the system, a recommended methodology have been identified which is the Database Life Cycle (DBLC) .The methodology will be explained all the stages of development that used in ISIMS. The structure imposed by the DBLC is specifically designed to developing the project that assists project development to be more systematically and satisfy the requirement. In this section explains detail on each method implement.

2.2 Project Methodology

Methodology is a collection of methods for solving problems. Typically, each methodology has procedures, techniques, tools, and documentation aids that are intended to help and develop an information system. There are several main steps involved in the database system development lifecycle.

2.2.1 Planning Phase

In this planning Phase, it involves gathering information from the previous system. Problem is analysed from previous system before building new system. When the problems have been analysed, then try to solve them. In the meantime, the database structure should be identified during this phase including entities involved.

2.2.2 Analysis Phase

In this Analysis Phase, it involves requirements elicitation, potential for improvement of the previous system is identified according to the information gathered in the Planning Phase. Other than that, user requirements will be captured. Thus, based on the user requirements, Entity Relationship Diagram (ERD), Data Flow Diagram (DFD) will be produced, independent of all physical consideration.

2.2.3 Design Phase

In this Design Phase, the process will be conducted according to the diagrams produced in the Analysis Phase. Besides that, interface and database will be designed based on the user requirements captured in the Analysis Phase.

2.2.4 Implementation Phase

In this Implementation Phase, the software that will be used in developing this system is XAMPP and Adobe Dreamweaver. The interface will be design in Adobe Dreamweaver by using PHP.Meanwhile, the database that will be used is Oracle for storage and retrieve data.This is according to the deliverables from the Design Phase.

2.2.5 Testing Phase

In this Implementation Phase, the software that will be used in developing this system is XAMPP and Adobe Dreamweaver. The interface will be design in Adobe Dreamweaver by using PHP.Meanwhile, the database that will be used is Oracle for storage and retrieve data.This is according to the deliverables from the Design Phase.

a) Database Design

It consists of three parts which are Conceptual Design, Logical Design and Physical Design.

1. Conceptual Design

   Data modelling is used to create an abstract database structure. The apllication that is going to be built will be produced a report, queries data and enable database manipulating. In addition, administration will track all data inserted into the database. Thus, report and queries data will be calculated by the application. Other than that, the application can be used to manipulating and retrieve data.

2. Logical Design

Entity Relationship Diagram (ERD) and Data Flow Diagram (DFD) are designed according to ISIMS that wanted to be built. Microsoft Visio 2010 will be used to design the diagrams. Thus, the business rules, entities and relationship can be determined.

3. Physical Design

This task is for selecting the data storage and data access of the database. This include function of thhe types of devices supported by hardware and data access methods supported by the application and the DBMS.

b) Implementation

During the implementation, security,backup, recovery and integrity control will be added.

c) Testing

When the data are inserted into the database, it will be tested by its performance, integrity, concurrent access and security constraint. There are several criteria that should be considered during the implementation but if it does not meet some of these criteria, several options can be done to increase the system performance. For example, perhaps should be change all the design or update the software and hardware that used.

2.3 Project Schedule and Milestone

This project is divided into two parts which are PSM 1 and PSM 2. PSM 1 is focusing on the real project design and implementation while PSM 2 will be focusing on a project thesis. Project schedule is an important part in order to develop a system.project schedule also defined the activities,what has already been completed and the sequence in which things need to be finished. This project will be developed according to the milestone below.

Week	Start Date	End Date	Activity
1	22/2/2016	26/2/2016	Proposal PSM : Submission & Presentation
			Proposal assessment and verification
2	29/2/1016	4/3/2016	Proposal correction / improvement Chapter 1
			List of supervisor/title
3	7/3/2016	11/3/2016	Chapter 1 (System Development Begins)
4	14/3/2016	18/3/2016	Chapter 1 & Chapter 2
5	21/3/2016	25/3/2016	Chapter 2
6	28/4/2016	1/4/2016	Chapter 2 Chapter 3
			Student status
7	4/4/2016	8/4/2016	Project Demo & Chapter 3 Chapter 4
8			**MID SEMESTER BREAK**
9	18/4/2016	22/4/2016	Project Demo & Chapter 4
10	25/4/2016	29/4/2016	Project Demo & Chapter 4
			student status
11	2/5/2016	6/5/2016	Project Demo
			Determination Of Student Status(Continue/Withdraw)
12	9/5/2016	13/5/2016	Project Demo & PSM Report
13	16/5/2016	27/5/2016	Project Demo & PSM Report
14	23/5/2016	27/5/2016	Presentation Schedule
15	30/5/2016	3/6/2016	FINAL PRESENATATION (PA)

16	6/6/2016	10/6/2016	**REVISION WEEK** Correction draft and report based on supervisor and evaluator comments during the final presentation session. Submission overall marks to PSM/PD committee.
17			**FINAL EXAMINATION SEMESTER**

Table 2.3.1:Project Schedule and Milestone

2.4 Conclusion

In conclusion, a suitable method had been determined for being used in developing the system.besides that, a specific milestones had been done to overview the system deliverables involved.

CHAPTER III

ANALYSIS

3.1 Introduction

This chapter describes further about problem analysis of the as-is system and requirement analysis of the to-be system. Current System Analysis and New System Analysis will be discussed under this chapter. It is very important to carry out this stage to ensure that the database design run accurately. On this phase, the entire document related to as-is and to-be system will be examined.

The purpose of database analysis is used to determine to weakness of the current system and take some action to improve the quality of the system based on

the user requirement. It will be divided into two categories of analysis for this system which are the analysis on the current system and the system that is going to be developed and also this system will be covers the problems analysis and the requirements analysis. Therefore, these phases will focus more to the system function. Besides that, there are several problems have been identified from the current system and will be explained later.

3.2 Problem Analysis

Based on the current system, there are several problems faced which system analyst are concluding that the current system are not consistent. Other than that, current system is lacking efficient way for the Admin to generate report related to student. This is because of the staff manually calculate the fee payment, so it may cause cases like human error in calculating the student fee payment and staffs takes time to key in all the details about the student that registered manually.

3.3 The proposed improvements/solutions

An improvements system has been proposed which called IT Base Student Information Management System. This system provides maintaining data for the administration who handles student information.

3.4 Requirement analysis of the to-be system

Context Diagram

A context diagram is a diagram that defines the border between the system, or part of a system, and its environment, showing the entities that interact with it. This diagram is a high level view of a system.

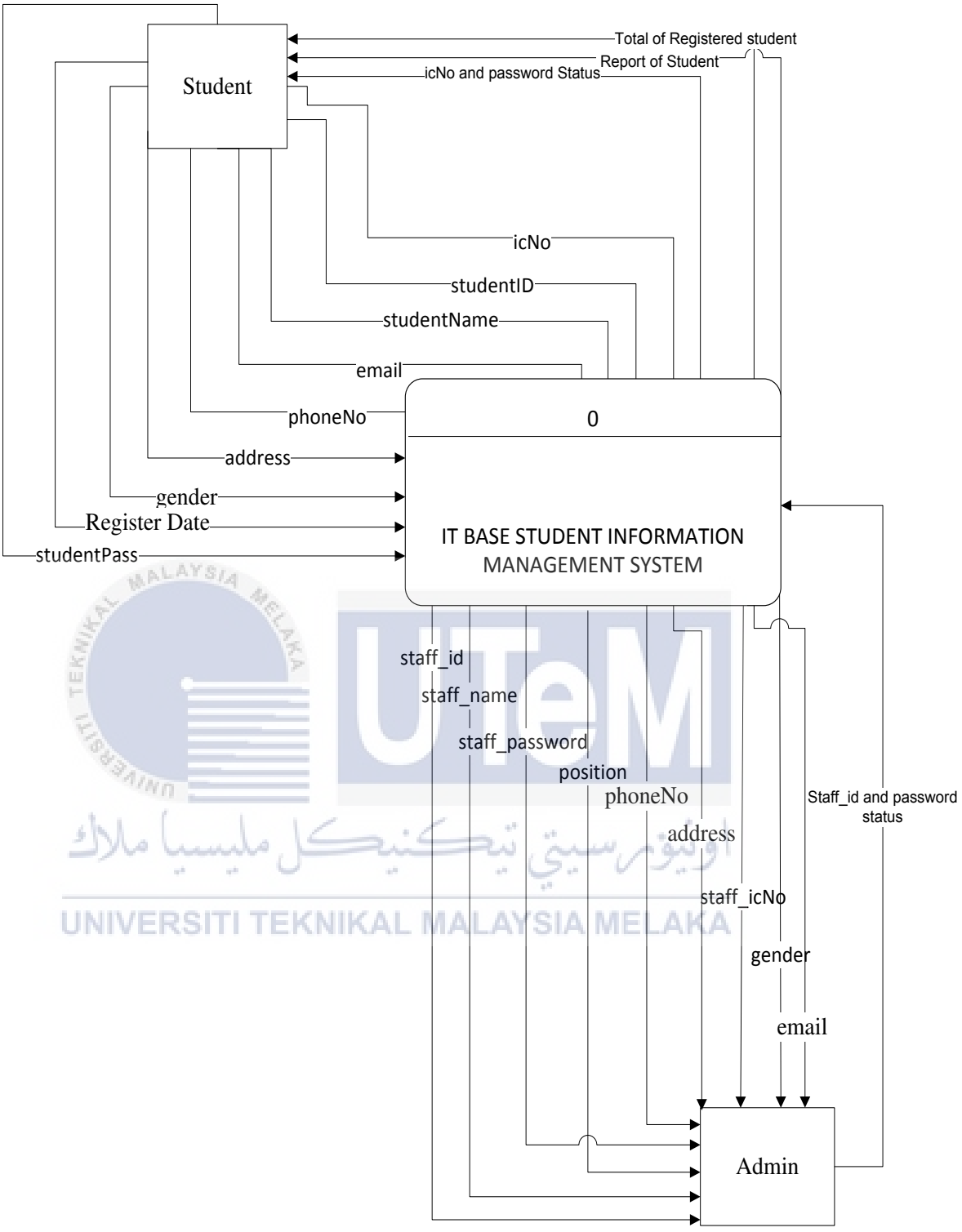


Figure 3.1: Context Diagram for ISIMS

Data Flow Diagram

A data flow diagram (DFD) is a way of showing graphical representation of the flow of data through an information system, modelling its process aspects. DFD can avoid duplicate records in the same database. For this system, DFD will be representing DFD level 0.

