

STAFF'S ACTIVITIES WEB DATABASE SYSTEM

FARIZA HANIM BINTI RUSLY
UNIVERSITI UTARA MALAYSIA

2002

STAFF'S ACTIVITIES WEB DATABASE SYSTEM

**A thesis submitted to the Graduate School in partial
fulfillment of the requirements for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia**

**By
Fariza Hanim Binti Rusly**

©Fariza Hanim Binti Rusly, 2002. All rights reserved.



**Sekolah Siswazah
(Graduate School)
Universiti Utara Malaysia**

**PERAKUAN KERJA KERTAS PROJEK
(Certification of Project Paper)**

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

FARIZA HANIM BINTI RUSLY

calon untuk Ijazah
(candidate for the degree of) Sarjana Sains (Teknologi Maklumat)

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project paper of the following title)


STAFF'S ACTIVITIES WEB DATABASE SYSTEM

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project paper)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan,
dan meliputi bidang ilmu dengan memuaskan.
*(that the project paper acceptable in form and content, and that a satisfactory
knowledge of the field is covered by the project paper).*

Nama
(Name) : Puan Nafishah Othman

(Penyelia Utama/Principal Supervisor)

Tandatangan
(Signature) : 

Nama
(Name) : Prof. Madya Dr. Zulkhairi
Md. Dahalin

(Penyelia Kedua/Second Supervisor)

Tandatangan
(Signature) : 

Tarikh
(Date) : 16/5/2002

**GRADUATE SCHOOL
UNIVERSITI UTARA MALAYSIA**

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a post graduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or, in any absence, by the Dean of the Graduate School. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or to make other use of materials in this thesis, in whole or in part, should be addressed to:

**Dean of Graduate School
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman**

Abstrak

Tenaga Kerja manusia merupakan aset terpenting di dalam sesebuah organisasi. Oleh sebab itu, keperluan untuk Pengurusan Aset (Sumber) Manusia yang cekap tidak dapat dinafikan. Salah satu bidang yang membantu kejayaan Pengurusan Aset (Sumber) Manusia adalah pengurusan rekod pencapaian pekerja yang berkesan. Justeru, sesebuah organisasi memerlukan pengurusan rekod aktiviti pekerja atau staf yang efektif.

Perkembangan berterusan aplikasi Teknologi Maklumat telah membuahkan peluang kepada organisasi untuk memanipulasi teknologi-teknologi bagi meningkatkan tahap pencapaian operasi harian masing-masing. Salah satu contoh adalah pembangunan pengurusan rekod berkomputer menggunakan sistem pangkalan data. Penggunaan sistem ini telah diperluaskan penggunaannya menerusi sistem pangkalan data berasaskan web. Perkembangan teknologi sebegini telah membuka ruang bagi organisasi untuk menggunakan serta memindahkan data-data yang disimpan dengan pantas dan terkini. Kesannya, pangkalan data yang berkualiti merupakan salah satu komponen terpenting dalam aplikasi web masa kini.

Evolusi teknologi ini telah menyokong serta menggalakkan pembangunan perisian bagi pengurusan rekod, sama ada dibina di dalam organisasi itu sendiri ataupun diperolehi melalui pembekal perisian luar. Terdapat pelbagai metodologi yang perlu diikuti dalam sesebuah proses pembangunan system. Justeru, para pembangun sistem perlu memilih metodologi yang bersesuaian dengan ciri-ciri sistem yang dibangunkan.

Laporan ini membincangkan berkenaan pembangunan Sistem Aktiviti Staf Berasaskan Web. Ianya dapat dilihat sebagai satu perkembangan baru dalam bidang sistem pengurusan rekod berasaskan aplikasi web ataupun jaringan komputer. Sistem ini dibina berdasarkan pendekatan DBLC (Database Life Cycle). Walaupun sistem ini telah direkabentuk berdasarkan keperluan Sekolah Perakaunan UUM, struktur serta fungsinya adalah fleksibel. Justeru, sistem ini dapat juga dijadikan model atau rujukan oleh jabatan-jabatan lain yang ingin membina sistem yang mempunyai ciri serta fungsi yang sama. Akhir sekali, beberapa isu serta cabaran berkaitan aspek rekabentuk serta pembangunan sistem turut diutarakan di dalam laporan ini.

