

**A Requirement Model of Online Application Reminder  
To Renew Visa for International Students**

**Abdunasser Ehmid Mehrez Saad**

**Universiti Utara Malaysia**

**2008**

**A Requirement Model of Online Application Reminder to  
Renew Visa for International Students**

**Thesis submitted to The Faculty of Information Technology in  
Partial Fulfillment of the Requirements for the Degree Master  
of Science (Information Technology),  
Universiti Utara Malaysia**

**By**

**Abdunasser Ehmid Mehrez Saad**

**Copyright ©2008, Abudunasser Ehmid Mehrez Saad.**

**All rights reserved**



**KOLEJ SASTERA DAN SAINS**  
**(College of Arts and Sciences)**  
**Universiti Utara Malaysia**

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

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

**ABDUNASSER EHMID MEHREZ SAAD**

calon untuk Ijazah  
*(candidate for the degree of)* **MSc. (Information Technology)**

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

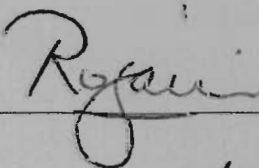
**A REQUIREMENT MODEL OF ONLINE APPLICATION REMINDER**  
**TO RENEW VISA FOR INTERNATIONAL STUDENTS**

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

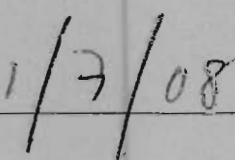
bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan  
dan meliputi bidang ilmu dengan memuaskan.  
*(that the project paper acceptable in form and content, and that a satisfactory  
knowledge of the field is covered by the project paper).*

Nama Penyelia Utama  
*(Name of Main Supervisor):* **ASSOC. PROF. DR. WAN ROZAINI SHEIK OSMAN**

Tandatangan  
*(Signature)*

: 

Tarikh  
*(Date)*

: 

## **PERMISSION OF USE**

In presenting this thesis in partial fulfillment of the requirements for a postgraduate 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 purpose may be granted by my supervisor or, in their absence by the Dean of the graduate School. It is understood that any copying or publication or used of this thesis or parts thereof for financial gain shall not allowed without my written permission. It is also understood that due recognition shall be given to me and to University Utara Malaysia for any scholarly use which may be made of any material from my thesis

Request 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**

# ABSTRACT

Information accessibility has become easier and can be improved by using web-based application. The aim of this project is to identify a requirement model of web-based reminder system. This system is an assistant tool for international students to remind them especially when they forget renews their visa at the time. It applies knowledge base and web base application in order to add element such as user friendly, usefulness, pleasing and informative. This prototype has been developed using general methodology of design research, Object-oriented approach focusing on Unified Modeling Language notation. The development of this prototype starts with analysis phase and ended with testing and evaluation. This project discusses some findings, problem encountered and limitation of the project's development. Finally, brief recommendation given as contribution to the future development.

# ACKNOWLEDGEMENTS

First of all, thank the almighty God, for generously supporting me through all my studies. I would like to express my sincere gratitude to my supervisors, Assoc. Prof. Dr. Wan Rozaini Sheik Osman for her kind help, support and guidance and pieces of advice throughout the whole process of writing this thesis. My sincere thanks to Madam Norida Darro for her help. I would like to express my gratitude to many staff at the University were a constant challenge and source of support. I owe to them a lot for what they taught me during these years.

Special thanks I would like to give to my beloved wife who supported me in my study. Many thanks go to my relatives back home especially to my beloved father and mother, Mr. Ehmideh Mehrez Saad and Mrs. Mabrouka Ali Athmona. I wish to take this opportunity to express my deepest thanks to my brothers, sisters, brother in law and for the love affection and support they have provided me with on every step of my life, specially this important part of my education.

Last but not least I want to extend my warmest thanks to those that have helped me, in any way, during my thesis work.

