FORM

_____

/Doktor Falsafah) to be kept in
ı the following rules and

ıiti Teknikal Kebangsaan

ary is allowed to make a copy

3. Information Technology and Communication library is allowed to make a copy of the thesis as an exchange material between higher institutions .
4. ** Please mark (/)

_____	CONFIDENTIAL	(Contains information with a secure level or for the important of Malaysia as ststed in AKTA RAHSIA RASMI 1972)
✓	LIMITED	(Contains LIMITED information stated by organization or institution where the research was done)
_____	UNLIMITED	

(AUTHOR SIGNATURE)

Permanent Address : D/A AIEL BIN ASIN,
PEJ. DAERAH, JALAN NYELONG,
96100, SARIKEI, SARAWAK
Date : 23/10/04

(SUPERVISOR SIGNATURE)
ZULISMAN MAKSOM
Lecturer
Faculty of Information and Communications Technology
Kolej Universiti Teknikal Kebangsaan Malaysia
Supervisor
Date : 23/10/04

NOTE: ** If the thesis is CONFIDENTIAL or LIMITED, please attach a letter from the the authorities. Thesis is referred as Laporan Projek Sarjana Muda (PSM).

© Universiti Teknikal Malaysia Melaka

TESIS^ APPROVAL STATUS FORM

JUDUL: STUDENT MANAGEMENT SYSTEM (SMS)

SESI: 1 2004/2005

I RAMIJH BINTI YASSIN
(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 hakmilik 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 (/)

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

(TANDATANGAN PENULIS)

Alamat tetap : D/A AIEK BIN YASSIN,
PEJ. DAERAH, JALAN NYELONG,
96100, SARIKEI, SARAWAK

Tarikh : 23/10/04

(TANDATANGAN PENYELIA)

ZULISMAN MAKSOM
Lecturer
Faculty of Information and Communications Technology
Kolej Universiti Teknikal Kebangsaan Malaysia
Tel: 06-2332473
Nama Penyelia

Tarikh : 23/10/04

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

© Universiti Teknikal Malaysia Melaka

raf
QA76.9.S88 .R35 2004
0000038150
Student management system / Ramija Assin.

ADMISSION

I admitted that this project title name of

STUDENT MANAGEMENT SYSTEM (SMS)

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

STUDENT : _____ Date : 23/10/04
(RAMIJA BINTI ASSIN)

SUPERVISOR : _____ Date : _____
(EN. ZULISMAN BIN MAKSOM)

© Universiti Teknikal Malaysia Melaka

STUDENT MANAGEMENT SYSTEM

RAMIJA BINTI ASSIN

This report is submitted in partial fulfillment of the requirements for the
Bachelor of Information and Communication Technology (Software Development)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2004

© Universiti Teknikal Malaysia Melaka

DEDICATION

I dedicate this project for my beloved ones and those who appreciate the meaning of effort and victory, lecturers involved, my beloved family, fellow friends and everyone involved in helping me to develop this project

To my beloved parents,

I sincerely value the importance of your presence, in guiding me along the way to grow mentally and spiritually apart from intellectual provisions. I can finally see your points from the facet of your eyes

Thank you, may God bless all of you

© Universiti Teknikal Malaysia Melaka

ACKNOWLEDGEMENTS

I would like to thank Encik Zulisman Bin Maksom as being very helpful in determining my objective, scope and the logic behind the project as well as guiding me towards producing this product. I am very grateful to Encik Zulisman who offered comments, suggestions, and praise. His enthusiastic support contributed to the success of my project.

This project was greatly enhanced and improved, thanks to Bruce Corkhill from Web Wiz Forum for providing consultation on the basic functions in a forum. Not forgetting the moderators and members from http://www.doxob.com and http://www.dzgnrs.com who are also being very helpful and responsive towards any doubts and questions referring to this project being posted in their forum.

Besides them, I would like to express my gratitude to Ms. Sabrina Ahmad in providing technical consultation on programming and documentation of the project.

There are also a lot of books and websites which provides free source code examples where some of it is related to my project, I would like to thanks them as well.

As always, I would like to thanks each others for being very co-operative and tolerate enough towards all of the request, delays and problems created during the whole process of development in this project. I am also indebted to my friends and housemates, for their support and encouragement.