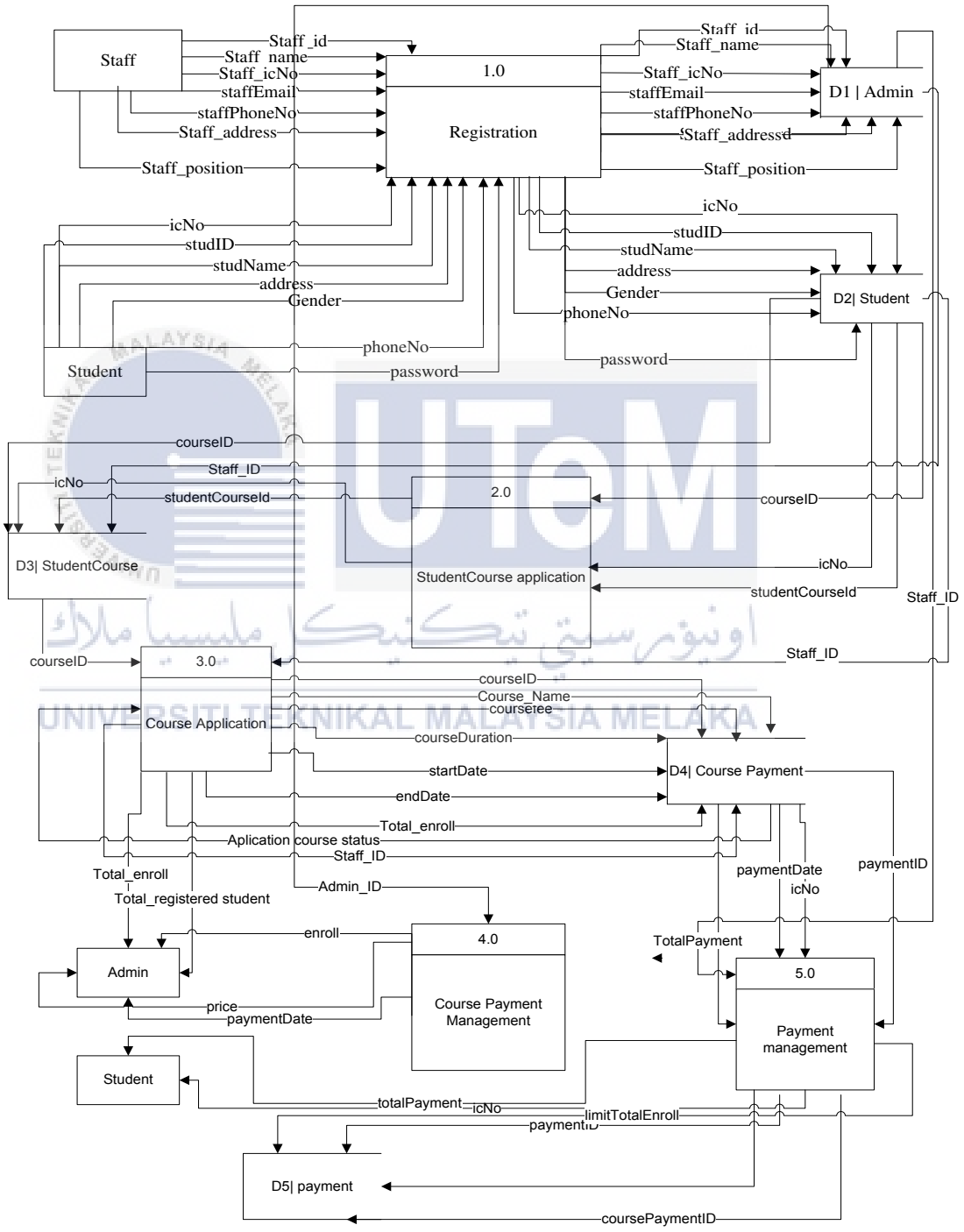


Figure 3.2: Data Flow diagram for ISIMS Activity Process Level-0

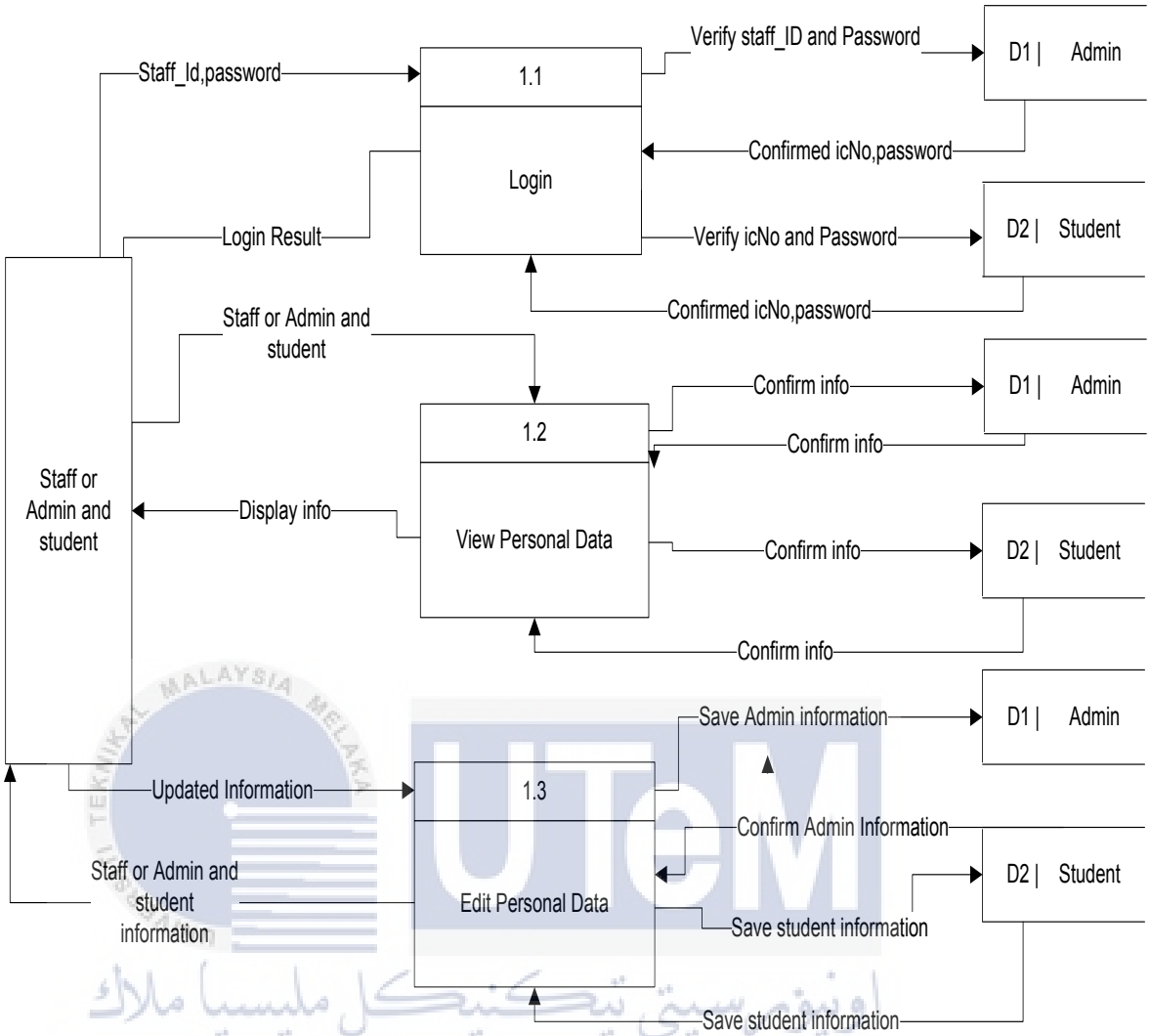


Figure 3.3: Data Flow diagram for ISIMS Activity Process Level-1

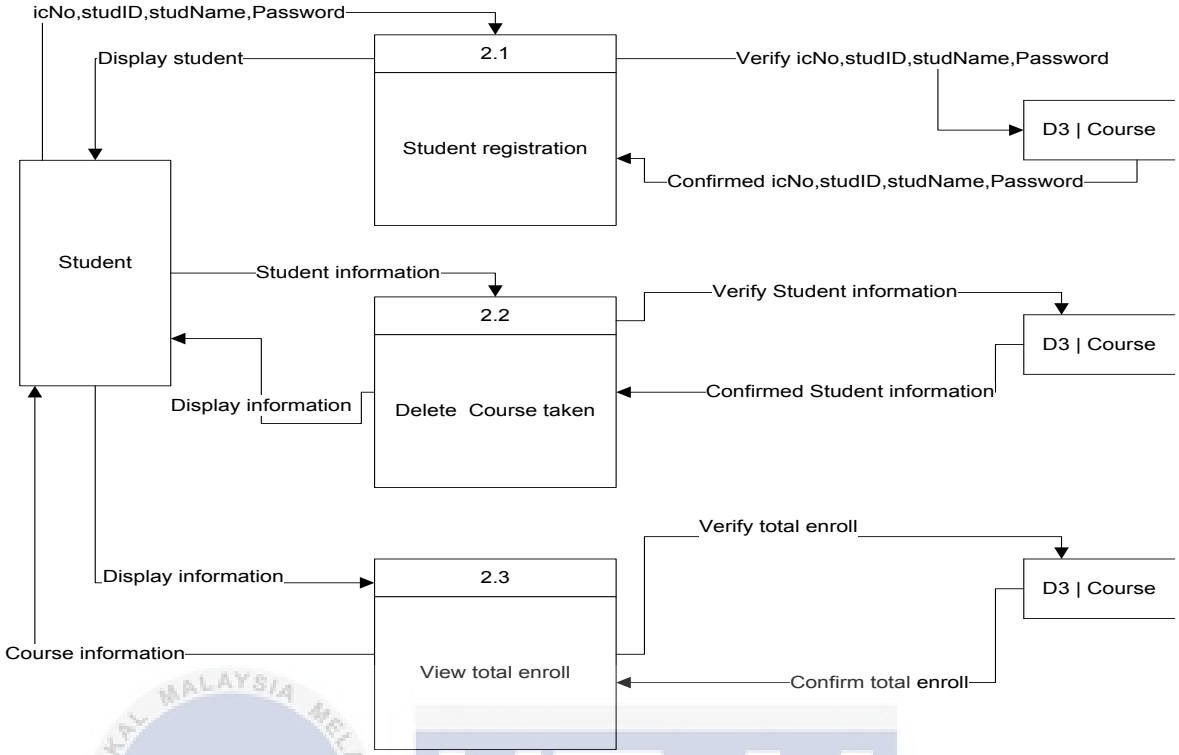


Figure 3.4: Data Flow diagram for ISIMS Activity Process Level-1

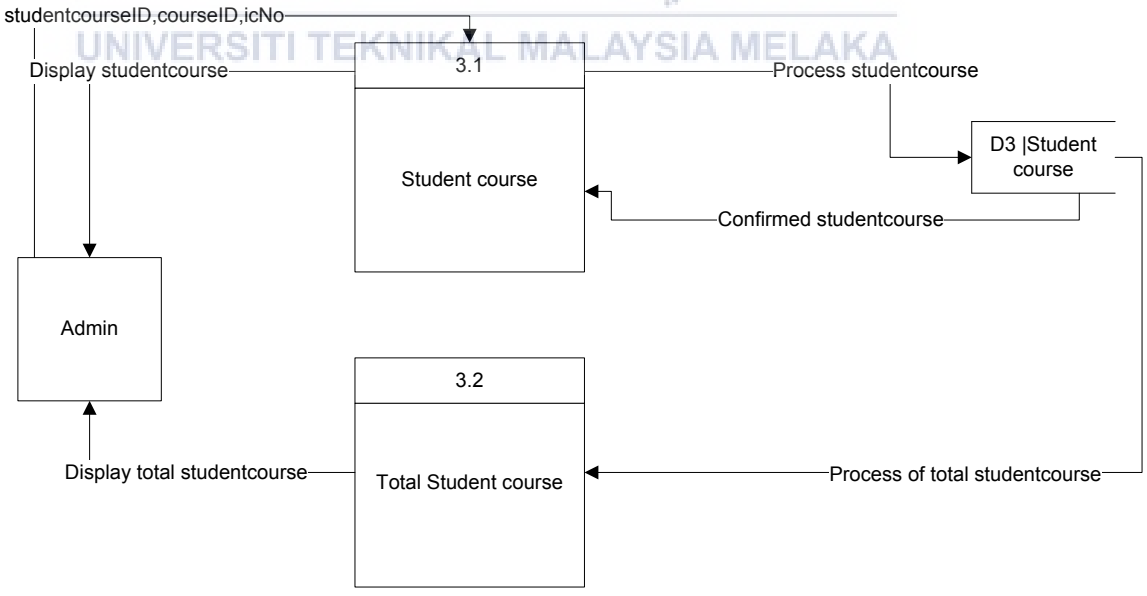


Figure 3.5: Data Flow diagram for ISIMS Activity Process Level-1

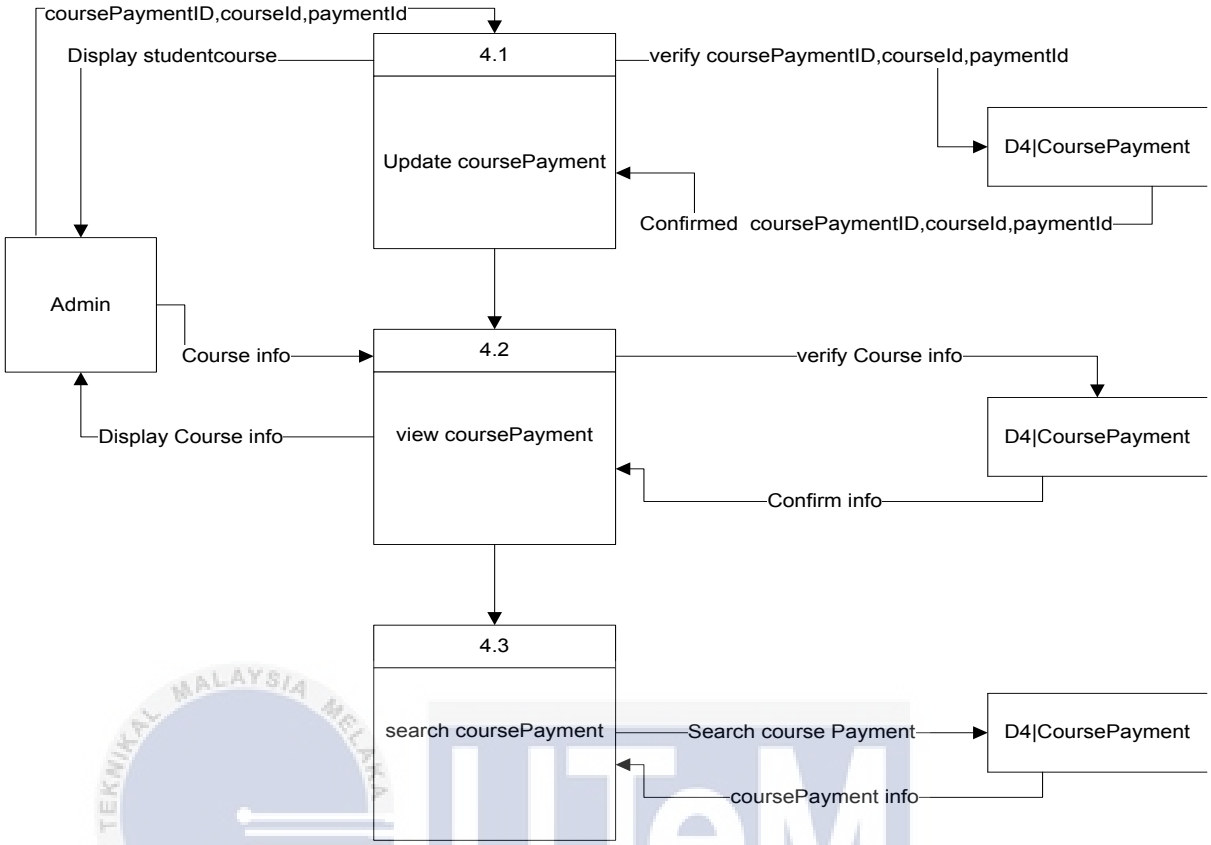


Figure 3.6: Data Flow diagram for ISIMS Activity Process Level-1

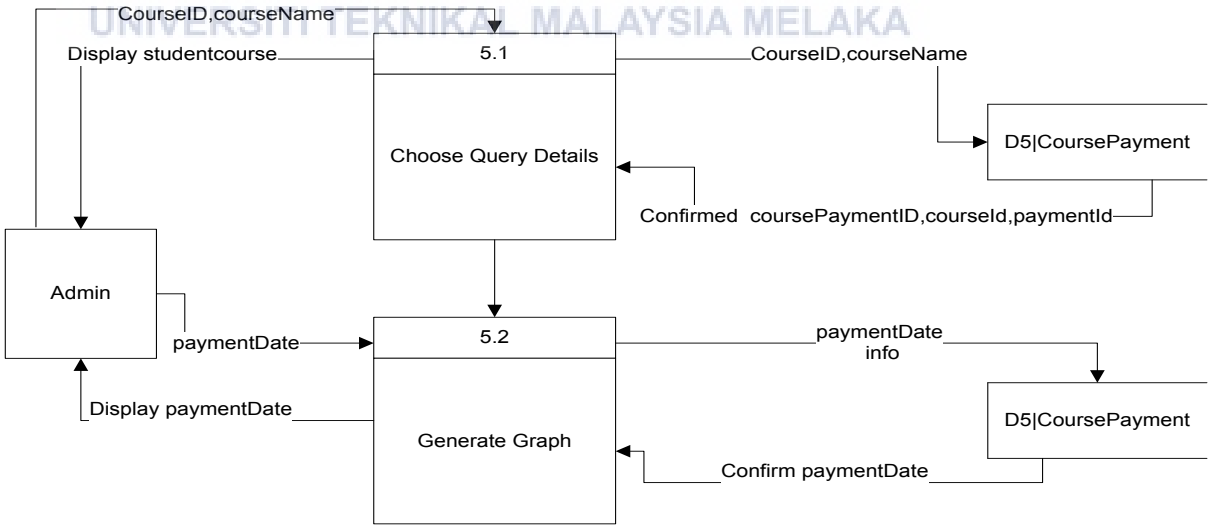


Figure 3.7: Data Flow diagram for ISIMS Activity Process Level-1

3.4.1 Functional Requirement

The Functional Requirements Specification documents the operations and activities that a system must be able to perform which is Functional Requirements. It should include is descriptions of data to be entered into the system, descriptions of operations performed by each screen, descriptions of work-flows performed by the system, descriptions of system reports or other outputs, who can enter the data into the system, and how the system meets applicable regulatory requirements.

Requirement	Description
Login	User such as Admin or staff and student must login first to use the system. The systems require id and password. The ID and password are already saving in database.
Member Registration	Perform by Admin or user. Admin can add or register new student if the user is come through walk in to the center. The new user also can register by own through website.
Reports	This module is for the admin to generate all the report of student's details.
Roles Management	Using Role is an easy and better management of privileges. Roles are named groups of related privileges that can be granted to users or other roles. Perform by admin. Admin can assign roles to some members that are responsible. If a member that are responsible to a role, admin will assign the role to another member.
Fee payment	Perform by Admin. In this part, the system will calculate the total fee made by student that they should pay the actual total and also the student can get the proof of the payment for example admin will print the receipt for the further references.

3.4.2 Non-functional Requirement

Non-functional requirement consists of several requirements which are Usability requirement, operational requirement, security requirement Reliability and performance requirement.

Requirement	Descriptions
Operational	This system must enable to run in windows platform from Apache server.
Security	This system should enable to be used in everyday life and only authenticate users are able access to the system.
Reliability	The system must perform the entirely of the specifications with consistently according flow of the system.
Performance	This system must be able to work when user retrieve and manipulate data and also give the good respond even though many user use this system simultaneously.

3.4.3 Other Requirements

In developing this project, there are also other requirements be needed other than the software and hardware. Here are the description and list of other requirement need for this project.

3.4.3.1 **Software Requirement**

Software	**Description**
Operating System	Microsoft Windows 7 Home Premium • Windows 7 is an operating system to be used in developing system.
Database	Oracle Database 10g Express Edition. • Oracle Database 10g Express Edition is available with many programming language and used to store essential data.
Web Server	Apache • The Apache HTTP Server is a web server which supports PHP programming language and Oracle Database 10g Express Edition.
Client-side	PHP • PHP is one of the programming languages. It used to design the interaction of the system or the user interface.
Web Development Tool	Adobe Dreamweaver CS6 • Adobe Dreamweaver CS6 is one of the web development tools that served as editor interface.

