

THESIS APPROVAL STATUS FORM

JUDUL: FTMK CLASS TIMETABLE SCHEDULING SYSTEM

SESI PENGAJIAN: 2005 / 2006

Saya TEO EIM LIU
(HURUF BESAR)

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

1. Tesis adalah hak milik Kolej Universiti Teknikal Kebangsaan Malaysia.
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 (/)

<u> </u>	SULIT	(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)
<u> </u>	TERHAD	(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)
<u> </u>	TIDAK TERHAD	

Gmmml
(TANDATANGAN PENULIS)

Alamat tetap : 37, KEDAI MANIR,

21000 KUALA TERENGGANU

Tarikh : 30 NOV. 2005

Amir Kasim
(TANDATANGAN PENYELIA)

AMIR SYARIFUDDIN BIN KASIM

Pensyarah

Fakulti Teknologi Maklumat dan Komunikasi

Kolej Universiti Teknikal Kebangsaan Malaysia

Karang Semerah 11800

Ayer Keroh, 75450 Melaka

Tarikh : 22 NOV. 2005

CATATAN: ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

FTMK CLASS TIMETABLE SCHEDULING SYSTEM

TEO GIM LIU

**This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Software Development)**

**FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
KOLEJ UNIVERSITI KEBANGSAAN MALAYSIA**

DECLARATION

I hereby declare that this project report entitled
FTMK CLASS TIMETABLE SCHEDULING SYSTEM

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

STUDENT : Gim Liu Date: 22. NOV.2005
(TEO GIM LIU)

SUPERVISOR : Amir Syarifuddin B. Kassim Date: 22 NOV 2005
(EN. AMIR SYARIFUDDIN B. KASSIM)

DEDICATION

To my beloved parents, Mr. TEO HUAT SENG and Mrs. Lim SIOK GUAT

Thank you for your support....

ACKNOWLEDGEMENTS

First and foremost, the author wants to takes this opportunity to thank all the peoples who have contributed their helps for me to complete the project.

The author would like to thank the Supervisor of the project, En Amir Syarifuddin b.Kassim. He is the lecturer who has provided the professional opinions and guidance for towards the project to successful way. The author also would like to thank to Pn Noorazilah binti Mohamed and En Noorhasyuddin in KUTKM that gives their cooperation by provides the required needs during author PSM II.

Lastly, the author would also like to express his appreciation to his family who has been supported the author to continue developing this project, the friends and lecturers who have spent their precious time and given their experience and opinions to the author. The information which provided by them is a good references and very useful for author to develop the project.

ABSTRACT

FTMK Class Timetable Scheduling system is developed for enhancing the operation of the faculty FTMK and improves its performance. The system also will make the process of timetable Scheduling more flexible and can execute smoothly. The FTMK Class Timetable Scheduling System is web-based application. System is created by combination of server side script such as PHP with Apache HTTP server, user side script such as HTML and database build using MYSQL. FTMK Class Timetable Scheduling System can arrange the timetable. The purpose of research, particularly literature review is to collect data. Through this literature review, scope of project and user requirements can be retrieved whether how big the project is. Systems can multiple views that mean the timetable can generate instructor timetable and class timetable. Only authenticated user can use this system. The Object-Oriented Analysis and Design methodology with the Unified Modeling Language is used to carry out the project analysis and design. And lastly, the software testing is carried out to test the correctness of the system before the system is deployed.

ABSTRAK

FTMK Class Timetable Scheduling System adalah dibangunkan untuk meningkatkan dan memperbaiki pelaksanaan operasi FTMK pada masa depan. sistem juga akan menjadikan penyusunan jadual waktu lebih flexible dan berjalan dengan lancar. *FTMK Class Timetable Scheduling System* adalah aplikasi yang dibangunkan menggunakan *web-base*. System ini dibangunkan dengan menggunakan server side script seperti PHP dengan *Apache HTTP server*, *user side script* seperti HTML, *JavaScript* dan database dibangun menggunakan MSQQL. Tujuan analisa sistem adalah untuk mengumpul maklumat yang mencukupi sebelum projek dimulakan. Sistem-sistem luaran akan digunakan sebagai rujukan dan dapat membantu pelajar menentukan skop system. *FTMK Class Timetable Scheduling System* merupakan sistem yang membenarkan pengguna menyusun jadual waktu. Sistem ini juga menghasilkan jadual waktu untuk tenaga pengajar dan pelajar. Hanya pengguna yang sah sahaja boleh menggunakan sistem ini. Metodologi *Object-Oriented Analysis and Design* dengan *Unified Modelling Language* digunakan untuk menjalankan analisis dan rekabentuk untuk projek dan akhir sekali pengujian perisian dijalankan untuk menguji keberkesanan sistem.