© Universiti Teknikal Malaysia Melaka

ABSTRACT

The first KUTKM student management system is named as SMS which completed in September 2004. I am a KUTKM student, which is currently the 4th year student of Information and Communication Technology (ICT) course. The purpose of having this web portal is to enhance the unity among college students and to update any news about the college to the students. SMS is designed only for the students of KUTKM where they can enjoy the forum, upload and download services and others more. SMS is a place for students to post any kind of (acceptable) suggestions, comments, public discussions, announcements and any other notices. Other functions in the web forum include statistic reviews, hot topic of the month and bulletin board. Alumni function in this forum is to provide a place for the students to search for KUTKM graduates. The parent of KUTKM students can also access this system in order to view their children progress. This system is also build to take into consideration the computerized decision support system in managing student problem and concern in the campus. SMS is believed to be a very popular site among the students of KUTKM after it is being implemented into the real system.

© Universiti Teknikal Malaysia Melaka

ABSTRAK

Sistem Pengurusan Pelajar KUTKM yang pertama iaitu SMS adalah dibangunkan dengan lengkapnya pada bulan September 2004. Saya adalah merupakan pelajar tahun keempat dalam bidang Teknologi Maklumat dan Komunikasi di KUTKM. Tujuan membina sistem portal ini adalah untuk mengeratkan perpaduan di kalangan pelajar dan juga untuk mengumumkan berita mengenai kolej yang terkini kepada pelajar. SMS direka khas untuk pelajar KUTKM di mana mereka boleh menggunakan perkhidmatan seperti forum, 'upload' (muat naik) dan 'download' (muat turun) dan banyak lagi. SMS adalah pusat di mana pelajar menghantar sebarang pendapat, komen, perbincangan umum, pengumuman and lain-lain yang bersesuaian ke atas forum. Fungsi-fungsi lain yang juga ditawarkan dalam forum ini adalah termasuk statistik, topik terhangat setiap bulan dan papan bulletin. SMS dipercayai akan merupakan laman web paling popular di kalangan pelajar KUTKM selepas ianya diimplementasikan ke atas sistem sedia ada.

© Universiti Teknikal Malaysia Melaka

CONTENTS

PARTICULARS	PAGE
PROJECT TITLE	i
ADMISSION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENT	vii
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF ACRONYMS	xvi
LIST OF APPENDIX	xvii
SECTION ONE	
TEXT CONTENTS	
CHAPTER I INTRODUCTION	1
1.1 Preamble	1
1.1.1 Research Purpose	1
1.1.2 Research Scope	2
1.1.3 Assumptions	2
1.2 Problem Statements	3
1.3 Objective	5
1.4 Scopes	5
1.5 Contributions	7
1.6 Expected Output	8

© Universiti Teknikal Malaysia Melaka

CHAPTER II LITERATURE REVIEW 9

2.1 Introduction 9
2.2 Fact And Finding 17
2.2.1 Research Background And Approaches 17
2.2.2 Research Significance 18
2.2.3 Research Bearing 19
2.2.4 Overview of Information System Continuum 19
2.2.5 Overview Of Decision Support Systems 20
2.2.6 Components Of Decision Support System 21
2.2.7 Intelligent Management – DSS In Student Management 17
2.2.8 Rationality In Decision Support System 24
2.2.9 Theory Of Forecasting 25
2.2.10 The Human-Computer Interaction Factor 26
2.2.11 The RAD Model 26
2.2.12 The SSDAM Methodology 27
2.2.13 The Waterfall Model Of SDLC 29
2.2.22 Findings 30
2.3 Conclusion 31

CHAPTER III PROJECT PLANNING AND METHODOLOGY 32

3.1 Introduction 32
3.1.1 Overview of Project Planning and Methodology 33
3.1.2 Project Concern 34
3.2 High-Level Project Requirements 35
3.2.1 Project Facilities Requirement 35
3.2.2 Software Requirements 36
3.2.2.1 Project Development Tools 36
3.2.2.2 Project Management Tools 37
3.2.3 Hardware Requirement 37

© Universiti Teknikal Malaysia Melaka

3.3 System Development Approach 38
3.4 Project Schedule and Milestones 41
3.5 Conclusion 42

CHAPTER IV ANALYSIS 44

4.1 Introduction 44
4.2 Analysis of Current System 46
4.2.1 Business Process 46
4.2.2 External and Internal View of Organization 50
4.2.3 Problem Analysis 53
4.2.4 Problem Statement 55
4.3 Analysis of To Be System 57
4.3.1 Functional Requirement 58
4.3.2 Technical Requirement 70
4.3.2.1 Software Requirement 71
4.3.2.2 Hardware/Firmware Requirement 73