Table 3.1 Software Requirement for server side.

3.4.3.2 **Hardware Requirement**

Hardware	Specification
Processor	Intel Core i5(2.26GHz,1066 MHz FSB)
Memory	6GB (5.87 GB usable)
System Type	64-bit operating system
Windows Edition	Windows 7 Home Premium
Hard Disk	500 GB

Table 3.2 Hardware Requirement Specification

3.4.3.3 **Software Requirement for Client- Side**

Software	Description
Operating System	Microsoft Windows 7 Home Premium • Windows 7 is an operating system to be used in developing system.

Table 3.3 Software Requirement for Client- Side

3.5 Conclusion

In conclusion, problem analysis and requirement analysis had been covered in this chapter. In term of the analysis phase is carrying out on the early stage of the system development lifecycle. All the important element like scope of the system, key technical requirement are determined in this stage .After analysed the current system which is they used the manual system, the improvement is required in order to make the operation of management run smoothly and more systematic.

The diagram explained the whole system to be developed in general. Basically, from the both diagram was explained about the flow of the system and data required to develop the database. Meanwhile, in term of requirement analysis also had been explained later and also in the next chapter, the system will explains about the project design.

CHAPTER IV

DESIGN

4.1 Introduction

This chapter is discussed about the design of the system and focuses more to result of detailed design. It shows a systematic approach towards system problem. Furthermore, through this chapter also describes the graphical user interface design which includes the conceptual data model design, logical data model design, and physical design. The conceptual data model design which is Entity Relationship Diagram (ERD) is illustrated to make the idea of the to-be system become more comprehensible.

Furthermore, logical data model design arrived at as a result of system analysis and is converted into physical system design. In addition, the states of the system are set clearly with the help of the Business Rule. Data Dictionary has all the attributes in entities with follow its format and type and the primary key of the entity. Data Definition Language (DDL) is build based on the conceptual design and logical design of the database. Next, expected results of the work performed to show the architectural design of the proposed project, engineering and related algorithms that should be used will be explained. Design phase is the stage of to determine project goals and user requirements.

The expected output after complete this phase is input, output, databases, forms, codification schemes and processing specifications are drawn up in detail. In the design stage, the programming language and the hardware and software platform in which the new system will run are also decided. The purpose of system design is to create a new system that will satisfy all document requirements and the things to identify during system design are all necessary output, inputs, interface and processes.

4.2 System Architecture Design

System architecture represents the structure of data and program components that are required to build a computer-based system. Architecture considers the architectural style that the system will take, the structure and properties of the components that constitute the system and the relationship that occur among all architectural components of system.

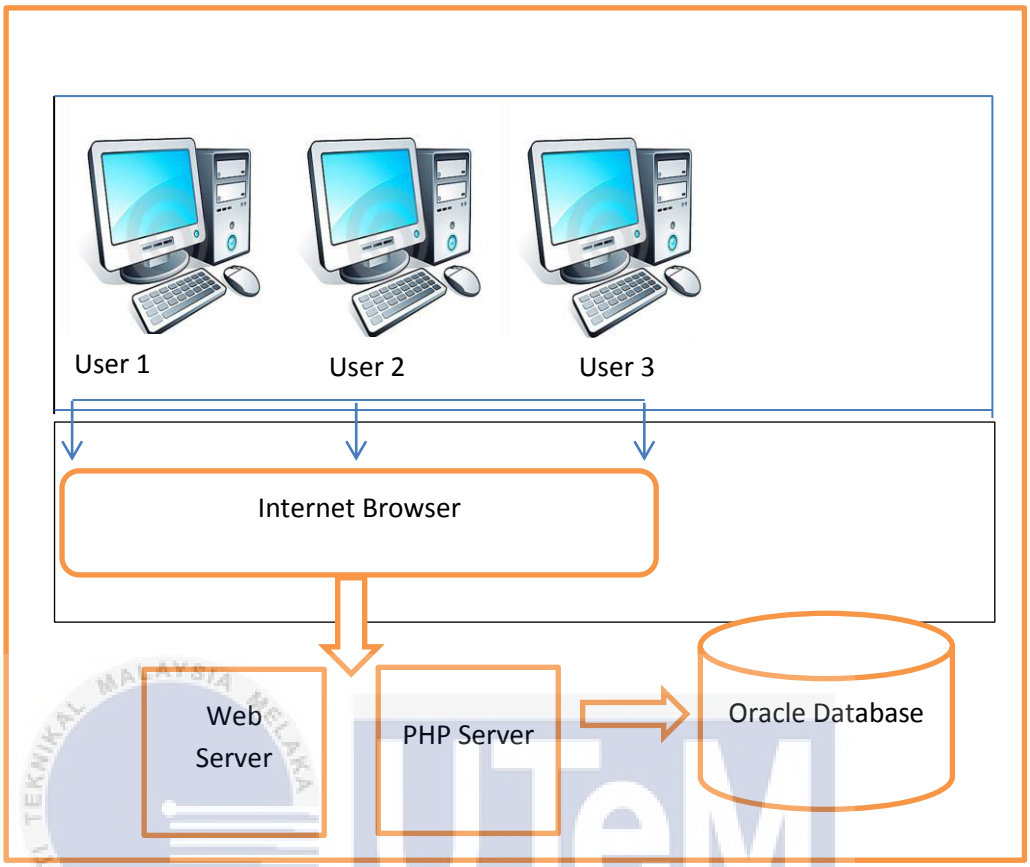


Figure 4.1: System Architecture Design in ISIMS

As shown in figure 4.1, the architecture design is implemented from three tiers. In first tier is known as presentation layer. The middle of architecture is the business logic tier, which is connected between user interface and database. The last tier is architecture layer. This layer will store all data collected from the middle tier to Oracle database.