Abstract

People are the most valuable asset of any organization. Therefore, the need for effective Human Asset Management is undeniable. One important area that supports successful Human Asset Management is good records management of staffs' progress. Thus, there must be an effective way of keeping records of each staff's activities.

The boost of Information Technology application provides opportunities for organizations to manipulate the technology in order to improve the effectiveness and efficiency of their operations. One example is the development of computerized record management system using database system, which now has expanded its' capabilities with the introduction of web-driven database system. The tremendous growth of this technology offers the ability to transfer large amount of stored and organized data on demand. As a result, powerful and scalable database has been a crucial component of today's web applications.

The evolution of this technology has in turn supports the development of new record management software, whether develop internally or through outsourcing. There are numerous methodologies that could be adhered to in system development process. Thus, developers must carefully select the methodology that is suit with own system's needs to be followed.

This report will discuss about the development of Staff's Activities Web Database System. It could be seen as an introductory work to a new dimension of record management system, which is based on the web application. This system is developed based on the Database Life Cycle approach. Even though the system is initially designed for the School of Accountancy, UUM, the structure and functions developed are flexible. Thus, this system could be used as a model or reference by other departments or schools in order to develop a similar system in future. Last but not least, some issues and challenges related to the system design and development has also been discovered in this project.

ACKNOWLEDGEMENT

All praise to Allah, for His mercy in giving me strength and courage to complete this project.

I would like to express my sincere and utmost appreciation to both of my dedicated supervisors. Dr Zulkhairi, has helped me tremendously in focusing my thoughts and guiding me to put my pieces of ideas into meaningful structure. Puan Nafishah has coaching me and also encouraging me with valuable moral support.

I would also like to express sincere appreciations to my parents as well as to the rest of my family members: who have always been my source of inspiration. Also, to my husband and my little son: thanks for being so caring and for being there for me during my most trying moment.

Finally, I would also like to extend my gratitude to the Dean of Graduate School and other staff, who have conducted the program successfully. To the staff of School of Accountancy, UUM, Encik Shahbani and also to all other friends who have helped me directly or indirectly in this study. Thank you very much.

Wassalam.

TABLE OF CONTENTS

Permission to Use	i
Abstrak	ii
Abstract	iii
Acknowledgement	iv
Table of Contents	v
List of Tables	viii
List of Figures	ix
List of Appendices	xi
CHAPTER 1 INTRODUCTION	1
1.1 Overview	1
1.2 Organization Background	3
1.3 Organization's Objectives	4
1.4 Organization's Structure	5
1.5 Organization's Operation	7
1.6 Problem Statement	9
1.7 Objective of the System	11
1.8 Significance of Study	12
1.9 Scope of the System	13
1.10 Thesis Structure	14
CHAPTER 2 LITERATURE REVIEW	16
2.1 Chapter Overview	16
2.2 Human Asset Management & Records Management	17
2.3 Data & Manual File System	20
2.4 File-Based System	21

2.5 Database	22
2.6 Database Management Systems	24
2.7 Database Model	25
2.8 Web Database	28
2.9 PHP, MySQL & Apache	31
2.10 Comparison Between MySQL & Other DBMS	37
2.11 Examples of Database & Web Database Development	37
2.12 System Development Methodology	40
2.13 Conclusion	43
CHAPTER 3 METHODOLOGY	44
3.1 Chapter Overview	44
3.2 System Methodology	45
3.2.1 Database Initial Study	49
3.2.2 Database Design	53
3.2.2.1 Conceptual Database Design	53
3.2.2.2 Logical Database Design	55
3.2.2.3 Physical Database Design	56
3.2.3 Prototyping	56
3.3 Conclusion	58
CHAPTER 4 SYSTEM DESIGN & DEVELOPMENT	59
4.1 Chapter Overview	59
4.2 Database Initial Study	60
4.2.1 Define Problems	60
4.2.2 Constraints	63
4.2.3 Objectives	64
4.2.4 Scopes	65
4.2.5 Boundaries	66
4.3 Database Design	67

