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JUDUL: **AN INTEGRATED NETWORK MONITORING TOOLS WITH ENHANCED GRAPHICAL USER INTERFACE**

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**AN INTEGRATED NETWORK MONITORING TOOLS
WITH ENHANCED GRAPHICAL USER INTERFACE**

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This report is submitted in partial fulfillment of the requirements for the
Bachelor of Information and Communication Technology
(Computer Network)

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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2004**

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WITH ENHANCED GRAPHICAL USER INTERFACE**

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DEDICATION

To my beloved parents....I love you.

My lovely Abah (Mr. Kamarudin Bin Ab. Rahman) and Mak (Mrs. Tijah Bt Sawil), who have taught me my set of values – work hard to success, thank you for all your supports. There is nothing can't replace your sacrifice to make my dream come true.

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you are the best advisory in my life. Thank for the opportunity.

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*Noraisah Bt Kamarudin,
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ABSTRACT

This paper introduces some of the best-known networking software and goes on to its details implementation methods. This system named as An Integrated Network Monitoring Tools with Enhanced Graphical User Interface and in this documentation, it's called as GUI-MoniTech system. The aim of this project is to provide new network monitoring software to an assigned organization with a user-friendly system environment. It's providing network utilities that working in the GUI environment. Users can interact with the system and easy to understanding the flow of the project because it easy to applied. In the other word, this software can be a middle-man between network and users.

The process of system development for this project is using a Rapid Application Development (RAD) because the main purpose of this project is to replace an existing system with new one. RAD has a smooth scheduling and planning in part of design and implementation and need to be completed before moving to the next phase.

This system developed by using a Java Programming Language. Its translation program is a modification of the traditional process that uses both compiler and interpreter. This programming language doesn't need other software to support it.

To complete this project, seven phases of system development must be going through. The details of each phase are explained in each chapter in this document. It is divided into four main part, where is addresses to System Analysis and Design, System Analysis Methods, System design Methods and the last part is on System Construction and Implementation phases.

The network environment for this project requires either on the LAN or Client/Server environment.

ABSTRAK

Secara keseluruhannya, dokumen ini menerangkan pendekatan terbaik yang dicadangkan di dalam perisian rangkaian komputer dan menerangkan dengan lebih terperinci tentang kaedah dan cara untuk membina keseluruhan sistem. Matlamat utama projek yang dibangunkan ini adalah untuk membekalkan perisian rangkaian komputer yang baru kepada organisasi yang telah dipilih (*FTMK*) dengan menggunakan pendekatan antaramuka sistem yang lebih ramah pengguna. Perisian baru ini bertindak sebagai perantara diantara pengguna dengan rangkaian komputer.

Pendekatan atau kaedah pembangunan sistem yang digunakan di dalam fasa pembangunan sistem (*system development phase*) ialah *Rapid Application Development (RAD)*. Pendekatan RAD telah dipilih kerana teknik – teknik yang digunakannya bersesuaian dengan tujuan utama projek ini iaitu penggantian sistem pemantauan rangkaian *FTMK* yang sediaada kepada sebuah sistem pemantauan rangkaian *FTMK* yang baru. RAD mempunyai penjadualan dan perancangan yang telus di dalam fasa rekabentuk dan fasa pelaksanaan sistem.

Sebagai tambahan, sistem yang dibangunkan ini menggunakan bahasa pengaturcaraan Java (*Java Language Programming*) untuk *back-end* dan *front-end* sistem. Program penterjemahan atau pentafsiran bahasa pengaturcaraan Java merupakan pengubahsuaian proses tradisional kepada menggunakan kedua – dua *compiler* dan *interpreter*.

Projek ini dilengkapi dengan lima utiliti rangkaian dan digunakan di dalam persekitaran GUI-MoniTech System. Pengguna sistem boleh berinteraksi dengan lebih mesra pengguna dan aturan perjalanan sistemnya lebih mudah untuk difahami kerana sistem ini senang untuk digunakan.

Tujuh fasa utama di dalam fasa pembangunan sistem (*system development*). diuraikan di dalam dokumen laporan akhir ini. Ia dibahagikan kepada empat bahagian utama iaitu bahagian Analisis dan Rekabentuk Sistem, Kaedah Analisis Sistem, Kaedah Rekabentuk Sistem fasa Pembinaan dan Pelaksanaan Sistem.

Persekitaran rangkaian yang diperlukan untuk melarikan (*running*) sistem ini memerlukan persekitaran *Local Area Network (LAN)* atau *Client/Server*.