4.3 Database Design

4.3.1 Conceptual Design

4.3.1.1 Conceptual Design Entity Relationship Diagram (ERD)

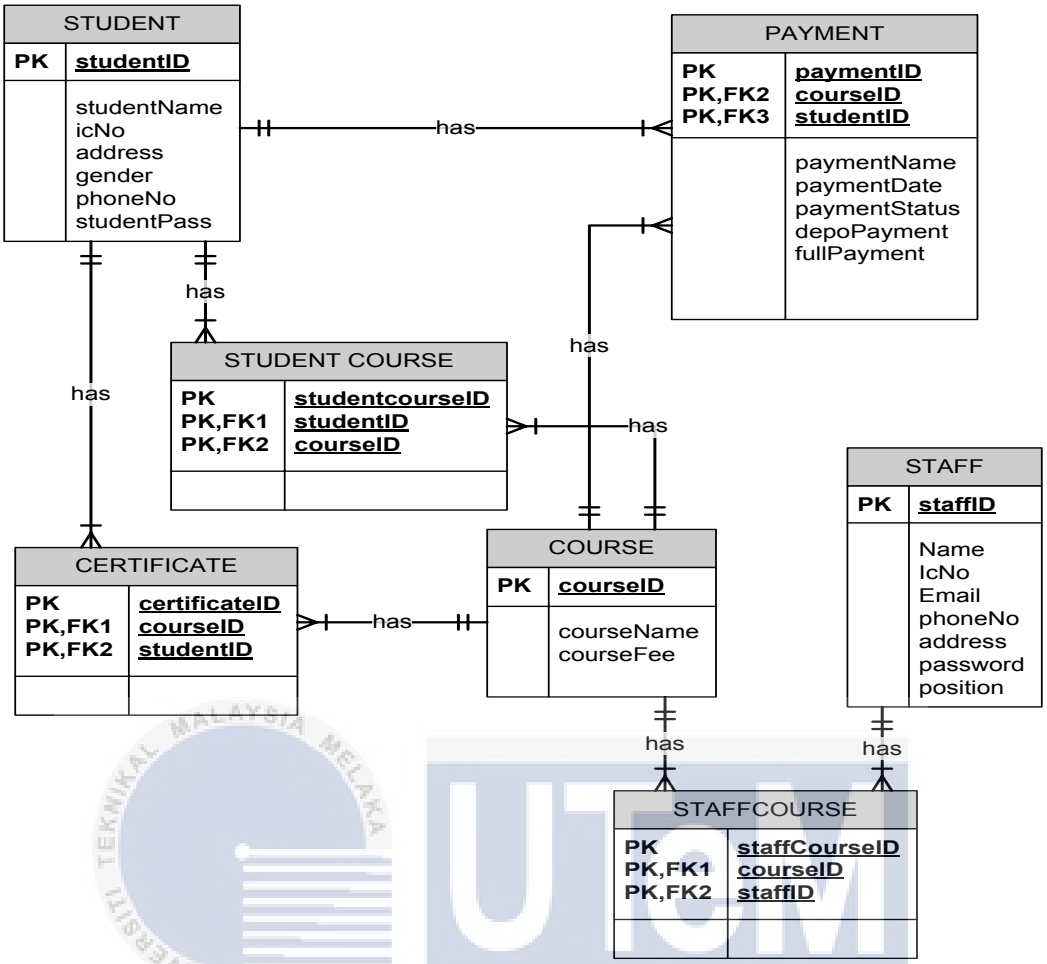


Figure 4.2: IT Base Student Information Management System ERD

4.3.1.2 Business rule

I. Each user may have different access level (admin or staff, student, and instructor).

II. User with access level admin or staff can be goes to admin page and menus.

III. User with access level student can be goes to student page and menu.

IV. User with access level instructor can be goes to student page and menu.

V. Admin or staffs is allowed to update their information and other information about student and training course.

VI. Student can sign up to register the course that entered by admin and also if have walk-in student, the admin also can key in the student data.

VII. Admin able to change all information that related with training course offer from time to time.

VIII. Each payment can have one or many payment details.

IX. Each student can pay one or many payments.

X. Each payment detail contains one or more course taken.

XI. Each employee can manage many payments

Each payment can only be managed by one employee.

XII. Each employee can manage many students.

Each student can only be managed by one employee.

4.3.2 Logical Design

Purpose of data dictionary is used to store any information according to the system that cannot be recorded using diagrams.it is important to manage all the data to avoid data redundancy. Below is the requirement for the IT Base Student Information Management System.

Attribute Name	Type	PK/FK
icNo	varchar2(14) not null primary key	Primary Key
studentID	varchar2(10)	
studentName	varchar2(50)	
email	varchar2(50)	
phoneNo	varchar2(12)	
address	varchar2(100)	
gender	varchar2(10)	
registerDate	date	
studentPass	varchar2(20)	

Table 4.1: Table Student

Attribute Name	Type	PK/FK
staffID	varchar2(10) not null primary key	Primary Key
Name	varchar2(20)	
IcNo	varchar(14)	
Email	varchar2(50)	
phoneNo	varchar2(11)	
address	varchar2(50)	
Password	varchar2(15)	
position	varchar2(15)	

Table 4.2: Table Staff

Attribute Name	Type	PK/FK
courseID	varchar2(10)not null primary key	Primary Key
courseName	varchar2(50)	
courseFee	number	
courseDate	date	
courseDuration	varchar2(20)	

Table 4.3: Table Course

Attribute Name	Type	PK/FK
paymentID	varchar2(15) not null primary key	Primary Key
paymentName	varchar2(100)	
paymentDate	date	
paymentStatus	varchar2(15)	

depoPayment	number	
fullPayment	number	
courseID	varchar2(10)	Foreign Key
studentID	varchar2(10)	Foreign Key

Table 4.4: Table Payment

Attribute Name	**Type**	**PK/FK**
staffCourseID		Primary Key
courseID		Foreign Key
staffID		Foreign Key

Table 4.5: Table StaffCourse

Attribute Name	**Type**	**PK/FK**
studentcourseID	varchar2(15) not null primary key	Primary Key
studentID	varchar2(10)	Foreign Key
courseID	varchar2(10)	Foreign Key

Table 4.6: Table StudentCourse

4.3.2.1 Query Design (Data Definition Language)

1. Create Database
2. Create Database psm
3. Create table and constraint

```
create table student(
studentID varchar2(10) not null primary key,
studentName varchar2(50),
icNo varchar2(14),
email varchar2(50),
phoneNo varchar2(12),
address varchar2(100),
gender varchar2(10),
registerDate date,
studentPass  varchar2(20));
```

Figure 4.3: DDL for Student Table

```
create table staff(
staff_id varchar2(10) not null primary key,
staff_name varchar2(20),
staff_password varchar2(15),
staff_icNo varchar(14),
position varchar2(15),
phoneNo varchar2(11),
address varchar2(50),
gender varchar2(10),
email varchar2(20));
```

Figure 4.4: DDL for Staff Table

```
create table payment(
paymentID varchar2(15) not null primary key,
studentID varchar2(10),
courseID varchar2(10),
paymentName varchar2(100),
paymentDate date,
paymentStatus varchar2(15),
depoPayment number,
fullPayment number,
constraint student_pk FOREIGN KEY (studentID) REFERENCES
student(studentID),
constraint course_pk FOREIGN KEY (courseID) REFERENCES
course(courseID),
constraint PK_payment PRIMARY KEY(paymentID, studentID, courseID));
```

Figure 4.5: DDL for Payment Table

```
create table studentCourse(
studentCourseID varchar2(15) not null primary key,
studentID varchar2(10),
courseID varchar2(10),
constraint stud_pk FOREIGN KEY (studentID) REFERENCES student(studentID),
constraint courses_pk FOREIGN KEY (courseID) REFERENCES course(courseID),
constraint PK_studentCourse PRIMARY KEY(studentCourseID, studentID, courseID));
```

Figure 4.6: DDL for studentCourse Table

Data Manipulation Language

4.3.3 Physical Design

4.3.3.1 DBMS Selection

In the IT Base Student Information Management System, the database that has been used in order to store data based on information of the system is Oracle Database.

4.3.3.2 Usage of Stored Procedures, And Triggers

- Procedure before insert
- Procedure before insert update
- Procedure before insert delete
- Procedure after insert

- Procedure after insert update
- Procedure after insert delete
- Trigger automatically generate id
- Trigger to do backup before update on the student payment

4.3.3 Security Mechanism

I. Login

This system provide login for each student to access the system.in order to login, they need to register first.it is to ensure authentication. If they do not register, they cannot use the system to view their course information, current status of payment.

II. Validation

The data will be validating before the users include staff and student login to the system. If they submit invalid password or ID, the system will give an error message to alert them. Thus, they cannot login to system.

4.4 Graphical User Interface (GUI) Design

4.4.1 Navigation Design

This section will explain about the navigation design for the IT Base Student Information Management System. The navigation design will describe the flow of conducting the system based on the level of the user. The user that involve in conducting the system is the admin or staff and student.

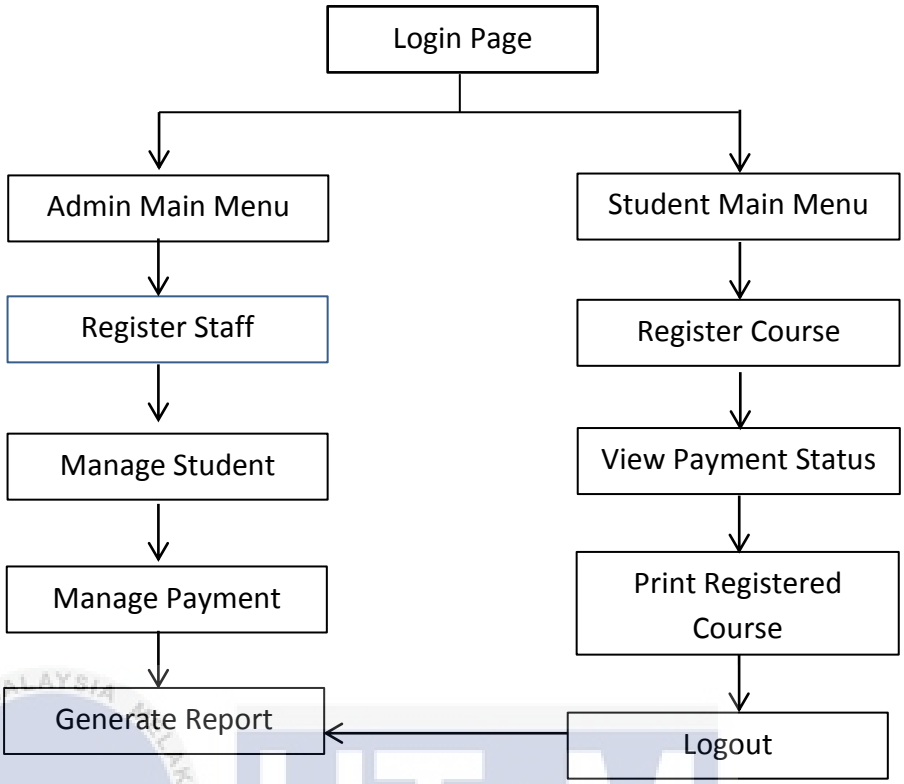


Figure 4.7: Navigation Design

4.4.2 Input Design

This section describes the input design for each interface, input, type, and validation rules. The IT Base Student Information Management System will check on the validation rules for data when user enters.

