

University Technology of MARA

Health Self-Assessment Rule-Based Expert System

Wan Ahmad Mujib Bin Wan Hamdy

**Thesis submitted in fulfillment of requirements for
Bachelor of Science (Hons) Intelligent System
Faculty of Information Technology
And
Quantitative Science**

April 2006

DECLARATION

I confess that this thesis and the research to which it refers are the product of my own work and any ideas or quotation from the work of other people, published or otherwise are fully acknowledge in accordance with the standard referring practices the discipline.

27 APRIL 2007

WAN AHMAD MUJIB BIN WAN HAMDY

2004218627

TABLE OF CONTENTS

CONTENT	
PAGE	
APPROVAL	ii
DECLARATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRACT	x
CHAPTER 1: INTRODUCTION	
1.0 Introduction	1
1.1. Background	1
1.2. Problem Statement	2
1.3. Objective Of The Research	3
1.4. Aim Of The Research	4
1.5. Scope Of The Research	4
1.6. Significance Of The Research	4
1.7. Summary	5
CHAPTER 2: LITERATURE REVIEW	
2.0 Introduction	6
2.1 Artificial Intelligent	6
2.2 Expert System	8
2.3 Rule Based Expert System	10
2.3.1 Inference Method	13
2.3.2 Advantage of Rule-Based Expert System	15
2.3.3 Disadvantage of Rule-Based Expert System	16

2.3	Expert System in Medical Field	17
2.4	Scoring Model	20
2.5	Summary	21

CHAPTER 3: RESEARCH APPROACH AND METHODOLOGY

3.0	Introduction	22
3.1	Research Approach and Methodology	22
3.2	Project Overview	24
3.2.1	Background of the research	24
3.2.2	Problem Statement	24
3.2.3	Objective of the Research	24
3.2.4	Aim of the Research	24
3.2.5	Scope of the Research	24
3.2.6	Significance of the Research	24
3.3	Knowledge Acquisition	25
3.3.1	Data Collection	25
3.3.1.1	Domain Expert	26
3.3.1.2	Books	26
3.3.1.3	Internet	27
3.3.2	Data Analysis	27
3.3.2.1	Common Health Problem	28
3.3.2.2	Health and Symptoms Analysis	28
3.3.2.3	Score Symptoms Analysis	30
3.3.3	Knowledge Representation and Scoring Model	30
3.4	Conceptual Design	32
3.4.1	Knowledge Base and Database Design	32
3.4.2	Inference Engine Design	32
3.4.3	Interface Design	33
3.4.3	System Flow	34
3.5	Project Development	35
3.6	Testing and Evaluation	35

ABSTRACT

In Malaysia, the level of health conscious is can be considered quite low and usually when diagnostician a health problem is usually done by the doctors. There is also other ways to do a self-diagnosis by reading a books, magazine or from Internet. Therefore new tools of diagnose is needed to solve the problem. The title for this project is Health Self-Assessment Rule-Based Expert System. The system is a Web-based system that can provide an online diagnosis through questionnaire for the users where much faster and easier than reading books or magazines. The system is not to replace the expertise of the doctors but it will be a new way of diagnosis. There are three objectives in the research to be fulfilled. The first objective is to do research and analyze facts on the health problems in Malaysia. The second objective is to produce set of rules based on the facts that been researched and analyzed. The last objective is to develop rule-based expert system where the system can perform forward chaining technique that can accept the input and produce the output for users. The main components of the rule-based which are the inference engine and the knowledge base are able to function and produce output. The rules that been created had been combine with scoring model called weighted average. The function of the scoring model is to calculate the percentage for the output. Even-though the expert system manage to meet the setting objectives, there are still limitation that can be found affect the system. The solution to overcome the limitation is by expanding the ability of the system. As suggested, the future expansion is to add up three components which are the developer interface, conflict resolution and uncertainty management.

Keywords: Rule-Based Expert System, Inference Engine, Weighted Average.