4.3.1 Conceptual Database Design	67
4.3.2 Logical Database Design	81
4.3.3 Physical Database Design	100
4.4 Prototyping	104
4.4.1 Create Database	105
4.5 Conclusion	111
CHAPTER 5 FINDINGS	112
5.1 Chapter Overview	112
5.2 Application of the Staff's Activities System	112
5.3 Design User Interface & PHP Scripts	116
5.4 Conclusion	124
CHAPTER 6 DISCUSSIONS	125
6.1 Chapter Overview	125
6.2 Development of the Staff's Activities Web Database System	125
6.2.1 Benefits of the System	127
6.2.2 Problems & Limitations	128
6.3 Issues and Challenges in System Design	130
6.3.1 Commitment from Users	130
6.3.2 Environmental Considerations in System Design	133
6.3.3 Pressures for Change as a Challenge for System Analyst	135
6.4 Advantages & Contributions of Study	138
6.5 Conclusion	140
CHAPTER 7 CONCLUSIONS & RECOMMENDATIONS	141
<i>BIBLIOGRAPHY</i>	

LIST OF TABLES

Table 4.1	Document Entity Types	70
Table 4.2	Document Relationship Types	72
Table 4.3	Document Attributes	73
Table 4.4	Document Attributes Domain	76
Table 4.5	Attributes in First Normal Form	83
Table 4.6	Attributes in Second Normal Form	84
Table 4.7	Attributes in Third Normal Form	85
Table 4.8	Document Relations & Foreign Key Attributes	86
Table 4.9	Design Base Relation for Staff's Activities System	101
Table 5.1	Modules & Processes of the System	115

LIST OF FIGURES

Figure 1.1	SPK's Organization Chart	7
Figure 3.1	Stages of the Database Applications Life Cycle	47
Figure 3.2	The Database Life Cycle	48
Figure 3.3	Summary of Activities in Database Initial Study	52
Figure 4.1	Entity Relationship Diagram	79
Figure 4.2	ERD After Data Normalization	89
Figure 4.3	Relational Database Schema	91
Figure 4.4	Context Diagram	93
Figure 4.5	Decomposition Diagram	94
Figure 4.6	Data Flow Diagram – Level 0	95
Figure 4.6.1	Data Flow Diagram – Level 1 for Process 1.0	96
Figure 4.6.2	Data Flow Diagram – Level 1 for Process 2.0	97
Figure 4.6.3	Data Flow Diagram – Level 1 for Process 3.0	98
Figure 4.6.4	Data Flow Diagram – Level 1 for Process 4.0	99
Figure 4.7	Create sas Database	106
Figure 4.8	Create Table	107
Figure 4.9	Specify Fields	108
Figure 4.10	Table with Attributes	109

Figure 4.11	List of Database Tables	110
Figure 5.1	Main Menu	117
Figure 5.2	Connecting to Database	118
Figure 5.3	Staf (Staff) Module	119
Figure 5.4	Kursus (Course) Module	120
Figure 5.6	Latihan (Training) Module	121
Figure 5.7	Penyelidikan (Research) Module	122
Figure 5.8	Carian (Search Staff) Module	123

LIST OF APPENDICES

Appendix A	Coding of PHP Scripts for Staff's Activities Web Database System
Appendix B	User Manual

CHAPTER 1

INTRODUCTION

1.1 Overview

Effective management of an organization's human assets is increasingly recognized as critical to organizational success. It is a major vehicle for continuous improvement and the management of change (Gibbs, 1999).

According to Fitz-enz (1997), *if top management commits to **human asset management** along these lines: values, commitment, culture, communication, partnering collaboration, innovation and risk, and competitive passion, the evidence strongly favors improved financial results and effective positioning of the company to meet future challenges.*

Meanwhile, continuous development of information technology, leads to significant revolution in the approach for improvement of human asset management performance. PC based processing technology connect via network along with the development of 'user-oriented' fourth generation language has resulted in an explosion of management information application software. In conjunction to that, the use of computers as tools in the management of an organization is common.