CHAPTER V DESIGN 74

5.1 Introduction 74
5.2 Preliminary / High-Level Design 75
5.2.1 Raw input/data 76
5.2.2 System Architecture 77
5.2.3 User Interface Design 80
5.2.3.1 Navigation Design 80
5.2.3.2 Input Design 85
5.2.3.3 Output Design 86
5.2.4 Database Design 86
5.2.4.1 Logical Database Design 86
5.3 Detailed Design 89
5.3.1 Software Specification 89
5.3.2 Physical Database Design 89

© Universiti Teknikal Malaysia Melaka

CHAPTER VI IMPLEMENTATION	**90**
6.1 Introduction	90
6.2 Software Development Environment Setup	91
6.3 Software Configuration Management (optional)	92
6.3.1 Configuration Environment Setup	92
6.3.2 Version Control Procedure	94
6.4 Implementation Status	94
CHAPTER VII TESTING	**96**
7.1 Introduction	96
7.2 Test Plan	97
7.2.1 Test Organization	98
7.2.2 Test Environment	98
7.2.3 Test Schedule	99
7.3 Test Strategy	100
7.3.1 Classes of Tests	101
7.4 Test Design	103
7.4.1 Test Description	103
7.4.2 Test Data	104
7.5 Test Case Results (for each test case individually)	105
CHAPTER VIII PROJECT CONCLUSION	**107**
8.1 Observation on Weaknesses and Strengths	107
8.2 Propositions for Improvement	108
8.3 Conclusion	109
BIBLIOGRAPHY	110
ATTACHMENT (User Manual)	112
APPENDIX	112

© Universiti Teknikal Malaysia Melaka

LIST OF TABLES

TABLE NO	TITLE	PAGE
2.1 Characteristics Between MIS/TPS And DSS		20
2.2 Simple Forecasting Examples		25
2.3 Forecast During Seasonal Period		34
3.1 SMS Project Development Schedule		45
5.2 Input Controls and Validation Rules		85
5.3 Output Controls and Validation Rules		86
5.4 Entity Relationship Description		87
7.1 Roles and Responsibilities of Testing		98
7.2 Environment Settings for Testing Phase		98
7.3 Test Schedule Summary		99
7.4 Test Case Results Summary		105
7.5 System Evaluation Rating Table		106

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
2.1 Student Management System Observation Pie Chart		12
2.2 Continuum of Information Systems Products		20
2.3 Components of DSS		22
2.4 Stages of Business Intelligence		23
2.5 The RAD Model		27
2.6 The SSDAM Model Structure		28

© Universiti Teknikal Malaysia Melaka

2.7 Waterfall Process Model 29
3.1 SMS Project Development Approach 39
4.5 Member Registration Use Case 66
4.6 Student Login 66
4.7 Profile Update 67
4.8 Search Engine 67
4.9 Guestbook Signing 68
4.10 Member Logout 68
4.11 Request Password 69
4.12 Manipulate MyGroup 69
4.13 Message Posting 70
4.14 Upload ad Download File 71
4.15 E-Greeting Card Sending 71
4.16 View Only MyGroup 72
4.17 Alumni 72
4.18 Miscellaneous 73
5.1 The High Level View of SMS 75
4.1 System Use Case 51
4.2 Administration DFD 63
4.3 Forum Manipulation DFD 64
4.4 Other Web Community DFD 65
5.1 High Level View of SMS 76
5.2 Overview of SMS Concept 79
5.3 Menu Bar Contents 81
5.4 Expanded Introduction Menu Bar 82
5.5 Expanded Tutorial Menu Bar 82
5.6 Totally Connected Navigation Structure 83
5.7 Hierarchical Navigation Structure 84
5.8 SMS Entity Relationship Diagram 88
6.1 Software Development Environment Setup 91
7.1 Testing Phases Involved for SMS 100
7.2 System Evaluation Final Result 106

© Universiti Teknikal Malaysia Melaka

LIST OF ACRONYMS

CPU	Central Processing Unit
DBDL	Database Definition Language
DBMS	Database Management System
DBO	Discount Breakpoint Order
DFD	Data Flow Diagram
DSS	Decision Support System
ES	Expert System
EIS	Expert Information System
ERD	Entity Relationship Diagram
SMS	Sudent Management System
ESS	Expert Support System
ICT	Information and Communication Technology
IS	Information System
MBMS	Modelbase Management System
MIS	Management Information System
MMS	Mail Management System
RAD	Rapid Application Development
SDLC	Software Development Life Cycle
SSDAM	Structured System Analysis and Design Methodology

© Universiti Teknikal Malaysia Melaka

LIST OF APPENDIX

APPENDIX	TITLE	PAGE
A	Snapshots of Student Management System Software	122
B	Gantt Chart	124
C	SMS User Interface Snapshots	125

© Universiti Teknikal Malaysia Melaka

CHAPTER I

INTRODUCTION

1.1 Preamble

University Information System (UIS) develop as a basic system for KUTKM to build their system altogether effectively, which Student Management System (SMS) implement as a part of UIS. It is important because KUTKM is a new public higher level institution (IPTA) in Malaysia. KUTKM needs to enhance the system used to convince everyone who joins KUTKM so they feel satisfied with services provided. All system in KUTKM builds covered employee works based on staff requirements and student learning environment such as upload and download notes, assignment, tutorial etc. but there is no such system implemented by focusing on university student life problem.