4.4.3 Output Design

Output is information produced by the system depends on different kind of user interaction. The kind output of the program produces, and the kind of input the program accepts, define the user interface of the program.

4.4.4 System Interfaces

Figure 4.8: Student Homepage

Figure 4.9: Admin or Staff Login

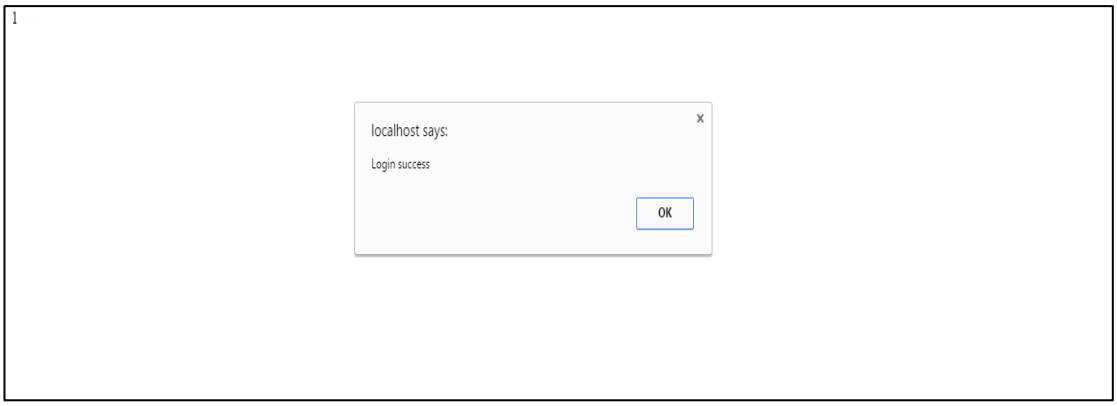


Figure 4.10: Login Success

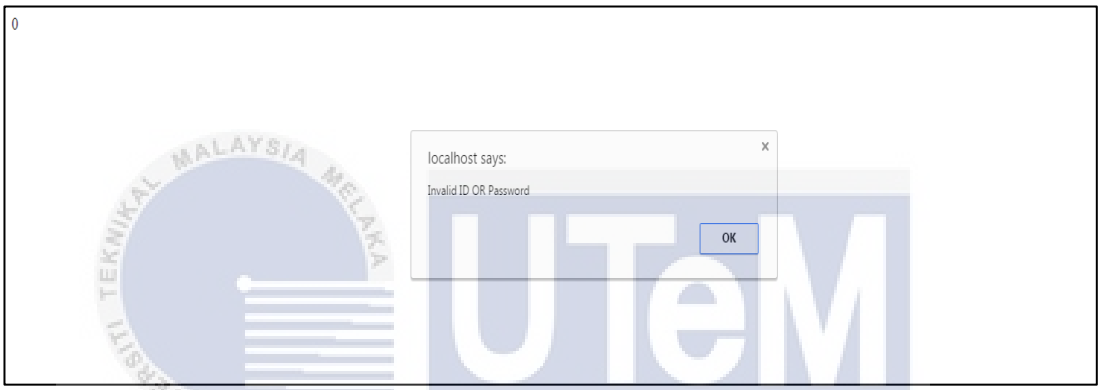


Figure 4.11: Login with wrong Password

Figure 4.12: Admin Menu

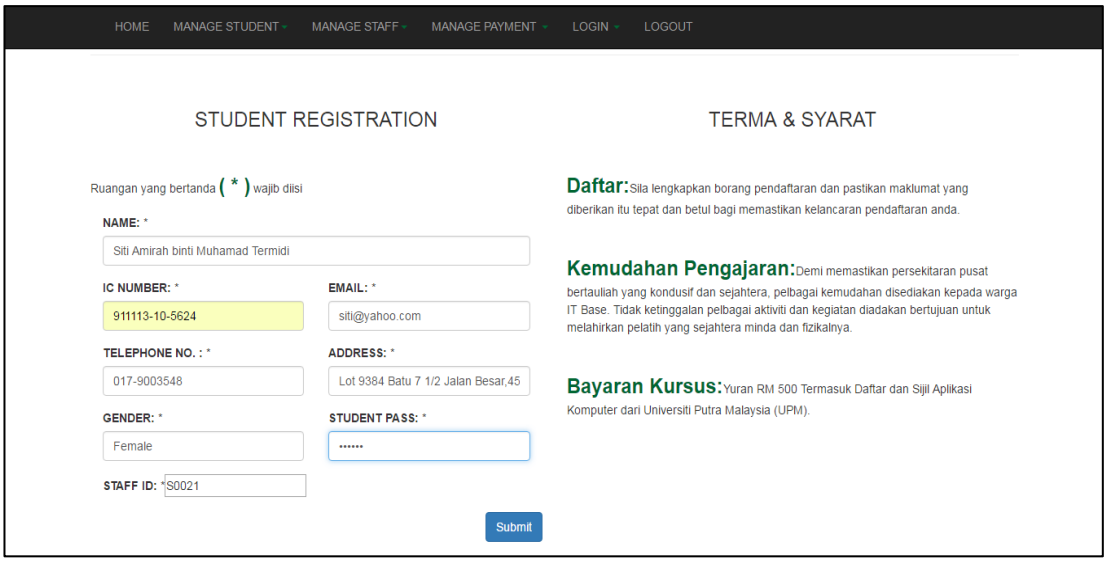


Figure 4.13: Add Student

STUDENT ID	NAME	IC NO.	ADDRESS	GENDER	EMAIL	PHONE NO	STAFF_ID	ACTION
ST0025	mimi	219917-03-2345	BUNGA RAYA	FEMALE	mimi@yahoo.com	019-50071666		UPDATE||DELETE
ST0063	amel	870819-10-7867	KLANG	FEMALE	adda@yahoo.com	017-3489826		UPDATE||DELETE
ST0064	aaa	870819-10-7867	KEDAH	Male	mimi@yahoo.com	017-3489826		UPDATE||DELETE
ST0026	ALIAH	911113-10-5624	KLANG	FEMALE	aliah@yahoo.com	018-6785467		UPDATE||DELETE
ST0062	aa	911113-10-5624	KLANG	FEMALE	aliah@yahoo.com	019-50071666		UPDATE||DELETE
ST0065	fasha sandha	870819-10-7867	KUALA KANGSAR	FEMALE	sha@gmail.com	019-5007144	S0021	UPDATE||DELETE
ST0081	ADA	870819-10-7867	KLANG	FEMALE	adda@yahoo.com	017-3489826	S0021	UPDATE||DELETE
ST0041	amirul	890715-04-1254	kota tinggi	Male	mirul@yahoo.com	017-7895641		UPDATE||DELETE
ST002	KIKI	870819-10-7867	klang selangor	female	kiki@yahoo.com	019-6783455		UPDATE||DELETE
ST0043	neelofa	950930-10-8765	ampang	FEMALE	neel@gmail.com	012-67885469		UPDATE||DELETE
ST0042	amirul	890715-04-1254	kota tinggi	Male	mirul@yahoo.com	017-7895641		UPDATE||DELETE
ST0061	aa	911113-10-5624	KLANG	FEMALE	aliah@yahoo.com	019-50071666		UPDATE||DELETE
ST00101	Siti Amirah binti Muhamad Termidi	911113-10-5624	Lot 9384 Batu 7 1/2 Jalan Besar,45300 Sungai Besar, Selangor	Female	siti@yahoo.com	017-9003548	S0021	UPDATE||DELETE

Figure 4.14: Display Student

4.5 CONCLUSION

As conclusion, this chapter explain the level of user design. The architecture of the system also has been shown clearly in this chapter. The design that display by the user interface is navigation design, input design and output design. This is derived by applying entity relationship diagram, business rule and data dictionary. The conceptual design is display the relationship for each entity that depending on the situation with each other.

For the chapter five is describe about the implementation of database structure phase. The design of implementation section will cover constraint and validation within the attribute in every table.

CHAPTER V

IMPLEMENTATION

5.1 Introduction

For this section is explained about the implementation of system. The implementation of the system involves the progress of the project and activities during the system working and the expected output after the phase is completed. In this chapter, system development environment setup includes software and database; also the database implementation will be explained.

5.2 Software Development Environment Setup

5.2.1 Software Development Setup

To be implementing the IT Base Student Information Management System, the computer must be installed with the web hosting server that runs on Windows Operating System with the Apache web server and Oracle database. The admin of ISIMS need to do the configuration to the web hosting server. The database will play the main role to save info of ISIMS.

Client	Server	Hardware
Google Chrome browser	- Apache Web Server - Oracle Database	Personal Computer

