

E-LABTEST SYSTEM

NURUL SHUHADAH BINTI JOHARI

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS TESIS*

JUDUL: E-LABTEST SYSTEM

SESI PENGAJIAN: 2009/2010

Saya NURUL SHUHADAH BINTI JOHARI

mengaku membenarkan tesis (PSM) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis dan projek adalah hakmilik Universiti Teknikal Malaysia, Melaka.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. **Sila tandakan (/)

_____ SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

_____ TERHAD (Mengandungi maklumat terhad yang telah di tentukan oleh organisasi/badan di mana penyelidikan dijalankan)

_____ TIDAK TERHAD



(TANDATANGAN PENULIS)

Alamat Tetap: B-02-36 Pangsapuri Sri Penara, Bandar Sri Permaisuri, Cheras, 56000 Kuala Lumpur.

Tarikh: 23/6/10

(TANDATANGAN PENYELIA)

En. Mohd Fadzil bin Zulkifli

Tarikh:

CATATAN: * Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)
** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

E-LABTEST SYSTEM

NURUL SHUHADAH BINTI JOHARI

**This report is submitted in partial fulfillment of the requirement for the Bachelor of
Computer Science (Database Management)**


**FACULTI OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2010**

DECLARATION

I hereby declare that this project report entitled

E-LABTEST SYSTEM

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

STUDENT :  Date: 23/6/10
(NURU SHUHADAH BINTI JOHARI)

SUPERVISOR : _____ Date: _____
(MOHD FADZIL BIN ZULKIFLI)

DEDICATION

Special dedicated to my beloved family. Thank you for all of the supports and love given all the way this project report has been made.

Furthermore, not forgotten to my beloved supervisor, Mr. Mohd Fadzil bin Zulkifli which had been patient and tolerant to construct and guide me while this project is in progress.

And lastly to my beloved friends and who have encouraged, guided and inspired me throughout my journey in education.

ACKNOWLEDGEMENTS

I would like to thank Mr. Mohd Fadzil bin Zulkifli for giving assistance to complete this final year project of Projek Sarjana Muda (PSM) successfully although there are so many obstacles and constraints in order to develop this project.

I also would like to thank my beloved parents who have been giving me support and motivation throughout my project. Although distance had been separate between us but the relationship that been built seen my born in this world are not enough to be compared to any things and person or tools in this world.

I also would like to thank my beloved friends and who have encouraged, guided and inspired me throughout my journey in education.

ABSTRACT

E-LabTest System is a system that will be developing for Universiti Teknikal Malaysia Melaka based on the requirement and problem that they faced. The conventional system is not practical and has many constraints. The one solution is made one system that can help them to solve the problem that they faced. The conventional system that they use right now still use the file and insert the data manually and still use paper. The system that will be built is one system which will reduce the usage of the paper and failing system by using paper. All data and information will be inserted in a computerized system and systematically. This system will use computer hundred percent in managing the data and managing information that will be inserting it. It also helps reduce task of lecturer in checking the answer student in laboratory test. There are some the module that will be inside on this system student, test, question, checking and report module.

ABSTRAK

E-LabTest Sistem ialah sistem yang akan di bangukan khas untuk Universiti Teknikal Malaysia Melaka berdasarkan keperluan, kehendak dan masalah yang dihadapi oleh pihak universiti berkenaan. Sistem sedia ada yang sedang mereka gunakan sekarang adalah tidak praktikal dan banyak masalah yang dihadapi. Jadi salah satu jalan penyelesaian kepada masalah ini adalah dengan mewujudkan atau membina satu sistem yang dapat menolong mengurangkan bebanan dan masalah yang sedang dihadapi. Sistem sedia ada hanyalah menggunakan penyimpanan maklumat secara sistem penfailan dan amat merumitkan apabila menguruskan banyak fail atau data. Sistem yang bakal dibina ini adalah satu sistem yang mengurangkan penggunaan kertas dan system penfailan secara manual. Segala data dan maklumat akan dimasukkan ke dalam sistem berkomputer dan secara sistematik. Sistem ini menggunakan komputer sepenuhnya dan segala operasi akan di jalankan di dalam komputer. Ia juga membantu menugurkan kerjayang dilakukan oleh pensyarah dalam memeriksa jawapan pelajar dalam ujian makmal. Antara modul yang terdapat dalam sistem ini ialah pelajar, ujian, soalan, periksa dan laporan modul.

