TESIS^ APPROVAL STATUS FORM

JUDUL: AN ENHANCE WINDOWS BASED FTP CLIENT APPLICATION

SESI PENGAJIAN: 2004/2005

Saya

MUHD NURUL FAKHRI BIN HASHIM

(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

_____	SULIT	(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)
_____	TERHAD	(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)
/	TIDAK TERHAD	

(TANDATANGAN PENULIS)

(TANDATANGAN PENYELIA)

Alamat tetap : D3 JALAN JUARA

KG MANJOI 30020 IPOH

Nama Penyelia

Tarikh : 28/10/04

Tarikh : 28/10/04

CATATAN: ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.
^ Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

ADMISSION

I admitted that this project title name of

AN ENHANCE WINDOWS BASED FTP CLIENT APPLICATION

is written by me and is my own effort and that no part has been plagiarized without

citations.

STUDENT   :_____ Date : 28/10/04

(MOHD NURUL FAKHRI BIN HASHIM)

SUPERVISOR   :_____ Date : 28/10/04

(MRS. SYARULNAZIAH BT. ANAWAR)

ACKNOWLEDGEMENT

Firstly, I would like to thank the Almighty God; Allah for blessing me through these seven months duration of Project Sarjana Muda.

I would like to take chances to express thousand thanks and also appreciation toward my supervisor (Mrs. Syarulnaziah Anawar), she has given me the opportunity in order to achieve the Project Sarjana Muda goal in this unit. Without her support and encouragement, all of my work would be useless.

And also I would like to thank my lecturers from Faculty of Information Technology and Communication (Computer Network) and PSM committee for giving me the guideline in completing Project Sarjana Muda.

Finally limitless thanks to my family and all of my friends from BITS, BITM and BITC course for all their supports and encouragements toward completing this project. Thank you again to those involved in my Projek Sarjana Muda.

ABSTRACT

Projek Sarjana Muda is the final semester project for KUTKM student which is to implement all the knowledge being learned to this project. The project is named Fakhri-FTP Client Application. The FTP client application is a client-based system, which enable user's an easy way to transfer files over the LAN and WAN. The main purpose is to provide a secure transfer and more reliable way to transfer files especially for KUTKM's member. The conventional method for applying to KUTKM is reasonable because they didn't have their own FTP client application yet to transfer file between their staff. The new system will make it easier to transfer file and became more efficient and reliable system with added features that useful to users such as automatic determine type of transferring file either in ASCII and Binary and transmission mode either in active mode or passive mode. The FTP client application will be the best solution to improve security and connection speed of KUTKM's member to transfer files with the use of efficient and systematic method. The significance of this project are to make it takes full advantage of broadband connections and increases download speeds, makes it easy to define downloads and uploads of multiple files from various directories and sites, running at peak efficiency and at the same time conserves user resources. The project is developed using 'Waterfall Model' as the development methodology because it's well understood and fulfills the criteria of the project and tools to be used. As the result, the FTP client application can be summarized to help user quickly and securely incorporate automated, timed file transfers or transfer on demand, capabilities into any application, ability to move entire subtrees of data especially a large data and support for passive mode which allow TCP connections to be relayed on a firewall in such a way that intranet IP addresses are not revealed to the public network.