\*\*\*\*\*

**To who wept for me and supported me in this life**

**To who gave me life by her love**

**To Gareha**

*My Allah bless us*

## TABLE OF CODES

No	Code	Description
1-	OIA	Office of International Affairs
2-	ICT	Information and Communications Technology
3-	IS	Information Systems
4-	SQL	Structured Query Language
5-	EEAS	Emergency Email Alert System
6-	EAS	Email Alert System
7-	VWP	Visa Waiver Program
8-	CSUQ	Computer System Usability Questionnaire

# TABLE OF CONTENTS

PERMISSION TO USE	I
ABSTRACT	II
ACKNOWLEDGEMENTS	III
TABLE OF CODES	IV
TABLE OF CONTENTS	V
LIST OF TABLES	IX
LIST OF FIGURES	X

## CHAPTER ONE : INTRODUCTION

1.0 Background	1
1.2 Problem Statement	3
1.3 Research Question	5
1.4 Research Objectives	5
1.5 Scope	5
1.6 Motivation of Research	6
1.7 Report Organization	6
1.8 Summary of Chapter	7

## CHAPTER ONE : LITERATURE REVIEW

2.1	Web Application	8
2.1.1	Web Development Tools	13
2.1.2	MySQL Database	15
2.1.3	PHP Scripting Language	16



2.1.4	Apache Server	16
2.2	Auto Remind System	17
2.2.1	Introduction	17
2.2.2	An Automated E-mail Flood Warning System	19
2.2.3	Use of Reminder Systems in Healthcare	20
2.2.4	Emergency Email Alert System	21
2.2.5	Simulation of Email Alert System	22
2.3	Renew Visa	23
2.3.1	International Students and Immigration: What is SEVIS	24
2.3.2	Visa Waiver Program	25
2.4	Summary of Chapter	26

### **CHAPTER THREE : RESEARCH METHODOLOGY**

3.1	Introduction	27
3.1	3.1.1 Awareness of problem	28
3.1	3.1.2 Suggestion	28
3.1	3.1.3 Development	29
	3.1.3.1 Identify the user's basic requirements	30
	3.1.3.2 Develop an initial prototype	31
	3.1.3.3 Use the prototype	31
	3.1.3.4 Revise and Enhance the prototype	32
	3.1.4 Evaluation	32
	3.1.5 Conclusion	32
3.7	Summary of Chapter	33

## **CHAPTER FOUR : FINDING AND DISCUSSION**

4.1	Introduction	34
4.1	Requirements of the prototype design	34
4.2.1	Functional Requirements	35
4.2.2	Non-Functional Requirements	36
4.3	Design of prototype	37
4.3.1	Main Use Case of the System	38
4.3.2	Login	39
4.3.3	Register Student Information	40
4.3.4	Register Visa Information	41
4.3.5	Edit Student Information	42
4.3.6	Edit Visa Information	44
4.3.7	Logout	46
4.3.8	Class Diagram	47
4.4	Development of prototype	48
4.4.1	Preview of the Prototype	49
4.5	How The system prototype works?	55
4.6	Usability Testing	56
4.6.1	Introduction	56
4.6.2	Percentage of Users Agreed	57
4.7	Conclusion	61
4.8	Summary of Chapter	62

## **CHAPTER FIVE : CONCLUSION AND RECOMMEDATION**

5.1	Conclusion	63
-----	------------	----

5.1.1	Problems and Limitations	64
5.2	Future Work	64
5.3	Summary of Chapter	64
<b>REFERENCES</b>		65
<b>APPENDICES</b>		71

## LIST OF TABLES

Table No	Description	Page No
<b>Table 1.1</b>	: Percentage of students to renew visa and penalized	4
<b>Table 4.1</b>	: Functional Requirements for Online Application Reminder System	35
<b>Table 4.2</b>	: Non-Functional Requirements for Online Application Reminder System	36
<b>Table 4.3</b>	: Likert Scale Classification	56
<b>Table 4.4</b>	: System Usefulness	57
<b>Table 4.5</b>	: Information or Content Quality	59
<b>Table 4.6</b>	: Interface Quality	60
<b>Table 4.7</b>	: Overall Satisfaction	61