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xii
	LIST OF FIGURES	xv
	LIST OF ABBREVIATIONS	xvii
	LIST OF ATTACHMENTS	xviii
CHAPTER I	INTRODUCTION	
	1.1 Project Background	1
	1.2 Problem Statements	2
	1.3 Project Objective	2
	1.4 Project Scope	3
	1.5 Project Significance	4
	1.6 Expected Output	5
	1.7 Conclusion	5
CHAPTER II	LITERATURE REVIEW AND PROJECT METHODOLOGY	
	2.1 Introduction	6

2.2	Facts and Findings	7
	2.2.1 Existing System	7
	2.2.2 Domain	11
	2.2.3 Technique	12
2.3	Project Methodology	12
	2.3.1 Rapid Application Development	13
	2.3.2 Database Life Cycle	14
	2.3.2.1 Database Initial Study	15
	2.3.2.2 Database Design	15
	2.3.2.3 Implementation and Loading	16
	2.3.2.4 Testing and Evaluation	16
	2.3.2.5 Operation	17
	2.3.2.6 Maintenance and Evaluation	17
2.4	Project requirements	18
	2.4.1 Software requirements	18
	2.4.2 Hardware Requirements	19
2.5	Project Schedule and Milestones	19
2.6	Conclusion	22

CHAPTER III ANALYSIS

3.1	Introduction	23
3.2	Problem analysis	24
3.3	Requirement analysis	25
	3.3.1 Data Requirement	25
	3.3.2 Functional Requirement	28
	3.3.3 Non-Functional Requirement	36
	3.3.4 Other Requirement	36
	3.3.4.1 Software requirement	36
	3.3.4.2 Hardware requirement	37
	3.3.4.3 Network requirement	38
3.4	Conclusion	39

CHAPTER IV	DESIGN	
4.1	Introduction	40
4.2	High-Level Design	41
4.2.1	System Architecture	41
	4.2.1.1 Client Tier	43
	4.2.1.2 Application Tier	43
	4.2.1.3 Database Tier	44
4.2.2	User Interface Design	44
	4.2.2.1 Navigation Design	48
	4.2.2.2 Input Design	49
	4.2.2.3 Output Design	51
4.2.3	Conceptual and Logical database design	51
	4.2.3.1 Conceptual Database Design	51
	4.2.3.2 Logical Database Design	54
4.3	Detail Design	57
	4.3.1 Software Design	57
	4.3.2 Physical Database Design (schema level –DDL/DCL)	62
4.4	Conclusion	65
CHAPTER V	IMPLEMENTATION	
5.1	Introduction	66
5.2	Software Development Environment Setup	67
	5.2.1 Software and Hardware Environment Setup	68
	5.2.2 Database Development Environment Setup	68
5.3	Database Implementation	76
5.4	Software Configuration Management	79

5.4.1	Configuration Environment Setup	79
5.4.2	Version Control Procedure	79
5.5	Implementation Status	80
5.6	Conclusion	81

CHAPTER VI TESTING

6.1	Introduction	82
6.2	Test Plan	83
6.2.1	Test Organization	83
6.2.2	Test Environment	84
6.2.2.1	Environment Setup	85
6.2.2.2	Software Application	85
6.2.2.3	System Software	86
6.2.2.4	System Hardware	86
6.2.3	Test Schedule	87
6.3	Test Strategy	88
6.3.1	Classes of Test	89
6.4	Test Design	90
6.4.1	Test Description	90
6.4.2	Test Data	99
6.5	Test Result and Analysis	103
6.6	Conclusion	107

CHAPTER VII PROJECT CONCLUSION

7.1	Observation on Weakness and Strength	108
7.2	Proposition for improvement	109
7.3	Contribution	109
7.4	Conclusion	110

REFERENCES	111
BIBLIOGRAPHY	112
APPENDENCIES	113

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	Projek Sarjana Muda (PSM) Milestones	20
3.1	Data Requirement for student	26
3.2	Data Requirement for computer	26
3.3	Data Requirement for student_answer	26
3.4	Data Requirement for test	26
3.5	Data Requirement for question	27
3.6	Data Requirement for test_set	27
3.7	Data Requirement for attendance	27
3.8	Data Requirement for lecturer	28
3.9	Software Requirement	37
3.10	Hardware Specification	38
3.11	Network Requirement	38
4.1	3-Tier System Architecture	42
4.2	Input Design	50
4.3	Output Design	51
4.4	Data Dictionary for table LECTURER	54
4.5	Data Dictionary for table STUDENT	54
4.6	Data Dictionary for table TEST	55
4.7	Data Dictionary for table QUESTION	55
4.8	Data Dictionary for table TEST_SET	55
4.9	Data Dictionary for table COMPUTER	56