Table 5.1: Client, server, and hardware requirement

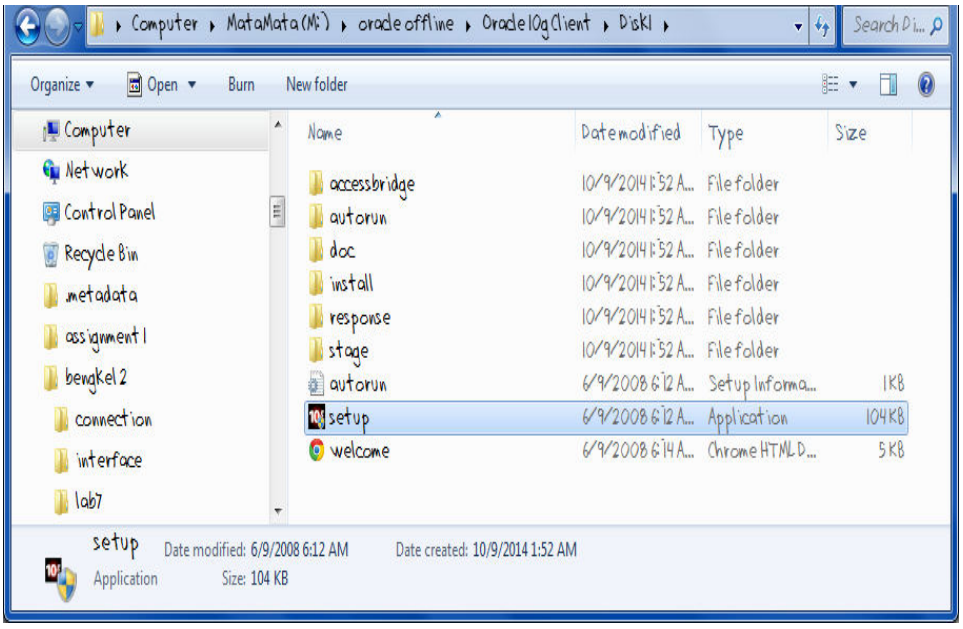
5.2.2 Database Development Setup

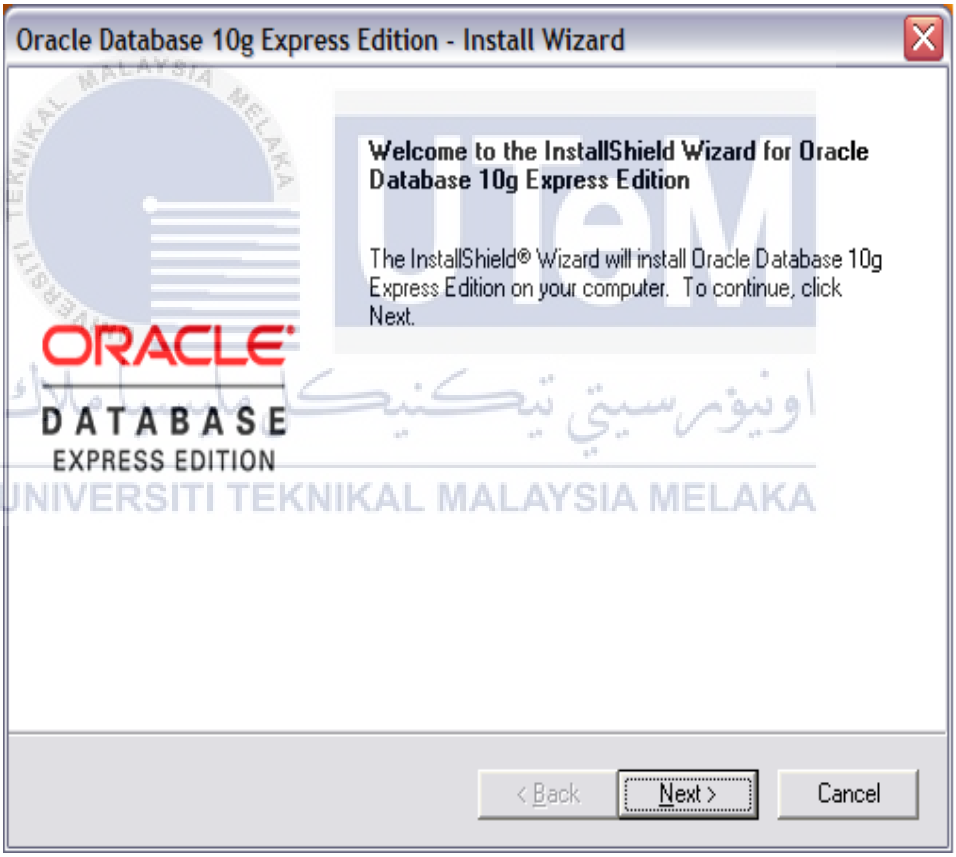
Database that used for this system is Oracle Database 10g Express Edition, by using this DBMS, there is certain skills of configuration need to be done. When this software is successfully installed into the computer, user needs to set a code for the database connection.

a) Installation steps for Oracle 10g XE on Windows 7:

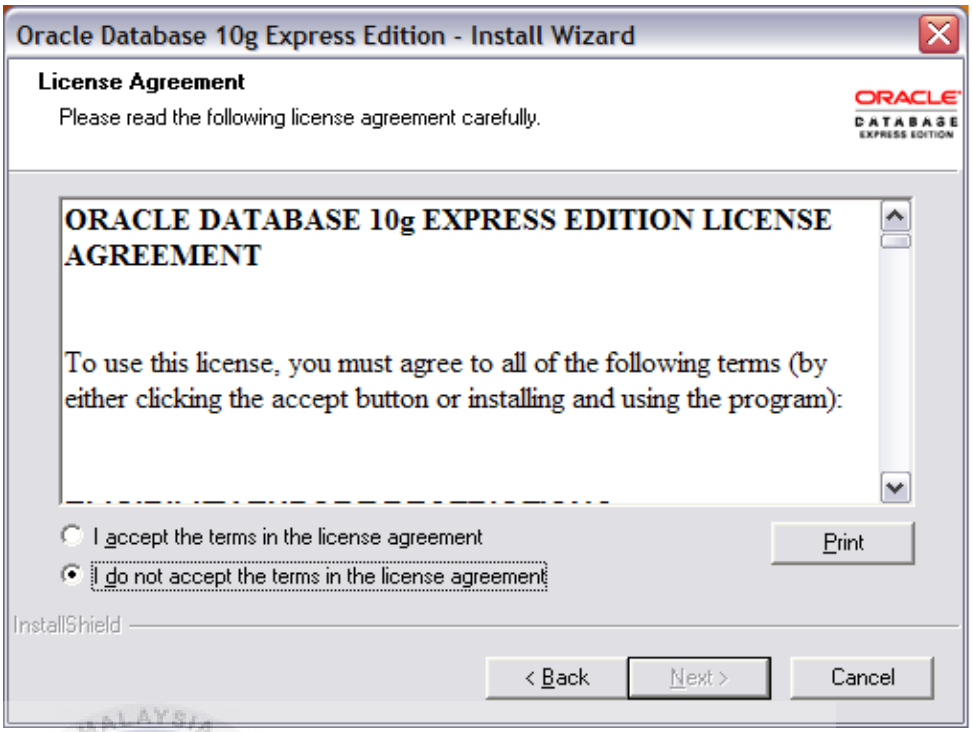
1) Download Oracle 10g XE installer from http://www.oracle.com/us/downloads

2) Start the installation program.

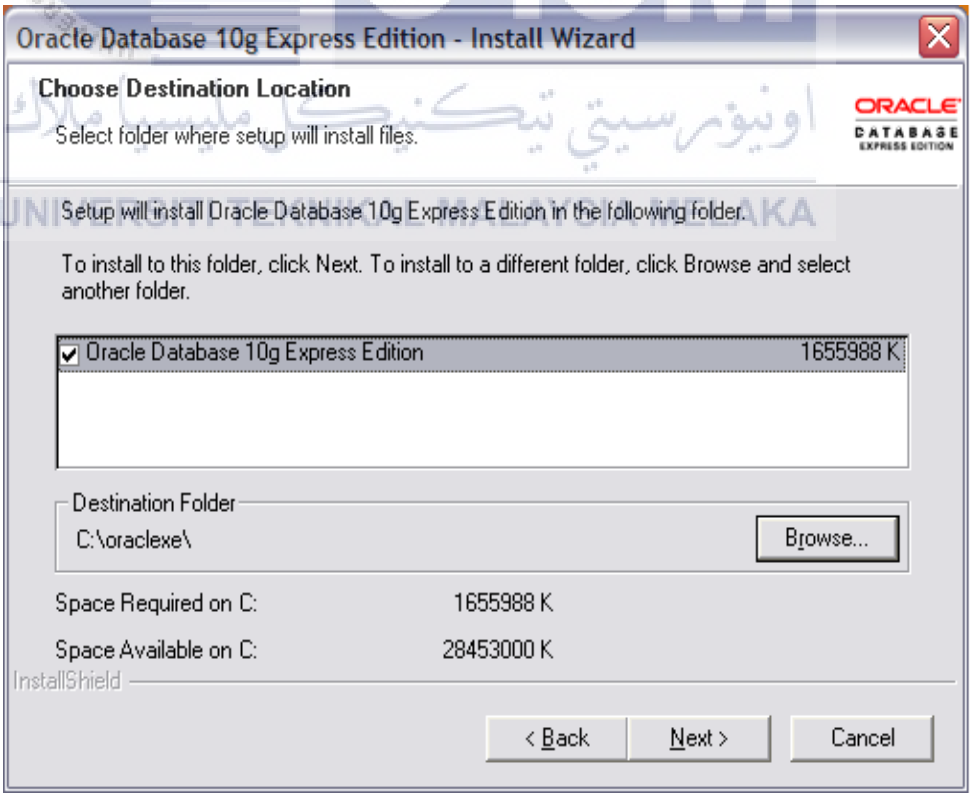




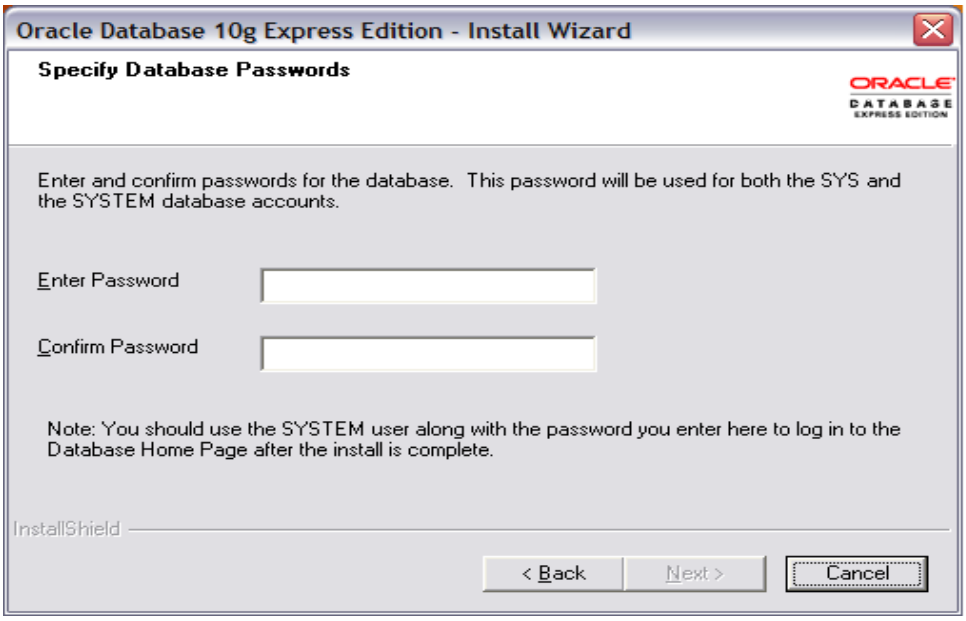
3) Select ‘I accept the terms in the license agreement’ and then click on Next.



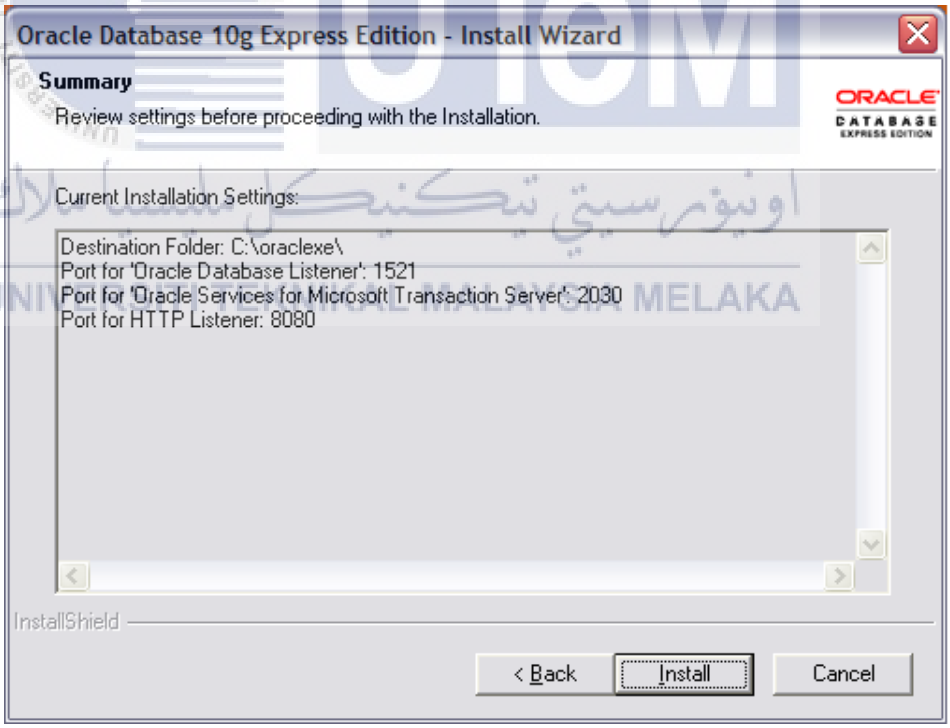
4) A dialog asking for destination location will appear. Do not change anything (accept the default settings) and click on Next.

