ONLINE CLINICAL 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
Ng Yong Hee

©Ng Yong Hee, 2001. 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)

Ng Yong Hee

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)

Online Clinical 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 Penyelia
(Name of Supervisor) : Prof. Madya Shahrum Hashim

Tandatangan
(Signature) :

Tarikh
(Date) : *24 Oktober 2001*

PERMISSION TO USE

In presenting this project in partial fulfillment of the requirement for a post graduate degree from the Universiti Utara Malaysia, I agree that the Universiti Library may make it freely available for inspection. I further agree that permission for copying of this project 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 use of this project 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 ant scholarly use which may be made of any material from my project paper.

Requests for permission to copy or to make other use of material in this project in whole or in part should be addressed to:

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

ABSTRACT (BAHASA MALAYSIA)

Tujuan utama projek ini untuk membangunkan satu sistem klinikal yang berkualiti serta bersambungan pada internet. Ia dibangunkan dengan menggunakan perisian Visual InterDev 6.0, SQL Server 6.0, Personal Web Server dan Macromedia Flash 4. Perisian Visual InterDev 6.0 digunakan sebagai alat untuk mencipta dan menyunting kod Active Server Page. Secara keseluruhannya, projek ini dapat menyediakan maklumat yang berkualiti pada penjagaan kesihatan dan klinikal kepda pengguna. Tambahan pula, projek ini boleh dianggapkan sebahagian pejabat perubatan. Ia juga dianggap sebagai alat latihan kepada pelajar perubatan dan penduduk.

ABSTRACT (ENGLISH)

The main objective of the project is to develop a usable, quality and a online clinical system in the web. This system is developed by using software Visual InterDev 6.0, SQL Server 6.0, Personal Web Server and Macromedia Flash 4. The Visual InterDev 6.0 is chosen as a tool to create and edit source codes Active Server Page. Overall, this project is to provide quality information on the health care and clinical for user to access. Furthermore, this project can be an essential part of virtual medical office. It can be a training tool for medical students and residents.

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Associate Professor Shahrum Hashim for all his help, encouragement and patience throughout the development of this project. Beside that, I also would like to thank my friends who have recommended and borrowed me some ASP books and training materials, without their advice this project would not be completed on time. Lastly, I would like to thank my family members for their undying love and support.

TABLE OF CONTENTS

	Page
PERMISSION	i
ABSTRACT (BAHASA MALAYSIA)	ii
ABSTRACT (ENGLISH)	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER ONE: INTRODUCTION	
1.1 Problem Statement	2
1.2 Objectives	3
1.3 Project Scope	3
1.4 Significance of the Project	5
CHAPTER TWO: LITERATURE REVIEW	
2.1 Clinical System Development	6
2.2 Evaluation Quality Clinical Information on Internet	11
2.3 Weight Management	12
CHAPTER THREE: METHODOLOGY	
3.1 Prototyping	16
3.2 Iterative Development Prototyping Approach	16
3.3 Critical Software Development Processes	18
3.4 Developer's System Requirement	20
3.4.1 Hardware Requirements	20

3.4.2 Software Requirements 20

CHAPTER FOUR: THE ONLINE CLINICAL SYSTEM MODEL

4.1 Requirement Model 22

4.2 Data Flow Diagram (DFD) 25

4.2.1 DFD 25

4.2.2 DFD level 0 26

4.3 Entity Relationship Diagram (ERD) 27

4.4 System Performance And Functionality 28

4.5 Use Case Diagram 29

4.6 System Architecture 31

4.7 Testing and Results 33

4.8 Evaluation 34

CHAPTER FIVE: DESIGN AND IMPLEMENTATION

5.1 Main Menu 35

5.2 Sub Main Menu 39

5.3 Change Password 40

5.4 Clinical Case 41

5.4.1 To log in into Clinical Case Menu 41

5.4.2 Clinical Case Menu 42

5.4.3 Add New Case 43

5.4.4 Delete Case 46

5.4.5 Search Case 46

5.5 Vitamins and Minerals 47

5.5.1 List of Vitamins and Minerals 47

5.5.2 Vitamins and Minerals Information 48

5.6 Diseases and Injuries 49

5.7 Search Case (Public) 51

CHAPTER SIX: CONCLUSION AND RECOMMENDATION

6.1 Objectives Evaluation 53

6.2 Benefits 53

6.3 Problems and Limitations 53

6.4 Future Enhancements 54

BIBLIGRAPHY 56

APPENDIX: USER CODES 57

LIST OF TABLES

Table 2.1	The Metropolitan height and weight for men and women ages 25 through 39	13
Table 3.1	Critical Software Development Processes	18
Table 4.1	System Performance	33