TABLE OF CONTENT

CONTENT	PAGE
PROJECT TITLE	i
ADMISSION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF CHARTS	xi
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF ACRONYMS	xvii
LIST OF ATTACHMENTS	xix
INTRODUCTION	
1.1 Preamble/Overview	1
1.2 Problem Statement(s)	4
1.3 Objectives	4
1.4 Scopes	5
1.5 Contributions	6
1.6 Expected Output	8

LITERATURE REVIEW

2.1	Introduction	9
2.2	Fact And Finding	9
2.2.1	Research Of Remote Method Invocation (RMI)	10
2.2.2	Research Of Others 4 Network Utilities	14
2.3	Conclusion	18

PROJECT PLANNING AND METHODOLOGY

3.1	Introduction	19
3.2	High-Level Project Requirements	20
3.2.1	Software Requirement	20
3.2.2	Hardware Requirement	21
3.3	System Development Approach	23
3.3.1	Project Methodology	23
3.3.2	Justification Of Chosen Methodology	26
3.4	Project Schedule And Milestone	28
3.5	Conclusion	32

ANALYSIS

4.1	Introduction	33
4.2	Analysis Of Analysis Of Current System	33
4.2.1	Business Process	33
4.2.2	Problem Analysis	36
4.2.3	Problem Statement	37
4.3	Analysis Of To Be System	38
4.3.1	Functional Requirements	38
4.3.2	Technical Requirements	39
4.3.2.1	Software Requirements	39
4.3.2.2	Hardware/Firmware Requirements	41
4.3.2.3	Implementation/Deployment Requirement	42

DESIGN

5.1	Introduction	43
5.2	Preliminary/High-Level Design	44
5.2.1	Raw Input/Data	44
5.2.2	System Architecture	45
5.2.3	User Interface Design	47
5.2.3.1	Navigation Design	47
5.2.3.2	Input Design	59
5.2.4	Database Design	62
5.2.4.1	Logical Database Design	62
5.3	Detailed Design	64
5.3.1	Software Specification	64
5.3.2	Physical Data Design	65

IMPLEMENTATION

6.1	Introduction	68
6.2	Software Configuration Management	73
6.2.1	Configuration Environment Setup	73
6.2.1.1	Setup And Configure The Netbeans IDE 3.6 Software Package	73
6.2.1.2	Setting Up The Data Sources (ODBC) To Support The Database	74
6.3	Development Status	75
6.4	Conclusion	77

TESTING	
7.1 Introduction	78
7.2 Test Plan	85
7.2.1 Test Organization	88
7.2.2 Test Environment	89
7.3 Test Strategy	90
7.3.1 Classes Of Test	92
7.3.1.1 Functional Testing Techniques	92
7.3.1.2 Nonfunctional Testing Techniques	94
7.4 Test Design	96
7.4.1 Test Description	96
7.4.2 Test Data	108
7.5 Test Case Result	109
7.5.1 Result	109
7.5.2 System Satisfied	125
PROJECT CONCLUSION	
8.1 Observation On Weakness And Strength	126
8.2 Propositions For Improvement	127
8.3 Conclusion	127
REFERENCES	128
APPENDIX	129

LIST OF CHARTS

CHART NO.	CHART TITLE	PAGE
3.1	Work Breakdown Structure for GUI-MoniTech system by phases	32
4.1	FTMK organization	38

LIST OF TABLES

TABLE NO.	TABLE TITLE	PAGE
3.1	Software requirements	21
3.2	Hardware requirements	22
4.1	Software requirements	40
4.2	Hardware requirements	41
5.1	Data dictionary for login interface	59
5.2	Data dictionary for registry form	60
5.3	Data dictionary for server platform interface	61
5.4	Data dictionary for client interface	61
5.5	Data dictionary for client platform interface	62
5.6	Member's table design in Monitech.mdb	63
5.7	Member's query design in Monitech.mdb	63
5.8	Data dictionary for the Monitech.mdb	76
6.1	An information on project progress by task of module	75
6.2	An information on project progress by duration	76