ABSTRAK

Projek Sarjana Muda merupakan projek semester akhir bagi pelajar untuk mengimplementasikan segala bentuk pengetahuan yang telah dipelajari terhadap projek ini. Projek yang dibangunkan diberi nama Fakhri-FTP Application. Aplikasi FTP client ini merupakan sistem berdasarkan pelanggan yang membantu pengguna untuk menghantar fail melalui LAN dan WAN. Tujuan penggunaan utamanya adalah untuk menyediakan penghantaran yang sulit dan selamat terutamanya untuk warga KUTKM. Projek ini bersesuaian dengan KUTKM kerana KUTKM masih belum mempunyai aplikasi FTP client yang khusus untuk menghantar fail antara mereka. Sistem yang akan dibangunkan ini akan membantu memindahkan fail dengan lebih efisien dan boleh dipercayai di samping dilengkapi dengan ciri-ciri tambahan untuk membantu pengguna seperti fungsi automatik jenis penghantaran fail samada ASCII atau Binary dan jenis transmisi samada dalam bentuk mod aktif atau mod pasif. Aplikasi FTP client ini juga akan membantu meningkatkan keselamatan dan kelajuan hubungan untuk warga KUTKM dalam penghantaran fail dengan lebih sistematik. Kepentingan projek yang dibangunkan ini adalah untuk menggunakan kelebihan hubungan jalur lebar melalui peningkatan kelajuan muat-turun, mudah untuk muat-turun dan muat-naik pelbagai jenis fail daripada direktori dan kawasan, pelaksanaan aplikasi secara optimum dalam masa yang sama menjimatkan penggunaan sumber memori pengguna. Metodologi projek ini juga dibangunkan berasaskan 'Model Air Terjun' kerana ianya mudah difahami dan memenuhi kriteria dan alatan yang digunakan dalam projek. Dengan ini dapatlah dirumuskan bahawa aplikasi FTP client ini dibangunkan untuk membantu pengguna memindahkan fail dengan cara yang lebih mudah dan selamat, melakukan penghantaran berdasarkan permintaan daripada pengguna, kecekapan berhubung dengan pelbagai aplikasi lain, keupayaan untuk memindahkan data yang besar dan menyokong penggunaan mod pasif yang membenarkan hubungan TCP dijalinkan melalui dinding api di mana alamat dalaman IP tidak didedahkan kepada rangkaian luar.

TABLE OF CONTENT

LIST OF TABLE

LIST OF FIGURE

ABBREVIATION

ASCII	-	American Standard Code for Information Interchange
CIFS	-	Common Internet File System
CNAME	-	Cannonical Name
CPU	-	Central Processing Unit
DHCP	-	Dynamic Host Control Protocol
DNS	-	Domain Name System
DPSS	-	Data Partitioned Across Multiple Server
EOF	-	End of file
FTP	-	File Transfer Protocol
GB	-	Gigabyte
GUI	-	Graphical User Interface
HCI	-	Human Computer Interaction
HPSS	-	High Performance Storage System
HTTP	-	Hyper Text Transfer Protocol
IMAP	-	Internet Message Access Protocol
IPC	-	Interprocess Communication
ISO	-	International Organization for Standardization
ISP	-	Internet Service Product
Kb	-	Kilobit
KB	-	Kilobyte
KUTKM	-	Kolej Universiti Teknikal Kebangsaan Malaysia
LAN	-	Local Area Network
Mb	-	Megabit
MB	-	Megabyte
MS-DOS	-	Microsoft Dos Operating System
MX	-	Mail Exchange
NAT	-	Network Address Translation

PAE	-	Physical Address Extension
POP3	-	Post Office Protocol version 3
RAM	-	Random Access Memory
RFC	-	Request For Comment
RPM	-	Red Hat Package Manager
SCTP	-	Stream Control Transmission Protocol
SDLC	-	System Development Life Cycle
SGA	-	Shared Global Area
SHMMAX	-	Shared Memory Segment Maximum
SHMMNI	-	Shared Memory Segment Minimum
SSH	-	Secure Shell
STP	-	Shielded Twisted Pair
WAN	-	Wide Area Network

LIST OF APPENDIX

CHAPTER I

INTRODUCTION

1.1 Project Introduction

This chapter describes about general introduction to FTP client application and presents the objectives and motivations for this project. It also lists the problem statement and proposed solution for developing and specifies the scope and significance of the project.

1.1.1 Project Description

The project that will be developed is called FTP Client Application. It is required to design, implement, install, configure and manage the basic component of computing resources. FTP or file transfer protocol is a files transfer and access program that operates on top of TCP/IP suite of protocols. Since FTP is based on TCP/IP, it is associated with the Internet and is actually the most used application.