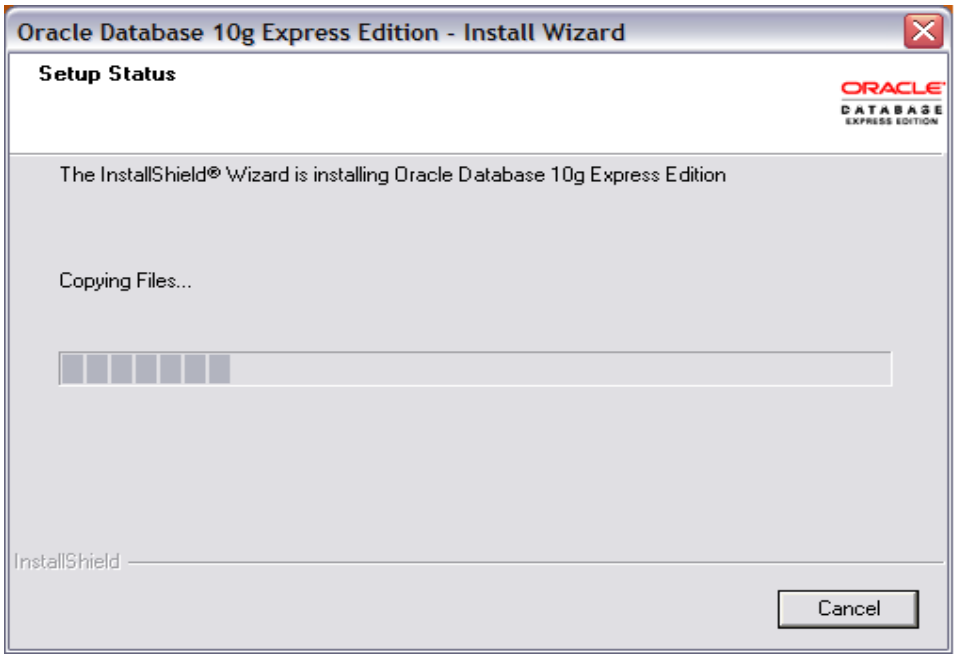


5) Type a password in the upper text box and then retype it on the lower text box then click ‘Next’.

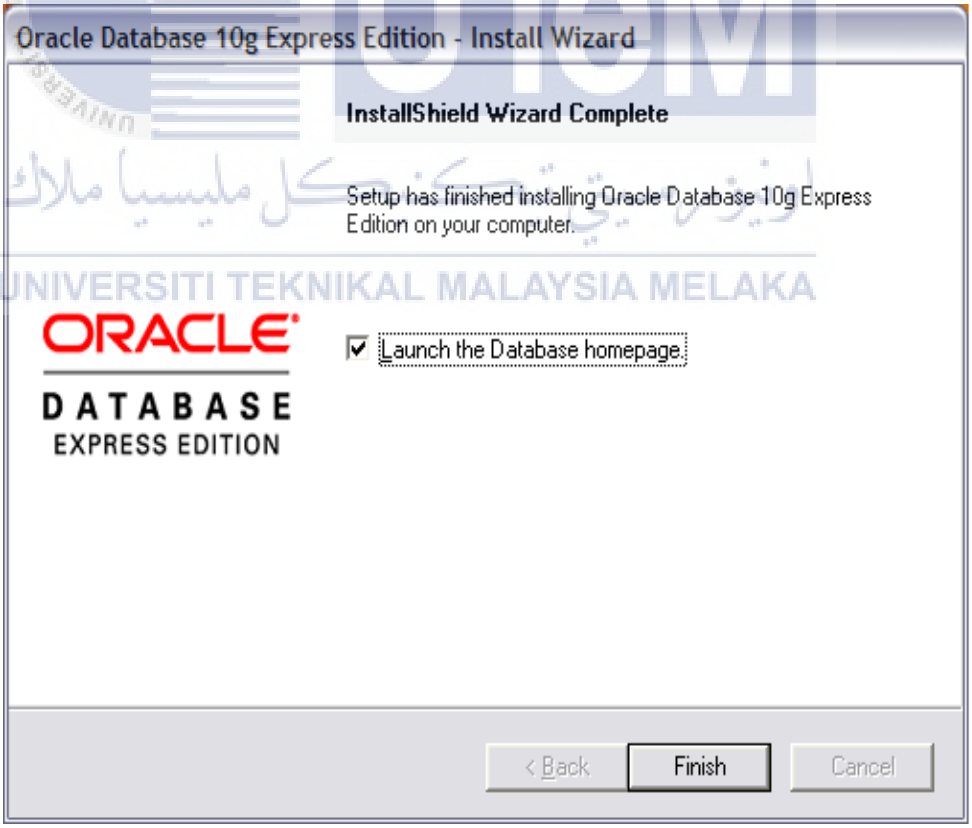


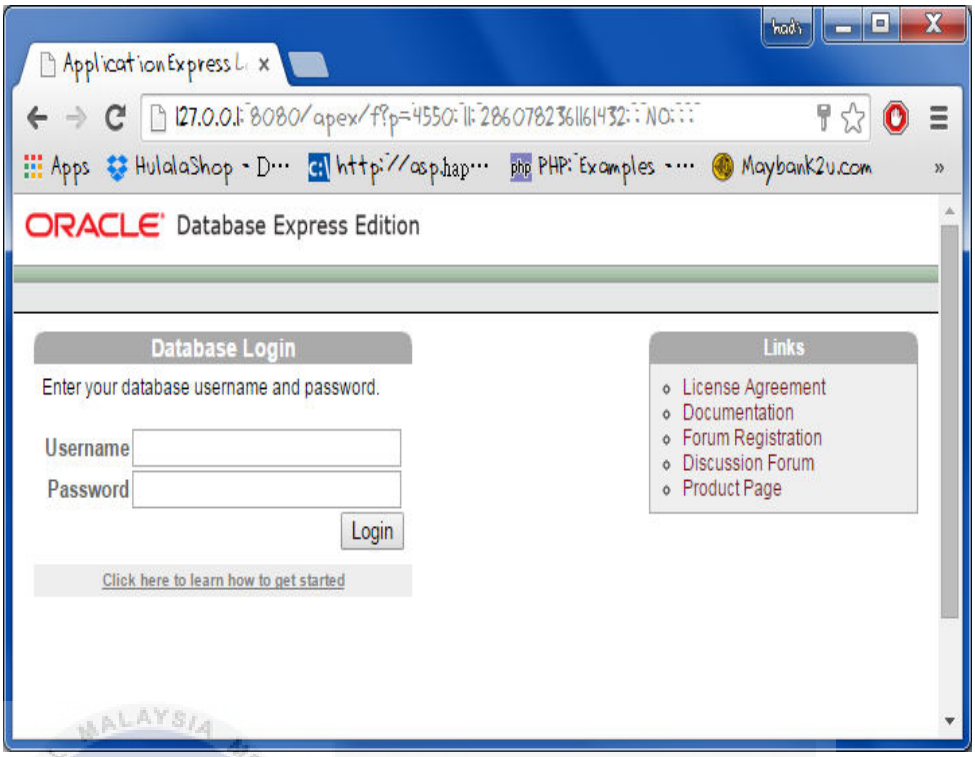
6) Click on **Install** and the process will start after a few seconds.





7) Click on **Finish** and your browser will open the **Database Login** page for your new server.





8) Login as admin. Default username and password is 'sys' and '123456'.

b) Configure Database Connection

Each process in IT Base Student Information Management System is done through session. For each session has been set in each of the script involved in developing this system. This session will work out with connection between form and database. Host address, username, password, and database used are including in the script.

```
<?php
//create connection
$conn = oci_connect("system","12345","XE");

if (!$conn)
{
        die ("Connection failed:".oci_connect_error());
}
else {
   print "Connected to Oracle!";
}
// Close the Oracle connection
oci_close($conn);
?>
```

Figure 5.1: Configuration of Database Connection

c) Assigning Staff Login

Each user who entered into the system must have own username and password. By using this unique username and password, only authenticated user is allow to access the data.

```
<?php
$conn = oci_connect("psm","psm","XE");
if (!$conn)
{$e = oci_error();

trigger_error(htmlentities($e['message'],ENT_QUOTES),E_USER_ERROR);
}
session_start();
$error='';
if (empty($_POST['STAFFID']) || empty($_POST['STAFFPASS']))
{
        Echo"<script language = 'Javascript'>
        alert('Fill All Field!')
        location.href = 'ADMINLOGIN.php'</script>";
}
else
{
$STAFFID = $_POST['STAFFID'];
$STAFFPASS = $_POST['STAFFPASS'];
$sql = "SELECT COUNT(*) AS NUMBER_OF_ROWS FROM staff
where STAFF_ID = '".$STAFFID."' and STAFFPASS =
'".$STAFFPASS."'";
$stid = oci_parse($conn,$sql);
oci_define_by_name($stid,'NUMBER_OF_ROWS',
$number_of_rows);
oci_execute($stid);
oci_fetch($stid);
//echo $number_of_rows;
        if($number_of_rows==1)
        {
                $_SESSION["STAFFID"] = $_POST['STAFFID'];
                Echo"<script language = 'Javascript'>
                alert('Login success')
                location.href = 'staffmanage.php'</script>";
        }
        else
        {
        Echo"<script language = 'Javascript'>
        alert('Invalid ID OR Password')
        location.href = 'ADMINLOGIN.php'</script>";
        }}
oci_close($conn);
?>
```


Figure 5.2: Assigning Staff Login

5.3 Database Implementation

Database Implementation will describe about the Oracle syntax through the system development of IT Base Student Information Management System. There are a several codes that have been implemented to approach data from database. The Database Implementation included database access using the advance queries that consist of SQL select statement for joins, aggregate function and etc.

1. **Select Statement**

   The result:

   ```
   select a.STUDENTID,a.STUDENTNAME,a.ICNO,
   a.ADDRESS,a.GENDER,a.EMAIL,
   a.PHONENO,b.STAFF_NAME from student a,staff b where
   a.STAFF_ID=b.STAFF_ID
   ```

2. **Join and Aggregate Function statement**

   The result:

   ```
   create or replace PROCEDURE REPORT(MYRC OUT
   SYS_REFCURSOR)
   AS BEGIN
   OPEN MYRC FOR SELECT TO_CHAR(PAYMENT_DATE,'yyyy-
   mm')AS MONTH, SUM(TOTAL_PAYMENT)AS TOTAL_PAYMENT
   FROM PAYMENT
   GROUP BY TO_CHAR(PAYMENT_DATE,'yyyy-mm')
   ORDER BY TO_CHAR(PAYMENT_DATE,'yyyy-mm')DESC;
   END;
   ```

Month	Total Payment
2016-10	100
2016-09	350

Month	Total Payment
2016-08	420
2016-06	790
2016-05	370
2016-03	100

5.4 Conclusion

As the conclusion, this chapter describes the Implementation Database Report summarizing the installation of operating system which is window, oracle database and the xampp server. Nevertheless, the implementation status had produced the schedule of the implementation progress based on module or component in system. The next chapter will be explained briefly for whole testing phase. Test Plan, Test Strategy, Test Design, and Test Result are included in the activities that will be conducted in the testing phase.

CHAPTER VI

TESTING

6.1 Introduction

This chapter is about the Testing of ISIMS. The testing phase is the important phase which is the software development Testing. This activity is focuses to analyse an attribute or the potential of a program for the whole of the system to make sure it meets the requirements. For this chapter, it will cover four sub-topics which are the test plan, the test strategy, the test design, and the test result and

analysis. The purpose of this testing phase is to ensure and determine which modules and functions that meet the requirements of the system. Furthermore, this testing process is also to find the errors that occur in the system.

6.2 Test Plan

Test Plan is systematic approach to test the system. Other than that, test plan is a vital part in testing phase where consists of the test organization, the test environment, and the test schedule.