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	PROJECT TITLE	i
	DECLARATION	ii
	DEDICATION	iii
	AKNOWLEDGEMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xiii
	LIST OF FIGURE	xiv
	LIST OF APPENDICES	xv
	LIST OF ABBREVIATION	xxi
CHAPTER I	INTRODUCTION	
	1.1 Introduction	1
	1.2 Project Background	1
	1.3 Problem Statement(s)	2
	1.4 Objective	3

1.5 Scope	3
1.6 Project Significance	4
1.7 Expected Output	5
1.8 Conclusion	5
CHAPTER II LITERATURE REVIEW AND PROJECT METHODOLOGY	
2.1 Introduction	6
2.2 Fact and Finding	6
2.2.1 Research for Methodology	7
2.2.2 Research for Current System	7
2.2.3 Result of Research	9
2.3 Project Methodology	9
2.4 Project Requirement	12
2.4.1 Software Requirement	12
2.4.2 Hardware Requirement	13
2.5 Project Schedule and Milestones	13
2.6 Conclusion	14
CHAPTER III ANALYSIS	
3.1 Introduction	15
3.2 Problem Analysis	16
3.2.1 Background of Current System	16
3.2.2 Problem Statement	18
3.3 Requirement Analysis	19
3.3.1 Function Requirement	19
3.3.1.1 Scope	20
3.3.2 Business Flow	21
3.3.3 Use Case view	21
3.3.4 Actor	21
3.3.5 Use Case Description	22

3.3.6 Interaction Diagram	40
3.3.7 List of Software Requirements	40
3.3.8 List of Hardware Requirements	40
3.3.9 List of Network Requirements	41
3.4 Conclusion	41
CHAPTER IV DESIGN	
4.1 Introduction	42
4.2 High-Level Design	43
4.2.1 Raw Input / Data	43
4.2.2 System Architecture	43
4.2.2.1 Static Organization	45
4.2.2.2 High-Level Class Diagram	45
4.2.3 User Interface Design	46
4.2.3.1 Navigation Design	47
4.2.3.2 Input Design	48
4.2.3.3 Output Design	55
4.2.4 Database Design	56
4.2.4.1 Logical Database Design	56
4.2.4.2 Business Rules	56
4.2.5 Deployment Design	57
4.3 Low –level Design	58
4.3.1 Detail Design	58
4.3.1.1 CSU FrmLogin	58
4.3.1.2 CSU FrmAdminRecord	60
4.3.1.3 CSU FrmStaffRecord	63
4.3.1.4 CSU FrmSubjectRecord	67
4.3.1.5 CSU FrmRoomRecord	71
4.3.1.6 CSU FrmAvailableRoomRecord	75
4.3.1.7 CSU FrmArrangeTimetable Record	79

4.3.1.2 CSU FrmSelectTimetable	83
4.3.2 Physical Database Design	84
4.4 Conclusion	85

CHAPTER V IMPLEMENTATION

5.1 Introduction	86
5.2 Software Development Environment Setup	87
5.2.1 Operating System	88
5.2.2 Programming Language	88
5.2.2.1 PHP (Hypertext Preprocessor)	88
5.2.2.2 Java Script	89
5.2.3 Web Server-Apacher 1.3.31	89
5.2.4 Database Server –MYSQL Database	90
Server	
5.3 Software Configuration Management	90
5.3.1 Configuration Environment Setup	91
5.3.1.1 PHP Apache Server Installation	92
Configuration	
5.3.2 Version Control Procedure	96
5.4 Implementation Status	97
5.5 Conclusion	97

CHAPTER VI TESTING

6.1 Introduction	98
6.2 Test Plan	98
6.2.1 Test Organization	99
6.2.2 Test Environment	99
6.2.3 Test Schedule	99
6.3 Test Strategy	100
6.3.1 Classes of tests	100
6.3.1.1 Black Box Testing	100

6.4 Test Design	101
6.4.1 Test Description	101
6.4.1.1 Unit Testing	101
6.4.1.2 System Testing	102
6.4.2 Test Data	102
6.5 Test Result and Analysis	102
6.6 Conclusion	103
 CHAPTER VII PROJECT CONCLUSION	
7.1 Observation on Weaknesses and Strengths	104
7.1.1 System Weaknesses	104
7.1.2 System Strengths	105
7.2 Propositions for Improvement	105
7.4 Conclusion	106
 BIBLIOGRAPHY	107
 APPENDICES	109

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	List of Software Requirements	12
3.1	List of Software Requirements	40
3.2	List of Hardware Requirements	40
3.3	List of Hardware Requirements	41
4.1	Login Input Design	48
4.2	Manage Admin Record Input Design	49
4.3	Manage Staff Record Input Design	50
4.4	Manage Subject Record Input Design	51
4.5	Manage Room Record Input Design	52
4.6	Manage Available Room Record Input Design	53
4.7	Manage Arrange Timetable Record Input Design	54
5.1	Datasets Used For Version Library	91
5.2	The Progress of the development Status	97

