

PERPUSTAKAAN UMP



0000079009

FINANCIAL PLANNING USING RULE BASED EXPERT SYSTEM

QURRATU AIN BINTI ROSLAN

**A REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR AWARD OF THE DEGREE OF COMPUTER SCIENCE
(SOFTWARE ENGINEERING)**

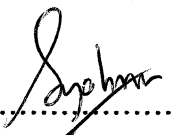
FACULTY OF COMPUTER SYSTEMS & SOFTWARE ENGINEERING

JUNE 2013

SUPERVISOR'S DECLARATION

"I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering)"

SINGNATURE

: 

SUPERVISOR

: **MR WAN MUHAMMAD SYAHRIR BIN WAN HUSSIN**

NAME

DATE

: 10 / 06 / 2013

STUDENT DECLARATION

"I declare that this thesis entitled Financial Planning Using Rule Base Expert System is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree"

SIGNATURE : 

SUPERVISEE : QURRATU AIN BINTI ROSLAN

NAME

DATE : 10/6/2013

DEDICATION

Special dedication to my family members especially to my parent (Roslan bin Hj Mustapha and Suraini binti Ali) who always give me encouragement to finish this Undergraduate Final Year Project.

**To my Supervisor
Mr Wan Muhammad Syahrir bin Wan Hussin**

**To all my course mate
Third Year BCS 13/14**

To all FSKKP's lectures and staffs

To all UMP-ian friends and friend out there

Thank you for your supporting and teaching

ACKNOWLEDGMENT

For the beginning, I would like to say Alhamdulillah for my Grateful Allah w.b.t for helping and simplify me to finish this thesis and everything that I have done. In doing my research and development application, I learn many things and gained a new knowledge to fulfill the (PSM) requirement.

A lot of thankful for my supervisor, Mr. Wan Muhammad Syahrir bin Wan Hussin in teach, educate, support, very helpful and provide a guidance to fulfill my thesis. In addition, thank you to my Personal Advisor, Miss. Azlina binti Zainuddin and all lectures at FSKKP that always support and give your spirit and advice. I really appreciated that.

Besides that, a very thank you to my parent and family that always support me during this period time. Thank you for your praise for my healthy and strength in doing this thesis. Last but not least, to my all my friend, especially to 3rd year BCS (2010/2011), thank you very much for your helping and support for every part of this subject. May Allah bless of us and give a good life.

TABLE OF CONTENTS

CONTENT	PAGE
SUPERVISORS DECLARATION	I
STUDENT DECLARATION	II
DEDICATION	III
ACKNOWLEDGMENTS	IV
ABSTRACT	V
ABSTRAK	VI
CONTENTS	VII
LIST OF TABLES	VIII
LIST OF FIGURES	IX
LIST OF ABBREVIATIONS	X

CHAPTER	TITLE	PAGE
1	INTRODUCTION	
1.1	Research Background	1-2
1.2	Problem Statement	3
1.3	Objective	3
1.4	Project Scope	4
1.5	Thesis Organization	4-5
2	LITERATURE REVIEW	
2.1	Introduction	6
2.2	Introduction of Financial Planning	7
2.3	Current news of Financial Management	8
2.4	Introduction of Expert Application	9
2.5	Existing Application Future	10
2.6	Intelligent Technology	11
2.6.1	Rule Based Expert Application	11-12
2.6.2	Forward Chaining	12
2.7	Purpose Rule Based in Financial Planning	13
2.8	Comparison between another Expert Application	13 - 14
2.9	Example of Existing Application using Forward Chaining	15
2.9.1	Expert application to identify Influenza-Like illness using Rule Based	15
2.9.2	UMP Bus Booking with Scheduling using Rule Based Forward Chaining	16
2.10	Comparison between Computer Language	16 - 17

3	METHODOLOGY	
3.1	Introduction	18
3.2	Background of Software Process Model	19
3.3	Rapid Application Development (RAD) Method	19
3.3.1	Rapid Application Development Phase	20 - 21
3.3.1.1	Requirement Planning Phase	21
3.3.1.1.1	Rule Assumption	22
3.3.1.1.2	Calculation Information	22
3.3.1.1.3	Logic Percentage Information	23
3.3.1.2	User Design Phase	24-26
3.3.1.2.1	Context Diagram	27
3.3.1.2.2	Data Flow Diagram (DFD)	28-32
3.3.1.2.3	Database Design	33
3.3.1.2.4	Data Dictionary	34-35
3.3.1.3	Construction Phase	35
3.3.1.4	Cutover Phase	35
3.3.1.5	Comparison Between Software Process Development	36-37
3.3.2	Development Tools	37
3.3.2.1	Hardware Tools	37
3.3.2.2	Software Tools	38
4	DESING AND IMPLEMENTATION	
4.1	Introduction	40
4.2	Implementation environment of Financial Planning using rule based expert system	40
4.3	System Implementation Process	40-41
4.4	System Interface	42-47
4.5	Database Construction	48-51