Normally on a network such as the Internet, a "client" computer uses the FTP Client Software program to request a file from another computer (or "server") on the Internet.

The FTP client application allows access to a remote computer over the Internet either anonymously or using an ID and password in order to transfer files between the remote computer and a local computer.

File transfer protocol defines the procedure to transfer a file or a portion of a file from one system to another under the command of an FTP user. A user wishing to transfer a file engages in an interactive dialogue that allows for user authentication, file formats control, remote directory inquiry and file transfer commands. It allows bi-directional data flow between the user and the remote server. FTP Client can essentially do many things at one time and prevents workflow interruptions. Instead of refreshing the directory or starting a download and then waiting for this to finish before continuing, it is now possible to carry out other functions instantly and simultaneously.

1.1.2 Motivation

In a new development of Information and Communication Technology (ICT) that widely in each companies and departments, the computer networking plays the main tasks to connect the devices (as a computer and printer) and other networks to interact and sharing the data, information and hardware's each others. The developments have got many requirements to develop the networking.

FTP client application is research into methods making transferring files and directory upload, file and directory download, and directory navigation of remote and local file systems a reliable, widely available standard on many of the types of computers that are used for modern communication-oriented system.

1.1.3 Referenced Organization

The FTP client application that being develop is an application primarily for use by KUTKM's employee, thus the organization to be referred definitely is KUTKM.

1.1.4   Problem Statement

i.   **Compatibility**

FTP clients are included with most network operating systems, but most operating system clients (such as FTP.EXE on Windows) support a relatively unfriendly command-line interface. therefore it's very useful to develop an FTP client application that can operates under Windows operating system with adorable interface and easier command to transfer files between user.

ii.   **FTP Mode**

Data connections may be set up in two different ways, active and passive refer to the operation of the FTP server, not the client. In traditional FTP applications, user must decide to use active or passive mode which would almost certainly be blocked by a firewall on the remote or server side.

ii.   **FTP Site File Viewing**

Ftp client viewing is one of important component in ftp application. It enable user to view the detail on the file in the ftp server. Current ftp applications usually have a confusing ftp file reviewing and doest not provide detail like the user wants or recognize.

1.1.5   Proposed Solution

i.   **Compatibility**

This project must be developing using language programming that support Windows terminal with different installation method therefore it is compatible and bring the good performance to the user.

ii.   **FTP Mode**

The FTP client application will be developed using automatic mode which can determine whether active or passive mode being used on the remote or server side.

ii.   **FTP Site File Viewing**

The FTP client application will be build just like a windows explorer and provide description about the file being viewed.

1.1.6   Project Methodology

Basically, the main resources that needed to be used for gathering information such as research are very effective methodology to use. The details of information gathering methods will be presented in the next chapter.

The FTP client application will be developed using Microsoft Visual C++ as object-oriented programming language that being using under Windows platform. A system development methodology is chosen based on the criteria of the project and tools to be used. As the result the "Waterfall model" is chosen because it's well understood and assumes that all project requirements can be specified in advance.

The reasons for choosing "Waterfall model" as the development methodology because the "Waterfall model" main strength is on its simplicity.

Simplicity means that the development methodology is simple and easier to understand. Hence user can have a better and clearer guideline on what their shall do during development process. The information about system development methodology "Waterfall Model" will be explained in Chapter 3.

1.2   Objective

i.   User friendly

The objective of this project is to help user using FTP utilities safety, easy and specific with the interesting GUI.

ii.   Security

The project also provide safety security that keeps unauthorized users such as hackers, crackers, vandals, and spies out of the protected network, prohibits potentially vulnerable services from entering or leaving the protected network, and provides protection from various types of routing attacks.

iii.   Enhancement of property dialog

Improvement of property dialog such as location, local file manipulation, FTP site settings, increase throughput file transferring and decrease congestion on network.

iv.   Bidirectional file exchanges

The application also enables user to activate multiple file transfer and makes it simultaneous to send or receive file between user and remote user.