LIST OF FIGURE

Figure	TITLE	PAGE
3.1	Scheduling Activity Diagram	16
3.2	Overview of FTMK Class Timetable	19
	Scheduling System	
4.1	FTMK Class Timetable Scheduling System architecture	44
4.2	Layering for FTMK Class Timetable Scheduling System	45
4.3	Navigation Design for FTMK Subject Scheduling System	47
4.4	Example Login Interface	48
4.5	Example Manage Admin Record Interface	49
4.6	Example Manage Staff Record Interface	50
4.7	Example Manage Admin Record Interface	51
4.8	Example Manage Room Record Interface	52
4.9	Example Manage Available Room Record Interface	53
4.10	Example Manage Arrange Timetable Record Interface	54
4.11	Example Manage Timetable Record Interface	55
5.1	The Software Development Environment Setup Architecture	91

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Gantt Chat	109
B	Business Flow	
	Figure B1: Login Activity Diagram	110
	Figure B2: Manage Admin Activity Diagram	110
	Figure B3: Manage Staff Activity Diagram	111
	Figure B4: Manage Subject Activity Diagram	111
	Figure B5: Manage Room Activity Diagram	112
	Figure B6: Manage Available Room Activity Diagram	112
	Figure B7: Manage Arrange Timetable Activity Diagram	113
	Figure B8: Manage View Timetable Activity Diagram	113
C	Global View Of Use-Case Model	
	Figure C1: Global view of use-case model for FTMK Subject Scheduling System	114
D	Sample Prototype Interface	
	Figure D1: Example Login Prototype	115
	Figure D2: Example Add New Admin Prototype	116
	Figure D3: Example Selection Admin Data Prototype	117

Figure D4: Example Delete Admin Data Prototype	118
Figure D5: Example Add New Staff Record Prototype	119
Figure D6: Example Selection Staff Record Prototype	120
Figure D7: Example Update Staff Record Prototype	121
Figure D8: Example Delete Staff Record Prototype	122
Figure D9: Manage Add New Subject Prototype	123
Figure D10: Selection Subject to Update Prototype	124
Figure D11: Update Subject Prototype	125
Figure D12: Delete Subject Prototype	126
Figure D13: Example Add New Room Record Prototype	127
Figure D14: Example Selection Room Record Prototype	128
Figure D15: Example Update Room Record Prototype	129
Figure D16: Example Delete Room Record Prototype	130
Figure D17: Example Add New Available Room Record Prototype	131
Figure D18: Example Selection Available Room Record Prototype	132
Figure D19: Example Update Available Room Record Prototype	133
Figure D20: Example Delete Available Room Record Prototype	134
Figure D21: Example Add New Arrange Timetable Prototype	135
Figure D22: Example Selection Arrange Timetable Prototype	136
Figure D23: Example Update Timetable Prototype	137

	Figure D24: Example Delete Timetable Prototype	138
	Figure D25: Example View Timetable Prototype	139
E	Sequences Diagram	
	FigureE1: Login Sequence Diagram	140
	FigureE2: Admin Sequence Diagram	141
	FigureE3: Staff Sequence Diagram	142
	FigureE4: Subject Sequence Diagram	143
	FigureE5: Room Sequence Diagram	144
	FigureE6: Available Room Sequence Diagram	145
	FigureE7: Arrange Timetable Sequence Diagram	146
	FigureE8: View Timetable Sequence Diagram	147
F	Raw Data	
	Table F1: Raw Data for FTMK Class Timetable Scheduling System Database	148
G	Class Diagram	
	Figure G1: High-Level Class Diagram for FTMK Class Timetable Scheduling System	149
F	Entity Relationship Diagram (ERD)	
	Figure H1: Entity Relationship Diagram (ERD)	150
I	Deployment Diagram	
	Figure I1: Deployment Diagram for FTMK Class Timetable Scheduling System	151
J	Data Dictionary	
	Table J1: Data Dictionary for Admin	152
	Table J1: Data Dictionary for Admin	152
	Table J3: Data Dictionary for Subject	153
	Table J4: Data Dictionary for Room	153
	Table J5: Data Dictionary for Available Room	154