## LIST OF FIGURES

Figure No	Description	Page No
<b>Figure 2.1 :</b>	Web browser-based information access	10
<b>Figure 2.2 :</b>	Architecture of web application	11
<b>Figure 3.1 :</b>	Design research cycle	27
<b>Figure 3.2 :</b>	The prototyping process	30
<b>Figure 4.1 :</b>	Main Use Case of the System	38
<b>Figure 4.2 :</b>	Sequence Diagram for login into the system	39
<b>Figure 4.3 :</b>	Sequence Diagram for register student information	40
<b>Figure 4.4 :</b>	Sequence Diagram for register Visa information	41
<b>Figure 4.5 :</b>	Sequence Diagram for Edit student information	42
<b>Figure 4.6 :</b>	Sequence Diagram for Edit student information	44
<b>Figure 4.7 :</b>	Sequence Diagram for Logout	46
<b>Figure 4.8 :</b>	Class Diagram	47
<b>Figure 4.9:</b>	Interface of the login page of the System	49
<b>Figure 4.10 :</b>	Interface of admin page	50
<b>Figure 4.11 :</b>	Interface of register new student page	51
<b>Figure 4.12 :</b>	Interface of register visa information page	52
<b>Figure 4.13 :</b>	Interface of view the soon expired visa page	53

<b>Figure 4.14 :</b>	Interface of register new student page	53
<b>Figure 4.15 :</b>	Interface of search for student page	54
<b>Figure 4.16 :</b>	Interface student information page	55

# CHAPTER 1

## INTRODUCTION

This project is to fulfill upon the request of course Thesis/Project (TZ6996) as one of the graduation requirements for Master Science in Information Technology (MSc. IT) in University Utara Malaysia. The purpose of this project is a requirement model of online application reminder to renew visa for international students.

This chapter gives a background, and further discussion about the problem statement, research question, objectives, motivation of the research and research scope.

### 1.1 Background

Information accessibility has become easier and can be improved by using web-based application. Web-to-host access tools are software products that ease the process of connecting to several types of data: legacy data, computer software applications, e-mails, faxes, documents, etc.

John & Micheal (1999) introduced a research about the application that appeared on the internet network that can be referred as online application. However, online application must be distinguished from a standard WWW application by the type

The contents of  
the thesis is for  
internal user  
only



## 6.0 References

- Antelman, L., & Mendelzon, A. (1998). WWW and the Internet - Did We Miss the Boat? *Fourteenth international Conference on Data Engineering*. Washington: IEEE Computer Society.
- Best, J.W. & Kahn, J.V. (2000). *Reaserch in education* (8th ed.). USA: Allyn and Bacon.
- Bevan, N. (1998). Common industry format usability tests. Retrieved March 9, 2008, from <http://www.usabilitynet.org/papers/cifus.pdf>
- Bigby, J., Giblin, J., Pappius, E. M., & Goldman, L., (2001) Appointment reminders to reduce no-show rates. *A stratified analysis of their cost-effectiveness. JAMA*, 250(13), 1742-1745.
- Campbell, J., Walton S, & C., S. (2006). Developing an Educational Reminder System for a Handheld Encounter Log., 38(10), 736-741.
- Conallen, J. (2000). Building Web Applications with UML. Retrieved March 27, 2008, from [http://catalog.ebay.com/Building-Web-Applications-With-Uml\\_ISBN-10\\_0201615770\\_ISBN-13\\_9780201615777\\_W0QQ\\_fclsZ1QQ\\_pidZ1648482QQ\\_tabZ2](http://catalog.ebay.com/Building-Web-Applications-With-Uml_ISBN-10_0201615770_ISBN-13_9780201615777_W0QQ_fclsZ1QQ_pidZ1648482QQ_tabZ2)
- Chasen, B. (2006). Emergency Alert System Retrieved April 18, 2008, from <http://anerroroccurredwhileprocessingthisdirective.com/2008/03/22/email-emergency-alert-system/>
- Dey, A., & K. Abowd. (2000). CybreMinder: A Context-Aware System for Supporting Reminders. Intl. *Symposium on Handheld and Ubiquitous Computing*, 172-186.
- Elmasri, R., & Navathe, S. (2000). A database system for the World Wide Web