The contents of
the thesis is for
internal user
only

BIBLIOGRAPHY

Avison, D.E and Fitzgerald, G (1993); **Information System Development: Methodologies, Techniques and Tools**; Alfred Waller Limited.

Booklet of School of Accountancy (1999), UUM.

Cameron, D. (2001); **Pythons, Perls and Web servers on PHP**. Hawaii Business, Oct 2001, Vol. 48 Issue 4, p38.

Chapple (2002); URL:<http://www.mysql.com/articles/ddws/index.html>

Connolly, T, Begg, C and Strachan,A (1999); **Database System: A Practical Approach to Design, Implementation and Management**; 2nd Edition, Addison-Wesley.

De Jesus, E. X ,(2000); Nothing But Blue Skies Online; URL:
<http://www.devx.com/premier/mgznarch/entdev/2000/ed0400.asp>

Fitz-enz, J. (1997); **Highly Effective HR Practice**, HR Focus, Apr97, Vol74 Issue 4, p11.

Gibbs, A. (1999); **Human Resource Management**, VolSector Management, Resource and Information for Charity Managers.

Gibson, M.L and Hughes C.T (1994); **System Analysis And Design; A Comprehensive Methodology With CASE**; Boyd & Fraser Publishing Company.

Glossary of Records Management Terms, (1989), ARMA International.

Greenspan, J and Bulger, B (2000); **MySQL / PHP Database Applications**; M & T Books.

Ian, J.G Jacobs, (1998); **Database Users Take Aim At The Web**, VARBusiness, Vol 14, Issue 6, p31.

Iskandar, A, NoorAzizi I and Agoos, M.T (2001); **The Development of Human Resource Management Application Using Ms Access**, School of Accountancy, UUM.

Kurata, D. (1999); Design Great Software; URL:
<http://www.devx.com/premier/mgznarch/vbpi/1999/05may99/pc0599.pdf>

Mannino, V.M., (2001); **Database: Application Development & Design**, McGraw-Hill International Edition, Singapore.

Mazakina, P. (1990); **Archives and Records Management for Decision Makers: a RAMP Study**, UNESCO, Paris.

Place, I and Hyslop, D. (1982); **Records Management: Controlling Business Information**. Reston Publishing Company Inc.

Post, V.G (1999); **Database Management Systems: Design and Building Business Application**, McGraw-Hill International.

Robek, M. (1987); **Information and Records Management**, 3rd Edition., Glencoe Publishing Company.

Rob, P and Coronel, C. (2000); **Database Systems: Design, Implementation &**

Management, 4th Edition; Course Technology Thomson Learning.

Rob, P. and Semaan, E., (2000); **Database: Design, Development & Deployment Using Microsoft Access**, McGraw-Hill International.

Ross, D. and Zymaris, C. (2000), **DB Forms: PHP, MySQL, and PHPLIB**, Dr. Dobb's Journal: Software Tools for the Professional Programmer, Aug2000, Vol. 25 Issue 8, p98, 6p

Runaker (2002); MySQL: A Freebie Database That Runs Like Expensive Brands; URL: <http://www.devx.com/dbzone/articles/runaker02/runaker02-1.asp>

The Challenges of Human Asset Management (2000); URL: <http://huskyl.stmary.ca/~hmillar/hresc.htm>

Tim, A. (1998); **Mission-critical Web databases**. Performance Computing, Apr98, Vol1, Issue 1, p39.

Utterback , J.M and Abernathy, W.J (1975); **A Dynamic Model of Process and Product Innovation**, Omega, 3, 6.

What is Record Management? (1989); URL: http://www.records.nsw.gov.au/publicsector/rk/whatisrm/what_is_rm_02.htm

Whitten, J.L and Bentley L.D (1998); **Systems Analysis And Design Methods**, 4th Edition; Irwin McGraw-Hill.

Zuhaimy, H.I and Shamsuddin A.S (1996); **Development of Staff Information System for Science Faculty**; University Technology Malaysia.