1.1.1 Research Purpose

Student Management System (SMS) is a web community service site that is specially designed only for the usage of KUTKM students.

What makes the students feel better after surfing through this portal is mainly because of the information provided, the easy browsing of the web page and also the user-friendly functions and interfaces being designed.

© Universiti Teknikal Malaysia Melaka

1.1.2 Research Scope

The most important part of the portal is that it provides a place for the students to share and exchange their ideas. In addition, it is a place for points of view of certain topics for the students to announce any upcoming events being held around the university. This SMS also applied concept of computerized Decision Support System (DSS) in managing student progress from time to time. This concept is applied by allowing the students to enter their own academicals information which later generated into a statistic.

Moreover, they can also upload their project and assignment into the portal and share among themselves. It is most useful where the students can download the projects remotely from anywhere in the world with an Internet connectivity. Most benefits can be gained during holidays, because of the distance constraint among the students, where most of them live very far all around Malaysia.

1.1.3 Assumptions

The SMS web portal will be offering much more services and functions, graphics and interactive programs which will not be found in the existing web of KUTKM before. Another problem with the existing web forum is the discussions and conversations of all members are being displayed widely and openly to all users. SMS solve this problem by providing a grouping service where the information of all discussions is only to be view by the authorized group members. The most worrying problem is the security of members' data, files sharing and information being posted to the portal. Privacy issue is one of the factors being considered where access only limits the members to KUTKM students with a valid matrix number according to their faculty. All members are committed to the Rules and Regulation fixed by the administrator.

© Universiti Teknikal Malaysia Melaka

1.2 Problem Statements

Student Management System (SMS) is the systems that will be used by KUTKM student in their studies environment management or better known as student campus life.

SMS portal is developed based on a few problems that had arisen in the existing web and forum. Following are the listing of the problems that had arisen.

i. **Privacy is not taken seriously**

The existing web forum is similar to public discussion group where the conversations are wide open and general. There is difficulty in maintaining privacy since many users are communicating in a same shared environment which is exposed to the public. This is because the existing web forum records all the messages on the screen. It also makes data available about each user's interaction during a communication session. Information such as who the user was interacting with at any given point in a conversation is made public but this might not be desirable at all times.

ii. **Hard to implement the unity among undergraduates in the existing web**

The existing web emphasize on homework distribution and learning purpose through downloading of notes and so on. This is not meant for active interaction between students. Therefore, the web forum does not serve as a medium to unite the KUTKM community.

Following are the types of users who can utilize the SMS portal:

i. **Database Administrator**

The function of the database administrator is to check the valid students' matric number in the database during the registration process is taken. Besides that, the database administrator also needs to validate the identification of the students when they log in to the portal using the login name and password

© Universiti Teknikal Malaysia Melaka

they have registered earlier. This is to prevent unauthorized user from damaging the portal and database.

ii. Undergraduates of KUTKM

The SMS portal is particularly for the undergraduates of KUTKM only. The students need to have a valid students' matriculation number in the database in order to become a registered member of this portal. The students also need to specify a login name and password during the registration process to enable them to enter the portal in future.

The function of the students is to participate in the topic discussions inside SMS web forum to enable them to keep track of the latest happenings and information. Moreover, the students can keep in touch with the other registered students by exchanging ideas and thoughts.

1.3 Objectives

Below are the listed objectives of the system.

i. Enhance the current web forum functionality by adding new features

SMS provides a variety of functionality to explore such as upload and downloading the things that they want to share with other registered users like notes and sample coding, photographs and etc. There is also a guestbook function to make the environment more user friendly by letting the user to manipulate the system.