(Vol. 1460): Heidelberg, Page 658-667.

Frank, D., Lucic, H., M. Opsenica, J. Puksec, M. Zic, S. Brajkovic, et al. (2000). The EMA System: A CTI-Based E-Mail Alerting Service. *IEEE Communications Magazine*, 38, 122 - 128.

Greenspan, J., & Bulger, B. (January 2001). *MySQL/PHP Database Applications* (No. 0764535374): Wiley.

Gwizdka, J. (2000). Timely Reminders: A Case Study of Use reminder system in clinical and Email Tools Usage. Extended abstract in Proceedings of *CHI 2000, Human Factors in Computing Systems*.

Han, L., & Li, X. (2001 13-16 May). A web-based graduate application database system. Paper presented at the *IEEE Electrical and Computer Engineering, Canada*, 59 - 64.

Hartle, T. W., & Burns, J. (2002). Interconnecting worlds. *Educes Review*. 37(5), 88-89.

Hasman, A., R.Bindels, & Clercq, P. d. (2000). On the Use of Reminder Systems in Healthcare. *Paper presented at the International Symposium on Wearable Computing*. Boston, 109-117.

Hermes, J. (2003). What is SEVIS? Retrieved April 21, 2008, from <http://web.mit.edu/scholars/sevis.html>

Hoffer, J.A., George, J.F., & Valacich, J.S. (2002). *Modern systems analysis & design* (3rd Ed.). New Jersey: Prentice Hall.

Hughes, S. (2001). A Database-Independent API for PHP. Retrieved May 5, 2008, from <http://www.webtechniques.com/archives/2000/10/hughes/>

- Johnstone, A. (2008). Renewing A Student Visa. Retrieved on May 3, 2008, from [http://EzineArticles.com/?expert=Andrew\\_Johnstone](http://EzineArticles.com/?expert=Andrew_Johnstone)
- Kendall, K.E., & Kendall, J.E. (2002). *System analysis and design* (5th ed.). Upper Seregisterle River, New Jersey: Prentice Hall.
- John, P., & Michael, P. (1999). A case study of the web-based information systems development. Retrieved on April 2, 2008, from [http://cecil.auckland.ac.nz/html/www\\_Case\\_Multimedia\\_98.pdf](http://cecil.auckland.ac.nz/html/www_Case_Multimedia_98.pdf)
- Katz, S. J., Moyer, C. A., Cox, D. T., & Stern, D. T. (2003). *Effect of a triage-based e-mail system on clinic resource use and patient and physician satisfaction in primary care*. *General Internal Medicine*, 18(9), 736-744.
- Kcrr, B., Wilcox, E. (2004) Resigning Remain: Reinventing the Email Client Through innovation and Integration. 18M Research Report RC23127 (WO403-146).
- Kling, A. (1998). The economic consequences of the World Wide Web. Paper presented at the *second World Wide Web conference: Mosaic and the web*, Geneva, Switzerland.
- Laudon, K.C., & Laudon, J.P (2000) *Management information system: Organization and technology in the networked enterprise* (6th Ed.). New Jersey: Prentice Hall.
- Lewis, J. R. (1995) IBM Computer Usability Satisfaction Questionnaires: Psychometric Evaluation and Instructions for Use. *International Journal of Human-Computer Interaction*, 7:1, 57-78. <http://www.acm.org/~perlman/question.cgiAbstract>