LIST OF FIGURES

Figure 3.1	The iterative development prototyping model	17
Figure 4.1	Data flow diagram level	25
Figure 4.2	Data flow diagram level 0	26
Figure 4.3	Entity Relationship diagram	27
Figure 4.4	Use Case Diagram	29
Figure 4.5	Conceptual System Architecture	31
Figure 5.1	Main Menu	35
Figure 5.2	Registration Form Menu	36
Figure 5.3	Registration Successful message	37
Figure 5.4	Error message	37
Figure 5.5	Member Login Menu	38
Figure 5.6	Sub Main Menu	39
Figure 5.7	Change Password Menu	40
Figure 5.8	Physician Login Menu	41
Figure 5.9	Clinical Case Menu	42
Figure 5.10	Add New Case Menu	43
Figure 5.11	List Case Menu	44
Figure 5.12	Case Menu	45
Figure 5.13	Search Case Menu	46
Figure 5.14	List of Vitamins and Minerals Menu	47
Figure 5.15	Vitamins and Minerals Information	48
Figure 5.16	List of Diseases and Injuries Menu	49

Figure 5.17 Diseases and Injuries Information 50

Figure 5.18 Body Mass Index 51

Chapter 1

INTRODUCTION

Online Clinical System is a World Wide Web based secured application to share knowledge and experience via the Internet. Clinical data can be placed into the database directly from the desk of participating physicians and accessed from anywhere around the globe. In fact, multiple users can simultaneously access the same data.

A Clinical system is the systematic investigation which studies the effects of various methods or treatments used in a treatment of diseases. It refers to the evaluation of treatment methods, surgery, drugs, diagnosis and prevention techniques. In summary the clinical case contains information consisting of patients, and treatment that were given to them, the results of those treatments, follow up visits of patients to their doctors and their outcomes.

Most of the leading causes of illness and death result not from infectious diseases but from health compromising behaviors. Although the cause of death is usually reported in term of diseases, the actual cause more often is a chosen health behavior. Prevention techniques are the best strategy for a health future. For example, not smoking cigarettes reduce the risk of a range of illness, including cancer, heart diseases, stoke and lung diseases.

Nowadays, information technologies are transforming the way health care is delivered. Innovations such as computer-based patient records, hospital information systems, computer-based decision support tools, community health

The contents of the thesis is for internal user only

Bibliography

Jeffrey L. Whitten (1998). *System Analysis And Design Methods*. Fourth Edition. McGraw-Hill

William M. Newman(1995). *Interactive System Design*. First Edition. Addison-Wesley

David K. Miller(1995). *Fitness A Lifetime Commitment*. Fifth Edition. Allyn And Bacon

Basiro Davey(1995). *Health And Disease*. Second Edition. Open University Press

B.E.Pruitt(1994). *Health Styles*. United States: Saunders College Publishing

Gayla J. Kirschman(1996). *Nutrition Almanac*. Fourth Edition. McGraw-Hill

Fourier R.(1999). *A Methodology For Client/Server and Web Application Development*. United States: Prentice Hall

HealthGate Data Corp(2001). *St. John Health System*. Http://stjohn.org/

Roger Fournier(2001). *Build E-business Application Faster*. Http://www.infoworld.com/

Philippe Kruchten. *From Waterfall to Iterative Development*. www.therationaledge.com/

Edward Kenworthy(1997). *Use Case Modelling*. Http://www.zoo.co.uk/

Health Summit Working Group(1999). *Quality of Health Information On the Internet* Http://www.ieeeusa.org/

Brian Pace(2001). *Quality Clinical Information*. Http://jama.ama-assn.org/