	Room	
	Table J6: Data Dictionary for Timetable	155
K	Version Control Procedure	
	Figure K1: Version Control Procedure	156
L	Unit Test Case Form	
	Table L1: Unit Testing – Login Module	157
	Table L2: Unit Testing – Manage Admin	158
	Record Module	
	Table L3: Unit Testing – Manage Staff	159
	Record Module	
	Table L4: Unit Testing – Manage Subject	159
	Record Module	
	Table L5: Unit Testing – Manage Room	160
	Record Module	
	Table L6: Unit Testing – Manage Available	161
	Room Record Module	
	Table L7: Unit Testing – Manage Arrange	161
	Timetable Record Module	
M	System Test Case Form	
	Table M1: System Testing – Login Module	163
	Table M2: System Testing –Manage Admin	165
	Record Module	
	Table M3: System Testing –Manage Staff	167
	Record Module	
	Table M4: System Testing –Manage Subject	169
	Record Module	
	Table M5: System Testing –Manage Subject	171
	Record Module	
	Table M6: System Testing –Manage	173
	Available Room Record Module	

	Table M7: System Testing –Manage Arrange Timetable Record Module	175
N	Test Data	
	Table N1: Test Data – Login Module	176
	Table N2: Test Data –Manage Admin Record Module	176
	Table N3: Test Data –Manage Staff Record Module	177
	Table N4: Test Data –Manage Subject Record Module	178
	Table N5: Test Data –Manage Room Module	178
	Table N6: Test Data –Manage Available Room Module	179
	Table N7: Test Data –Manage Arrange Timetable Record Module	180
O	Test Case Result	
	Table O1: Test Case Result	181
P	User Menu	
	Figure P1: Main page	182
	Figure P2: Admin Login Page	183
	Figure P3: Main Menu	184
	Figure P4: Staff Menu	185
	Figure P5: Staff Form	186
	Figure P6: Confirm Message to save	186
	Figure P7: Selection Staff Page	187
	Figure P8: Update Staff Form.	188
	Figure P9: Confirm Message to Update	188
	Figure P10: Selection Staff Page.	189
	Figure P11: Delete Staff Form	190
	Figure P12: Confirm Message to Delete	190

Figure P13: Selection for update Available Room	191
Figure P14: Delete Available Room Data Page	192
Figure P15: Timetable Page	193

LIST OF ABBREVIATION

ABBREVIATION	DESCRIPTION
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
FTMK	Fakulti Teknologi Maklumat dan Komunikasi
PSM I	Project Saujana Muda I
PHP	Hypertext Preprocessor
UML	Unified Modeling Language
HTTP	Hypertext Transfer Protocol
HTML	Hyper Text Markup Language
ERD	Entity Relationship Diagram

CHAPTER I

INTRODUCTION

1.1 Introduction

This chapter is a general survey will follow by the discussion of the background of the project. Based on problem statement to find out the scope of project to achieve the objective of the system. This chapter also concluded with an expected output that is result the system output.

1.2 Project Background

FTMK Class Timetable Scheduling System is a system will be proposed to Faculty of Information & Communication Technology in KUTKM. This system will be developing in the web base platform and will be created by combination of server side script such as PHP with Apache HTTP server, user side script such as HTML and system database will be build by MySQL.

This system database will design queries to retrieve the data and show it to the staff, subject, room and available room. Only Committee members who involved in class timetable scheduling can use this system. User must login before user this system.

FTMK Class Timetable Scheduling system is develop for enhance the operation of the faculty FTMK and improves its performance. The system also will make the process of timetable Scheduling more flexible and can execute smoothly.

1.3 Problem Statement

Use the current system to scheduling the timetable in FTMK become any problem to the committee member. Beside is some the problem is define after conduct the interview.

The first problem is time consuming, wasted time occur when committee member need to arrange many timetable using manual system. They be careful in arrange the timetable to decrease the mistake probability so they need to many time to arrange the timetable.

Second, mistake probability is high because they using manually to arrange the time table in the paper. At the one time, committee member need to consider many criteria.

Third, the committee member in the FTMK will be burdened with additional workload. So more time is needed to access certain data and arrange the timetable so that can affect the working performance

Lastly, increase student in KUTKM every year become the reason manual system practiced will not be able to support the to scheduling the schedule using manually.

1.4 Objective

The objective of the FTMK Class Timetable Scheduling System is to develop a web based system for the committee number who involved in class timetable scheduling of faculty FTMK in KUTKM for replace the manual system.

The main objectives of the FTMK Class Timetable Scheduling System are as below:

1. To manage the information in databases.

All information like admin, staff, subject, room, available room and timetable in database can be add, update, delete and print.

2. To arrange the timetable.

The system can arrange the timetable the class timetable and instructor timetable.

3. To provide multiple view schedule.

The Schedule view allows viewing by class timetable and instructor timetable.

1.5 Scopes

It is necessary to define a scope when built up a project and The FTMK Class Timetable Scheduling System will be develop in the scope of:

End User

The end users of the system are Committee members who involved in class timetable scheduling can an access to this system.

Type of System

FTMK Class Timetable Scheduling System is a web-base system developed with the properties of custom-made software product.