Besides that, it is a place for students to post any kind of suggestions, comments, public discussions, announcements, and any other notices that are acceptable.

ii. To make the web more personalized and private

Due to maintain the privacy of the user, SMS is specially design to improve the performance of the existing web by introducing a member's only groups or community. SMS web forum is only open to the KUTKM students

© Universiti Teknikal Malaysia Melaka

who have a valid matriculation number. All the discussions and file sharing happens inside the SMS web are private and safe from any interception or interruption from other unauthorized users.

iii. **Improve the web interface design to give the users a new feel**

SMS has a brand new layout which gives the students a refreshing feel. The use of colors, contrast and images are well designed to make the web page appear to be more user-friendly and easy to navigate around. Most importantly, they do not feel bored with graphics placed all around without systematic alignment.

iv. **Enhance unity of KUTKM community by increasing interactivity among students**

This portal will strengthen the relationship among undergraduates through sharing of the latest updates and exchange of information in the KUTKM community. The information will be more leisure and interest or hobbies oriented to attract the participation from the students. The level of communication among the students with others will increase because of frequent visit to the portal. Indirectly, they will feel united and belong to one big family. For instance, they can exchange opinions, discussing problems and express their feeling to share with all and getting advice from expert on certain subject.

1.4 Scopes

The SMS portal mainly serves as a medium to strengthen the relationship among the community of KUTKM. Being a method to bring everyone together, it makes all the undergraduates to feel as being part of the institution. Therefore, it is the aim of this project to provide the best of services and functionalities to carry the role of organizer, building credibility and trust among the participants.

© Universiti Teknikal Malaysia Melaka

As the name of the portal suggest, the main function of this portal is being a web forum to provide a platform for information dissemination. Information can be in the form of (acceptable) suggestions, comments, announcements or notices. The members also get to hold discussions whenever necessary concerning homework or assignments, sports and co-curriculum activities, events and happenings, clubs and societies and many more. To add interactivity and fun to the forum, members will be given the opportunity to participate in various activities. Besides that, the portal also covers six other functions as follows: -

i. **Members Registration**

Visitors who would like to access the functions and services provided by the portal are required to fill up relevant information to become a registered member. The members consist of KUTKM students and parents. It should be a fast and easy process as most of the information is already stored in the database, which can be retrieved and validated upon registration.

ii. **Members Login**

This will be a common procedure for members to access the services. They will need to enter login name and password for validation purpose.

iii. **Upload and Download Function**

Members who are willing to share notes, sample coding and so on are free to upload them on the web so that other members are able to download them for reference.

iv. **Guestbook Signing**

All visitors are welcome to sign the Guestbook and leave valuable comments about the services offered. Among the assumptions taken in the development of this portal is that the network traffic will be the highest during break hour. Besides that, not all the undergraduates will become a member.

In developing this portal, the most frequently used programming languages software will include JavaScript, Apache Serve, PHP, MySQL, XHTML and HTML. SMS also emphasize on the 3-Tier Technology which

© Universiti Teknikal Malaysia Melaka

consist of Apache server and MySQL function as the database. Other software to be used for development will be Adobe Photoshop, Adobe Premiere, Adobe ImageReady, Macromedia Dreamweaver and etc.

1.5 Contributions

This system is focused on the student and parent as the main user. For the student, they can interact among themselves by joining a group after everyone registered as a member. They are able to interact among themselves and create a healthy environment because it concerns with their studies. The student can even also monitor their progress from time to time based on their score. Before this, student can only view their assessment mark towards the end of the semester. But now they are able to key in their own information and aware of their progress throughout the whole semester. Lecturers play an important role in giving a full commitment by providing the student with relevant information.

Parents also benefits from the system. The portal allowed parents to take part in helping their children with their studies. By viewing the statistic progress, parents are able to discuss it among themselves as a family.

This system is focused on the student and parent as the main user. For the student, they can interact among themselves by joining a group after everyone registered as a member. They are able to interact among themselves and create a healthy environment because it concerns with their studies. The student can even also monitor their progress from time to time based on their score. Before this, student can only view their assessment mark towards the end of the semester. But now they are able to key in their own information and aware of their progress throughout the whole semester. Lecturers play an important role in giving a full commitment by providing the student with relevant information.

Parents also benefits from the system. The portal allowed parents to take part in helping their children with their studies. By viewing the statistic progress, parents are able to discuss it among themselves as a family.

© Universiti Teknikal Malaysia Melaka

1.6 Expected Output

After completing this project, the Student Management System is delivered on time, within budgets and works correctly. The system is a web portal that provides student management solution for KUTKM students.

The objectives of Student Management System project had been achieved through its functions and features. The new system is going to provide KUTKM students a more effective way for manage their learning environment. Student will be able to access the new system at any place of KUTKM and at anytime whenever they are free. Furthermore, students can explore areas of interest according to their needs and set their own pace for learning. End users are able to review or replay any portion of the learning materials instantly according to their needs.

© Universiti Teknikal Malaysia Melaka