LIST OF FIGURES

FIGURE NO.	FIGURE TITLE	PAGE
2.1	The Remote Procedure Call paradigm	10
2.2	Local Procedure Call versus Remote Procedure Call	11
2.3	The Java RMI architecture	12
3.1	Typical Times for the four stages of the RAD Lifecycle	25
3.2	Traditional Development Vs Rapid Application Development	26
4.1	Context Diagram of GUI-MoniTech system	39
5.1	Undetails GUI-MoniTech System architecture	45
5.2	System architecture details	46
5.3	Context diagram of GUI-MoniTech system	48
5.4	Data Flow Diagram (DFD) level 0	49
5.5	Data Flow Diagram (DFD) level 1 for process 2.0	50
5.6	Data Flow Diagram (DFD) level 1 for process 1.0	51
5.7	Data Flow Diagram (DFD) level 2 for process 2.1	52
5.8	Data Flow Diagram (DFD) level 2 for process 2.2	53
5.9	Data Flow Diagram (DFD) level 2 for process 2.3	54
5.10	Data Flow Diagram (DFD) level 2 for process 2.4	55
5.11	Data Flow Diagram (DFD) level 2 for process 2.5	56
5.12	Chatting interface	57
5.13	Server platform interface	57
5.14	Client interface	58
5.15	Client platform interface	58
5.17	Conceptual view for the data abstraction using in the system	67

6.1	The context of system construction and implementation of GUI-MoniTech system	69
6.2	The software implementation module for GUI-MoniTech system	71
6.3	The software development environment for GUI-MoniTech system	72
7.1	Unit Testing and the V Model	80
7.2	Integration Testing and the V Model	81
7.3	User Acceptance Testing and the V Model	82
7.4	Regression Testing and the V Model	84
7.5	FTMK software testing program organization	85
7.6	FTMK extensions too the V Model	87
7.7	GUI-MoniTech system development environment	89
7.8	Expected error 1	96
7.9	Expected error 2	96
7.10	Login link	97
7.11	GUI-MoniTech system utility interface	97
7.12	Logout link	98
7.13	Confirm message to logout from the GUI-MoniTech system	98
7.14	Register Link	99
7.15	Registering new member form	99
7.16	Adding member success	100
7.17	GUI-MoniTech system utility interface	100
7.18	Confirm message to logout from the GUI-MoniTech system	101
7.19	Host Lookup interface	101
7.20	Remote Method Invocation interface	102
7.21	Multicast Sniffer interface	103
7.22	Port Scanner interface	104
7.23	Chatting interface	105

7.24	Server interface	106
7.25	Server platform for chatting utility	106
7.26	Client interface	107
7.27	Client interface	107
7.28	Client platform for chatting utility	108
7.29	Expected error 1	109
7.30	Expected error 2	109
7.31	Login link	110
7.32	GUI-MoniTech system utility interface	110
7.33	Logout link	111
7.34	Confirm message to logout from the GUI-MoniTech system	111
7.35	Register Link	111
7.36	Registering new member form	112
7.37	Adding member success	112
7.38	GUI-MoniTech system utility interface	113
7.39	Confirm message to logout from the GUI-MoniTech system	113
7.40	Host Lookup interface	114
7.41	Host Lookup output	114
7.42	Remote Method Invocation interface	115
7.43	Remote Method Invocation output	116
7.44	Multicast Sniffer interface	116
7.45	Multicast Sniffer output	117
7.46	Port Scanner interface	117
7.47	Port Scanner output	118
7.48	Chatting interface	118
7.49	If server button clicked, it will appear connection status	119
7.50	Server connection status	119
7.51	Server connection established	120
7.52	Client log on showed in the server platform interface	120

7.53	Server login in the server platform interface	121
7.54	Start chatting	121
7.55	Client message will be appear in the server platform	122
7.56	Server reply the client messages	122
7.57	If client button clicked, it will appear input box	123
7.58	Server IP Address input by client	123
7.59	Client connection established	124
7.60	Client log in into chatting utility	124
7.61	Start chatting	125

LIST OF ACRONYMS

ACRONYM	DESCRIPTION
[A] AUT	Application under Test
[B] BPF	Berkeley Packet Filter
[C] COTS	commercials off-the-shelf
[D] DLPI	Data Link Provider Interface
[F] FTMK	Faculty of Information and Communication Technology (Fakulti Teknologi maklumat dan Komunikasi)
[G] GUI	Graphical User Interface
[L] LAN LLI NIT	Local Area Network Network Interface Tap
[O] ODBC	Open Database Connectivity

[P]

PC	Personal Computer
PSM I	Bachelor Project 1 (Projek Sarjana Muda 1)
PSM II	Bachelor Project 2 (Projek Sarjana Muda 2)

[R]

RAD	Rapid Application Development
RMI	Remote Method Invocation

[S]

SAP	Session Advertisement Protocol
SDP	Session Description Protocol
SOW	Statement of work

[T]

TCP	Transmission Control Protocol
-----	-------------------------------

[U]

UDP	User Datagram Protocol
-----	------------------------

[W]

WBS	Work breakdown structure
-----	--------------------------

LIST OF ATTACHMENTS

ATTACHMENT NAME	ADDRESS TO	PAGE
A	Chapter 3: Project Planning and Methodology	129
B	Chapter 5: Design	132
C	Chapter 4: Analysis	134
C	Chapter 6: Implementation	134

CHAPTER I

INTRODUCTION

1.1 Preamble/Overview

GUI-MoniTech system is a breakthrough solution that provides integrated fault and performance monitoring of applications, networks, systems and user defined data sources. Generally, for the whole, **GUI-MoniTech** system is a network monitoring tools software that developed for *Faculty of Information and Communication Technology (FTMK)*, which it will be used in their network management system.