1.3   Scope

i.   User

This project can be used by personal computer, administrator and cooperate with security system that will be develop for the user to use. The administrator will set rules of permission for the ftp server therefore the user will used the ftp client application according to the permission.

ii.   **System**

The client program presents a graphical interface that allows a user to connect to the ftp server, list the files in the ftp server, retrieve and send files between server and client and terminate the connection to the server after the works done.

iii.   **Functionality**

This project will provide several functions as listed below:

a.   Automatic FTP mode

Determine whether active or passive mode being used on the remote or server side to make data connection securely and reliable.

b.   Installation method

The installation of this client program will be precedence for Windows platform because the development process is being used under Windows operating systems.

1.4   Project Priority

The FTP client application is specially designed for KUTKM's staff which has several significance as listed below:

1.4.1   Project Significance

i.   Takes full advantage of broadband connections and increases download speeds

ii.   Multiple concurrent connections and robust auto-resume-in-error makes it the choice of many professional who need to frequently transfer big size of data.

iii.   Makes it easy to define downloads and uploads of multiple files from various directories and sites.

iv.   Running at peak efficiency and at the same time conserves user resources.

v.   It comes with an easy to use interface and allows passive connections, resumes failed transfers, and offers an easy-to-use manager for controlling user access to files and file operations.

vi.   User can use this application under Windows operating system.

1.4.2   Area of Research

i.   The project will be developed under Graphical User Interface (GUI) and Human Computer Interaction (HCI) which enable drag and drop and Multilanguage support function to transfer file between user and remote user. The FTP client application will become useful tools to transfer file because it's easier than other FTP client application and more user friendly.

1.5   Conclusion

This chapter gives an overview to the project and explains the purpose of this project to be developed. It presents the primary objectives and specifies the scope of this project. It also focuses on problem statements and proposed solution to manage the basic component of computing resources that will be the contribution of this project. The next chapter will be describing about literature view through the case study about the ftp client and the methodology that will be used.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter explains an overview about case studies and significance of literature review. It discuss about theory that will be used in the project and method that are used to gather information through recent research. The existing FTP client applications are being used as case studies for this project.

2.1.1 Information Gathering Methods

Basically, there are few methods that are being used for gathering information such as interview, sampling and research. However, these methods should be applied depends on the information needs.

In order to collect information to develop FTP client application, the resources include electronic media, printed media, and guidance from the lecturer.

The fastest growing and the biggest source of information and knowledge are on the Internet. It provided a lot of information such as project sample, methodologies for the system development, the best technique and method to develop the system, development tools and suitable software and hardware. As for project sample, information such as the necessary requirements, necessary data, form sample and other successfully gathered.

Printed media such as journal articles also useful because it provided detailed information. Usually it offers a relatively concise, up-to-date format of research and become the most relevant and reliable research.

Books offer a good starting point to find more detailed sources. It less up-to-date but provides detailed information. Information like development tools, development strategy, authoring tools and other can be easily gained.

2.1.2 Significance of Previous Research

The previous research has significance about to find solutions for the problem determined more information, gain detailed about the area of research and provide many idea and suggestion as references for the research to develop the project.

2.2 Case Study

2.2.1 Overview of FTP client application

File transfer mechanisms were first proposed in 1971 and were developed for implementation on hosts at MIT. The protocol was officially published as RFC 114[6]. Since those benign days, the protocol has been refined for efficiently and reliably transferring files among hosts and allowing convenient use of remote file storage capabilities. The current official document is published as RFC 959.

The FTP client session is not secure if client use a secure host session configured to use FTP to transfer files. The FTP client implements RFC2640 [6], which addresses the Internationalization (I18n) of the File Transfer Protocol to support multiple character sets and languages.