- Malaysia Immigration Guidelines. (2008). Retrieved April 11, from [http://www.theoneacademy.com/malaysia/mal\\_immigration.html](http://www.theoneacademy.com/malaysia/mal_immigration.html)
- Marmasse, N., & Schmandt, C. (2000). Location-aware information delivery with comMotion. Paper presented at *the 2nd International Symposium on Handheld and Ubiquitous Computing*, Bristol, England.
- McDonald., C. J., N.Engl., & J.Med. (1999). Protocol-based computer reminders, the quality of care and the non-perfect ability of man. 1351-1355.
- Milosevic, S. Gibson, P.F. Linington, J. Cole and S. Kulkarni, On design and implementation of a contract monitoring facility, in *Proc. of 1st IEEE Int'l Workshop on Electronic Contracting*, pages 62-71, 2004.
- Mocny, R. (2004). Day One of the US-VISIT Program. Migration Policy, Retrieved on April 17 from <http://www.migrationpolicy.org/events/USVISIT%20event%20summary.1.11.041.pdf>
- Moser, S. E. (2000). Effectiveness of post card appointment reminders. *Family Practice Research Journal*, 14(3), 281-288
- Nijaz, B., (2000). Web-based information access for agile management. *International Journal of Agile Management Systems*, 2 (2), 121 - 129.
- Opsenica, M., Frank, D., & J. Puksec. (2000, 13 -16 October). EMA System and Concurrence Solution. Paper presented at *Electrotechnical Conference*, Maricic.
- Park, J., & Sandhu, R. (2000). Secure Cookies on the Web. *IEEE Internet Computing*, Page 36-43.

- Randell, L. G., & Bolmsjo, G. S. (2001). Database driven factory simulation: a proof-of-concept demonstrator Paper presented at *the Winter Simulation Conference*, Vol 2, Issue 2001, 977 - 983.
- Rodgers, S. (2002). SEVIS: Chronology of a federal program. College and University. Vol 78, Page 41-43.
- Rumbaugh. J. (September 1994). Getting started - Using Use Cases to Capture Requirements. Object Oriented Programming.
- Sarmad Alshawi, Xiaoning Yu, & Irani, Z. (2002 ). Supporting technology driven business processes through the internet: a practical technical note. *International Journal of Services Technology and Management* 3(2), 238 - 248.
- Siskin, A. (2004, February 10). Visa Waiver Program. Retrieved March 29 from <http://www.au.af.mil/au/awc/awcgate/crs/rl32221.pdf>
- Takashi, K., & Liang, E. (1997). Analysis and Design of Web-based information Systems. Retrieved April 23 2008, Retrieved May 4 from <http://www.ra.ethz.ch/CDstore/www6/Technical/Paper245/PAPER245.htm>
- Thomas, J., (2004). A Web-based and Email Driven Electronic Contract Management System, *IEEE on e-Business engineering*.
- Utpal M, Dholakia, & Rego, L. L. (1998). What makes commercial Web pages popular? *An empirical investigation of Web page effectiveness*. *European Journal of Marketing*, 32(7/8), 724 - 736.
- Vaishnavi & Kuechler. (2004). Design Research in information System. Retrieved on May 4th 2008, from <http://www.isworld.org/Researchdesign/drisISworld.htm>

Wichansky, A. M. (2000). Usability testing in 2000 and beyond. *Ergonomics*, Vol. <http://web23.epnet.com/43>, pp 998-1006. Retrieved February, 2005, from

Xiao, L. & Dasgupta, S. (2002). *Measurement of User Satisfaction with Web-Based Information System: An Empirical Study*. Eighth Americas Conference on Information Systems

Yagecic, J. (2001). An Automated E-mail Flood Warning System. Retrieved April 30, 2008, from <http://ci.issaquah.wa.us/Page.asp?NavID=464>