Actually, before this, *FTMK* has been using other network monitoring software to monitor all faculty networks, but the existing software cannot achieve it monitoring objectives. However, this application is a *stand-alone* system because this application only can be used by a certain individual for the security reasons. Below is the brief explanation about new features that will be added in the new system.

Host Lookup is program that can be used by *FTMK* to check either their network is life or not. This program is used to finding the host name (or domain name) from an IP address involves sending a message containing the IP address and requesting the computer located at that IP address to return its name. Usually this will be the same as the domain name. However, many computers have many domains name, so the host name may be one of the domain names hosted or it could be something totally different.

The project that developed is easy to use, on the other hand is more user-friendly compare with existing system that not based on GUI techniques. Therefore, this application can be more practical if it developed and implemented using the GUI technique.

The other utility that may be added in this system is *Remote Method Invocation (RMI)* services. Remote Method Invocation (RMI) is an object-oriented implementation of the remote procedure call mode. It is an API for Java programs only, but its relative simplicity makes this API a good starting point for students learning to use distributed objects in network applications.

This application also provided *Multicast Sniffer* utility. Packet sniffing is listening (with software) to the raw network device for packets that interest you. When your software sees a packet that fits certain criteria, it logs it to a file. By using GUI interface, it can make this sniffer activity easier.

Another utility that added is *Port Scanner* utilities. A port scanner is a program which attempts to connect to a list or range of TCP (Transmission Control Protocol) or UDP (User Datagram Protocol) ports on a list or range of IP addresses. Port scanners are used for network mapping and for network security assessments.

The last features that will add in this new system is, this system provide a *Chatting* services that will help FTMK's staff to solve any problem only by using the chat program. An instant messenger is a computer application which allows instant text communication between two or more people through a network such as the Internet.

An instant messenger is a client which hooks up to an instant messaging service. Instant messaging differs from e-mail in that conversations happen in real time. Also, most services convey an “online status” between users.

Here, the **GUI-MoniTech** system is suggested because it will help the Network Administrators and technicians to monitor what happen in their network. So it will be quite easy for them because this system may use a user-friendly system. The problem that have to face are, replace all the system from the console application into a GUI interfaces. This development phase is quite difficult because it may rearrange and recoding backs all the existing coding.

For this project, Java Programming Language was chosen to implement this system. Both machine level and assembly languages are classified as low-level languages. This is because both of these languages type use instructions that are directly tied to one type of computer. Thus, an assembly language program is limited in that it can only be used with the specific computer type for which the program is written. In contrast to low-level languages are languages that are classified as high-level. A high-level language uses instructions that resemble natural languages and can be run on a variety of computer types.

C++, PASCAL and Java are all high-level languages. A Java program’s translation is a modification of the traditional process that uses both compiler and interpreter. The suitable methodology that is suggested for this system is *Rapid Application Development (RAD) Methodology* and its act as work planning for system development.

The details about this methodology and work planning will be discussed in the chapter 3 (Planning and Project Methodology).

1.2 Problem statement(s)

Actually, before this, *FTMK* has used other network monitoring software to monitor all networks, but the existing software cannot achieve their monitoring objectives. The main purpose of this application development is to add some more features in the existing system.

In the existing system, it's running in a command prompt, but with the additional features in the new application, it will be more useful with interesting interfaces and as a result, it will be easier to understand. The existing system will be replaced by the **GUI-MoniTech** system and still keep the existing functions. Besides, this system will be developed and implemented based-on *Graphical User-Interface (GUI)* techniques. The suggestion to solve these entire problems, **GUI-MoniTech** system has adding many features in their application.

1.3 Objectives

Below are the several objectives that have to achieve:

- a) To provide systematic, efficient, effective and better monitoring services especially for the Network Administrators and technicians with the user-friendly GUI interfaces.
- b) More useful features will be added and **GUI-MoniTech** system can be more practically in software infrastructure category.
- c) To establish more network utilities into one networking software.
- d) To provide fully data security to the Network Administrators and technicians because it have a different level of authorization of the data in the system.