5	RESULT AND DISCUSSION	
5.1	Introduction	53
5.2	Result and Analysis	53
5.2.1	Objective Achievement	54-56
5.2.2	Testing for Financial Planning Assessment	57
5.2.2.1	Testing Result by One (1) Condition	57-58
5.2.2.2	Testing Result by random Condition with Five (5) same test cases for every condition	59-60
5.2.2.3	Testing Result with new rules	61
5.2.2.4	Testing Result with deleted rules	62
5.3	Assumption	62
5.4	Project Constraint	63
5.5	Advantages and Disadvantages	64
5.5.1	Advantages of Financial Planning Application	64
5.5.2	Disadvantages Financial Planning Application	64
5.6	Suggestion and Improvement	65
6	CONCLUSION	67
	REFERENCE	68-69
APPENDIXS	APPENDIX A	71-72
	APPENDIX B	74-75
	APPENDIX C	77 -106
	APPENDIX D	108 - 113
	APPENDIX E	115-120

LIST OF TABLES

Table Number		Page
2.1	Comparison of Expert Application	13 - 14
2.2	Comparison of Computer Language	16 - 17
3.1	Example Rule Assumption	22
3.2	Example of Calculation Information	22
3.3	Example Rule Assumption	23
3.4	Data dictionary for administrator	34
3.5	Data dictionary for user	34
3.6	Data dictionary for rule	34
3.7	Data dictionary for solution	35
3.8	Comparison of Software Process Development	36
3.9	Hardware Tool of Financial Planning Application	37
3.10	Software Tool of Financial Planning Application	38
5.1	Testing Result of Test Case by One Condition	56-57
5.2	Testing Result of Test Case by random Condition	58-59
5.3	Testing Result of Test Case by new rules	60
5.4	Testing Result of Test Case by deleted rules	61

LIST OF FIGURES

Figure Number		Page
2.1	Financial Planning Example Equation	7
2.2	Expert System Practice	9
2.3	Example Rule Based Forward Chaining	12
2.4	Interface of Influenza-Like illness Detection System (ILIDS)	15
3.1	Rapid Application Development (RAD)	20
3.2	Pai Chart Assumption	23
3.3	Rule Based inference processes	24
3.4	Sample rule based of Financial Planning System Solution	25
3.5	Flow chart for Financial Planning System	26
3.6	Context Diagram for Financial Planning System	27
3.7	Data Flow Diagram Level 0 for Financial Planning System	28
3.8	Data Flow Diagram for Login	29
3.9	Data Flow Diagram for Question	30
3.10	Data Flow Diagram for Manage Solution	31
3.11	Data Flow Diagram for Manage Rules	32
3.12	Entity Relation Diagram Financial Planning Application	33
4.1	Pseudo code of Financial Planning Application	41
4.2	Financial Planning Application Homepage	42
4.3	Source Code JQuery Mobile Homepage	42

4.4	Financial Planning Application (info)	43
4.5	Financial Planning Application (about us)	43
4.6	Financial Planning Application (vision & mission)	44
4.7	Financial Planning Application (Financial Assessment)	44
4.8	Part of source code for financial planning Assessment	45
4.9	Hypertext Preprocessor (PHP) code for Financial Assessment	46
4.10	Hypertext Preprocessor (PHP) code for Financial Assessment calculation	46
4.11	List of table created in PHPMyAdmin	47
4.12	Table for Admin	47
4.13	Table for rule value	48
4.14	Table for Solution	49
4.15	SQL query for database connection (cb10065_psm)	50
5.1	Prototype of Financial Planning Application	53
5.2	Financial Planning Question by implementing rule base concept	54
5.3	Rule of Financial Planning Application Assessment	55

LIST OF ABBREVIATIONS

FSKKP	: Fakultas Sistem Komputer Kejuruteraan Perisian
FPA	: Financial Planning Application
AKPK	: Agensi Kaunseling dan Pengurusan Kredit
BCS	: Bachelor of Computer Software
SDLC	: Software Development Life Cycles
RAD	: Rapid Application Development