4.10	Data Dictionary for table ATTENDANCE	56
4.11	Data Dictionary for table STUDENT_ANSWER	56
5.1	Software and Hardware Requirement	68
5.2	Version control Procedure	80
5.3	Implementation status of e-LabTest System	81
6.1	The user and their task	84
6.2	Environment Setup Specification	85
6.3	e-LabTest System Application Environment	85
6.4	System Software Tools	86
6.5	System Hardware Tools	86
6.6	Test Schedule for e-LabTest System	87
6.7	Login Module	91
6.8	Student Module	92
6.9	Computer Module	93
6.10	Test Module	94
6.11	Question Module	95
6.12	Attendance Module	96
6.13	Checking Module	97
6.14	Report Module	98
6.15	Report and Recovery Module	99
6.16	Test Data for Login Module	100
6.17	Test Data for Student Module	100
6.18	Test Data for Computer Module	100
6.19	Test Data for Test Module	101
6.20	Test Data for Question Module	101
6.21	Test Data for Attendance Module	102

6.22	Test Data for Checking Module	103
6.23	Test Data for Report Module	103
6.24	Test Result and Analysis for Login Module	104
6.25	Test Result and Analysis for Student Module	104
6.26	Test Result and Analysis for Computer Module	104
6.27	Test Result and Analysis for Test Module	105
6.28	Test Result and Analysis for Question Module	105
6.29	Test Result and Analysis for Attendance Module	105
6.30	Test Result and Analysis for Checking Module	106
6.31	Test Result and Analysis for Report Module	106

LIST OF FIGURES

FIGURE	TITLE	PAGE
2.1	uCertity create account interface	8
2.2	uCertity Set Question	9
2.3	uCertity Question	9
2.4	uCertity Result	10
2.5	Rapid Application Developments Model	13
2.6	Database Life Cycles Model	14
3.1	DFD of Manual System	24
3.2	Context Diagram	28
3.3	Level-0 Data Flow Diagram	29
3.4	DFD Level 1 for Login System	30
3.5	DFD Level 1 for Manage Question	31
3.6	DFD Level 1 for Create Set Question	32
3.7	DFD Level 1 for Handle Question	33
3.8	DFD Level 1 for Manage Student	34
3.9	DFD Level 1 for Check Answer	35
4.1	3-Tier System Architecture	41
4.2	Log In interface	44
4.3	Student interface	45
4.4	Computer interface	46
4.5	Question interface	47
4.6	Navigation Design for e-LabTest System	48

4.7	Entity Relationship Diagram for e-Labtest System	52
5.1	Software development environment for e-LabTest	67
5.2	Oracle Net Configuration Assistant: Welcome page	69
5.3	Net Service Name Configuration	69
5.4	Net Service Name Configuration, Database Version	70
5.5	Net Service Name Configuration, Service Name	70
5.6	Net Service Name Configuration, Select Protocols	71
5.7	Net Service Name Configuration, TCP/IP Protocols	71
5.8	Net Service Name Configuration, Test	72
5.9	Oracle Net Configuration Assistant: login page	72
5.10	Net Service Name Configuration, Connecting	73
5.11	Net Service Name Configuration, Net Service Name	73
5.12	Net Service Name Configuration Done	74
5.13	Oracle Forms Builder	74
5.14	Connect form	75
5.15	Accessing to the database	75
5.16	Oracle SQL Plus Worksheet	76

LIST OF ABBREVIATIONS

ABBREVIATION		DESCRIPTION
GUI	-	Graphical User Interface
RAD	-	Rapid Application Development
DFD	-	Data Flow Diagram
DBLC	-	Database Life Cycle
ERD	-	Entity Relationship Diagram
DDL	-	Data Definition Language
DBMS	-	Database Management System
DCL	-	Data Control Language
PSM	-	Projek Sarjana Muda
CPU	-	Computer Processor Unit
SQL	-	Structured Query Language.
PK	-	Primary Key
ELT	-	e-LabTest

LIST OF ATTACHMENTS

ATTACHMENT	TITLE	PAGE
1.0	Project proposal	113
2.0	Gantt Chart	120
3.0	User interface Design	122

CHAPTER I

INTRODUCTION

1.1 Project background

In today's modern lifestyle, advancement in Information Technology gives the opportunity for new resources to straight away actualize management to be kept electronically. Now, in education have many way to take an exam. From manual exam to online exam via specific system that has been developed.