6.2.1 Test Organization

Test organization describes people involves in the testing phases. It is to make sure the whole system will be tested. The people are responsible in managing, executing, designing, checking, and resolving the testing activities. For the ISIMS system, system developer will act as a main tester because the system developer is know the procedure and functional in each codes, module and the architecture of system. The people that are responsible in the testing phase are as follow below:

Testing Activity	Person Involved In ISIMS Testing
User Acceptance Testing	Siti Amirah Binti Muhamad Termidi
System Testing	Siti Amirah Binti Muhamad Termidi
Integration Testing	Siti Amirah Binti Muhamad Termidi
Unit Testing	Siti Amirah Binti Muhamad Termidi

Table 6.1: Individual Involved in Testing Phases

6.2.2 Test Environment

Test environment describe about what the environment system that will be tested. It includes the hardware, software, server operating system, database server, and network configured or other software component is needed to use to test the system.

System Configuration	Specification Server	Specification Client
Operating System	Windows 7 home Premium	Windows 7 home Premium
Computer Processor	Intel Core i5	Intel Core i5
Computer RAM	6 Gigabyte	4 Gigabyte
Hard Disk Space	500 GB	442GB
Input Device	Keyboard, Mouse	Keyboard, Mouse
Database	Oracle 10g Express Edition	Oracle 10g Express Edition
Web Browser	Google Chrome, Mozilla Firefox, IE	Google Chrome, Mozilla Firefox, IE
Web Server	Apache	None
Network Connection	Wide Area Network	Wide Area Network

Table 6.2: Test Environment Schedule

6.2.3 Test Schedule

Testing must be scheduled and make sure for each task in testing can be fulfill the entire requirement needed with consistently and well-organized. Test schedule has described four phases such as the unit testing, integration testing, system testing, and acceptance testing. It's also describes the testing activity done in the period of time.

Activities	Description	Start	End
Unit Testing	To ensure the unit of system meet its requirement need.	20/3/2016	5/7/2016
Integration Testing	To demonstrate each module of ISIMS functions properly.	24/5/2016	22/7/2016
System Testing	To establish confidence that ISIMS will be accepted by the user.	4/6/2016	4/7/2016
User acceptance Testing	To confirm that ISIMS meets the entire business requirements.	21/6/2016	29/7/2016

Table 6.3: Test Schedule

6.3 Test Strategy

Test strategy identify the overall approach to testing, identifying what level of testing are to be applied and the methods, techniques and tool to be used in ISIMS. White box and Black Box Testing are the test strategies that will be used. These approaches real on the level or knowledge the test analyst has of the internal knowledge structure of the system.

Black Box Testing	White Box Testing
Does not need any knowledge of code structure.	Handles with internal logic and structure of the code.
To implement the tester is needed to be through with the requirement of system.	To implement the testing plan the tester must possess knowledge of coding and logic.
Users should know how the system should response to the particular action.	Tester must find out which unit of the code is multifunctioning.

Usability testing.	Unit testing.

Table 6.4: Test Strategy

6.3.1 Classes of tests

Many testing strategies are available for testing a system in order to develop the test case. The developer and the tester are using the testing that is tested by equivalence portioning; integration testing is also tested by using performance testing and reliability testing, unit testing, user acceptance testing, and system integration test.

6.3.1.1 Unit Testing

Unit testing is traditionally domain for developers of system. This testing is conducted by development team to ensure the correctness of calculation and data manipulation that is involved in ISIMS. Other than that, the testing also checks on the consistency in the window content and navigation as well as file or record creation, add, update, delete operation.

6.3.1.2 User Acceptance Testing

The User Acceptance Testing brings on the most of common activities in the tester and determines the acceptance level of user towards the system is developed. User can decide either the system is user friendly or not and also it is easy for user to understand the interface or not.

6.3.1.3 System Integration Testing

The Integration Testing is to check the ability of accuracy data in each modules interaction to confirm the stability and reasonable switching. Furthermore, data transmission from one module to another will also screed to identify potential loss or corruption of data.

6.4 Test Design

A number of test cases will be identified for each item to be tested at each level of testing. Test cases are created to describe the testing in each unit of ISIMS. The unit testing will be carried out by the programmer to test the design and structure of the coding of ISIMS. Component of test which are the case identifications; each test will specify how the implementation of particular requirement or design decision is to be tested and the criteria for success of the test.

6.4.1 Test Description

Test description is created to describe the testing in each unit of ISIMS. The unit testing will be carried out by the programmer to test the design and structure of the coding of ISIMS. Component of test which are the case identifications; test cases and expected result for each module are designed and documented.

Test Case ID	Description	Action	Expected Output
TEST_1001	User ID	User need to fill in user ID field	System verify user ID
TEST_1002	Password	User need to fill in Password field	System verify Password
TEST_1003	Login Successfully –Admin-	Login using correct ID and Password	System will display admin main page
TEST_1004	Login Successfully –Student-	Login using correct ID and Password	System will display student main page
TEST_1005	Login Failed -Invalid User ID and password-	Login using invalid User ID and password	System will display error login failed page

Table 6.5: Test Case for Login Module

Test Case ID	Description	Action	Expected Output
TEST_2001	Name	Name is automatically detected after login	System displays the name

TEST_2002	Successfully update profile	Student fills all the mandatory field and click update button.	The system will ask confirmation to update and if the student click OK the system will display that the 'student data is updated'.
TEST_2003	View Course	Student click *view course*	The system will display to the student all the list of courses that are offered and the quota of each course.
TEST_2004	Add Course	Student choose the course	The system will display the current course that has been chosen by the student.
TEST_2005	Failed Update profile	Student click the update and leave the blank mandatory field	The system will display the error and student is required to fill the entire mandatory field.

Table 6.6: Test Case for Student

Test Case ID	Description	Action	Expected Output
TEST_3001	User Level	User level detected as admin	The system displays the user level
TEST_3002	Name	Admin name is detected after login	The system displays the name.
TEST_3003	Course search	Admin fills the course name and enter the keyword search	The system will display the output as filled up by the admin.
TEST_3004	Add course	Admin fill new course by click button add course	The system will display 'the course is successfully inserted'.
TEST_3005	Update course	Admin fill all mandatory field and click update	The system will ask confirmation to update and if admin click OK system will display 'course is updated'.
TEST_3006	Failed update course	Admin click update and leave mandatory field	The system will give error and required admin to fill it.
TEST_3007	Delete course	Admin click delete button	The system will ask confirmation to delete and if admin click OK system will display 'course is deleted'.
TEST_3008	Student search	Admin fill student name student ID and select search button	The system display the output as same as filled up by the admin.
TEST_3009	Student details	Admin click student details	The system will display details of

			student.
TEST_3010	Update student	Admin fill all mandatory field and click update	The system will ask confirmation to update and if admin click OK system will display 'student is updated'.
TEST_3011	Failed update student	Admin click update and leave mandatory field	The system will give error and required admin to fill it.
TEST_3012	Delete student	Admin click delete button	The system will ask confirmation to delete and if admin click OK system will display 'student is deleted'.

Table 6.7: Test Case for Admin

6.4.2 Test Data

The test data will provide a general description of the source of the test data. It's also important to make testing to the condition for each function in ISIMS module that needs to be cover.

Test Data ID	Attribute	Test Data
Test_Data_01 Login	-Staff ID -Staff Password	-S0021 -1234
Test_Data_02	-User level	-Student

Register Student	-IC/No -Student Password -Student ID -Student Name -Email -Phone Number -Address -Gender -Register Date	- 871002-08-5018 - 3333333 - ST00262 - DALILAH MANSOR - dalilah@gmail.com - 012-2567889 - TMN MELAWATI - FEMALE - 01/06/2016
Test_Data_03 Register course	-Student course ID -IC/No -Course ID	- ST00322 - 871002-08-5018 - C00141 Adobe Photoshop
Test_Data_04 Make Payment	-Payment ID -IC/No -Total Payment -Payment Date	-P0047 -871002-08-5018 -RM 350 -15/09/2016
Test_Data_05 Print out Student Detail	-Course id -Course name -Course fee -Course duration -Student name	- C00141 - Adobe Photoshop - RM 100 -2 weeks - DALILAH MANSOR

Table 6.8: Test Data for ISIMS.

6.5 Test Results and Analysis

Test result and analysis explain about the test case identification. Tester identification will show expected results whether they are OK or not, and if the result is failed, all detailed report of the results or problems will be recorded..

Test ID	Result	Descriptions
TEST_1001	Ok	-
TEST_1002	Ok	-
TEST_1003	Ok	-
TEST_1004	Ok	-
TEST_1005	Ok	-
TEST_2001	Ok	-
TEST_2002	Ok	-
TEST_2003	Ok	-
TEST_2004	Ok	-
TEST_2005	Ok	-
TEST_3001	Ok	-
TEST_3002	Ok	-
TEST_3003	Ok	-
TEST_3004	Ok	-
TEST_3005	Ok	-
TEST_3006	Ok	-
TEST_3007	Ok	-
TEST_3008	Ok	-
TEST_3009	Ok	-
TEST_3010	Ok	-
TEST_3011	Ok	-
TEST_3012	Ok	-

6.6 Conclusion

In this chapter, system testing is software testing in which developers can detect several errors occur. This chapter is also to ensure that the system will fulfil the requirements needed. The database also focused on the important

criteria during its implementation which are testing plan and how the testing has done and the result that has been recorded and reported.

Other than that, the Integration Test Plan documents is the step to be taken, and describe the test cases and expected results to confirm the functioning of interfaces between program units and subsystems for IT Base Student Information Management System. The strategy used in this testing is black box testing. It is more concern on the correctness output appears by the system. This system is implemented to help organization manage data systematically and keep data safely. Chapter VII will explain about Project Conclusion.

CHAPTER VII

PROJECT CONCLUSION

7.1 Introduction

After going through the development process of this project, there are many conclusions that can be taking out. The system has some strength and weaknesses that are identified during develop this system.

Undeniably, in developing this system, there are some problems or obstacles that must be faced. In addition, there is also a problem in terms of program

development for the modules or functions that are available. In terms of interface design it should be designed to attract. However, this problem can be resolved based on plans made at the beginning of the development of the system.

Upon completion of the entire system, then it can be concluded that the developed system is a system that is easy to understand, user-friendly and attractive and hope all the flaws of this system can be improved and resolved. It is essential for this system to operate with a more complete and systematic.

7.2 Observation on Weaknesses and Strengths

7.2.1 Strengths System

The strengths of the system are as stated as below:

i. Interfaces that are used can be easily understood and used by consumers.
ii. All information is recorded in an organized and easy to reach back.
iii. The searching and recording the data are easy without taking a long time.
iv. The system can print receipts of student that has registered the course.

7.2.2 Weaknesses System

The weaknesses of the system are as stated as below:

i. To access this system, it needs internet connection.
ii. No proper database backup and recovery.

7.3 Propositions for Improvement

For overcoming system, there are many parts should be modified which is to improve database security with enhance the password policies, account login attempts, and data encryption.

Besides that, the Initial training required for all programmers and users about the integration between databases. This system also should add more reports to enable managers to analyse.

7.4 Contribution

As a contribution to management system for ISIMS will facilitate the administrator to process and calculate the total price of course that is taken by the student. All the details of students and courses taken have recorded, stored into database, and is also easier to the user to retrieve and manipulate the data.

7.5 Conclusion

A good database system must have the feature of database security and good backup feature to prevent the data loss when database crash. Database system is a central point of the entire organisation to store the data of the organization. So, high security feature must be set up inside the database system. Database system must organize the data systematically, store and retrieve data efficiency, enforce data security policies at all levels, and can manage backup and recovery for high availability. Last but not least, this system still has some weaknesses and the problem occurs during the system development process. To overcome this problem it needs more effort and time to fully complete this system without flaws and as long as the objective is still achieved, this system also can be beneficial.

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APPENDICES