The system would be develop are e-LabTest System for subject Database Programming. This system is to help the lecture in checking student answer. This is based on the requirements and problems that faced by the lecturers during conduct lab test session. This system will feature new module to check the lab test answer automatically. It means lecture does not need to go through to every computer to check the answer. Lecture can check the answer from one place. In this system, lecturer can add or update the information about student that takes the exam. This system also has ability to store record of student result. It can give the faster result to student.

The users of this system are the administrator and lecturer. Both of them used same system but in different approach which means that the priority to use this system is more to lecturer part rather than to administration part. Lecturers are able to make a test and know to performance of student. The administrator can make backup and recovery of the data that had been inside the database in order to avoid data lost or database crash.

Lastly, the system is stand alone system which will be used in Unversiti Teknikal Malaysia Melaka (UTEM). It will be used Oracle Forms Builder as front end application and Oracle 10G as the database.

1.2 Problem Statements

The problems that we would like to solve by developing this system are to save time and make the lecturer task more effective because now lecturer need to check one by one computer to check the answer of student.

The current systems that are used now are manually. It is not suitable to manage a lot of data and can't be store properly. Sometime, when the lecturer make record and rewrite the record later in the computer, some mistake and error will be happen although we realize it or not.

Accessing to certain data is difficult because lecturer need to make manually check to their manual system and every time to look to the performance of student, lecturer need to check one by one their student result.

1.3 Project Objective

The main point developing this system is to create new systems that improve the manual system. This system is expected to help the lecture to mark to be more effective, easier and faster. Objectives of e-LabTest System are as follows:

1. To help the lecture in checking student answer

In this context of helping the lecture in checking student answer mean that all the process to check the student answer will do inside the system and it will give a faster result. For example after the lab test, lecturer will come up with the result at that time. It save the time and give advance performance.

2. To reduce and avoid the simple mistake that always be done by human.

By checking the answer may be easy to small amount of people that take an exam. But it can be a burden and hard to manage when it becomes bigger. So, the entire mistake while checking the answer can be avoid and reduced with this system.

3. To increase the students performance

When this system has developed, it facilitates the lecture to check the answer. It means lecturer can make exercise more often because the checking answers just take a little time.

4. To avoid the intrusion or violation data and information or missing data that often happen to current system.

Data authentication can be trusted when using this system. This is situation where all unauthorized person cannot modified and manage the data in the system without permission from the administration. All the information can be store safely by using this system.

1.4 Project Scope

A few scope have been define to develop this project. This system will develop based on two scopes that are the system's scope and the user's scope.

1.4.1 System scope

a) Administration modules

In this administration module, the administrator shall be able to view the entire user data in order to make a correction if there are mistakes or errors during data insertion in the computer system.

Furthermore, the administrator can make backup and recovery of the data that had been inside the database in order to avoid data lost or database crash. In

addition, administration can view a report or summarization of the exam that has been conducted and performance of students.

b) Lecturer

Lecturer can add new data about the student which will take the exam. Lecturer also can add question and run checking answer of the lab test they conduct. Besides that, the lecturer can view the student's result in order to check the performance.

1.4.2 User scope

The users for this system can be divided into two. They are Back-end User and Front-end User. Each of the users has their own responsibility to the system functionality.

a) Back-end User

Administration of the system that shall be able to control, manage and configure overall of the system.

b) Front-end User

Lecturers that will use the system like insert, update, delete, and view the data and information.

1.5 Project Significance

Significance of this project is that a lecturer has much benefit by using this system. Task of lecturer in conducting lab test can easier and more effective in making a question and make a checking. When lecturer using this system, they will make a more test because it just it can help to increase the performance of student. Lecturer also can produce the more systematic report by using this system and avoid from make a mistake and error during storing data.