LAN Searching System

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ABSTRAK

Di masa kini, aplikasi carian adalah penting untuk membantu pengguna dalam mencari fail-fail atau dokumen penting. Dengan ribuan fail dalam komputer, tidak dapat dinafikan bahawa sukar untuk mencari fail atau folder secara manual dari satu komputer ke satu komputer kerana boleh pembaziran masa jika fail yang dicari tidak ditemui. Oleh kerana itu, sebuah kajian berkenaan sistem pencarian ini dilakukan untuk menghasilkan suatu prototaip sistem carian yang membolehkan pengguna untuk mencari fail di komputer localhost atau komputer lain pada jaringan yang sama. Kaedah atau teknik yang digunakan dalam membangunkan Sistem Carian LAN adalah Microsoft Windows Application Programming Interface (API) yang di lakukan di atas platform Windows. Sistem ini telah dibangunkan dengan menggunakan Microsoft Visual Basic 6.0 (VB 6.0).Pembangunan Sistem Life Cycle (SDLC) menjadi metodologi utama yang digunakan sebagai aliran proses untuk projek ini. Terdapat enam tahap yang dikelaskan dalam metodologi SDLC iaitu Pengenalan Projek dan Pemilihan, Projek Inisiasi dan Perancangan, Analisis, Rekabentuk, Pelaksanaan dan Penyelenggaraan yang mana kesemuanya telah dibincangkan secara terperinci dalam laporan ini.

ABSTRACT

Nowadays, searching application is important in order to help user in searching their important files or documents. With thousands of files in the computer, it cannot be denying that difficult to search files or folders manually from one computer to one computer because it can be a poor time management if the files is not met. Therefore, a study of LAN Searching System was carried out to create or develop a prototype of searching system that allows the user to search files on their localhost computer or other computer on network that connected together. The method or technique that is used in developing the LAN Searching System is Microsoft Windows Application Programming Interface (API) ran in Windows platform. This system has been developed using the advantage provided by the Microsoft Visual Basic 6.0 (VB 6.0). System Development Life Cycle (SDLC) will be the main methodology used as the process flow for this project. There are six phases being classified in SDLC methodology which is Project Identification and Selection, Project Initiation and Planning, Analysis, Design, Implementation and Maintenance where has been discussed detail in this report.

TABLE OF CONTENT

CHAPTER	TITLE	PAGE

LIST OF FIGURE

CHAPTER 1

INTRODUCTION

1.1 Introduction

Searching data in a computer is the activity of finding any kind of forgotten or misplaced files either in a specified computer or computer in network. Searching application is an easy way for user to search any files and folders at any locations in their computer. A collection of data or information that has a name, called the filename. Almost all information stored in a computer must be in a file. There are many different types of files such as, data files, text files, program files, directory files, picture and so on.

This system is based on client-server concept, where the server is use to searching file on each client on Local Area Network (LAN). Searching application provide several search criteria where the user can specify it by themselves. For example, the user can search files by name, or type. Searching computer to find necessary files is a rather common procedure that every PC user performs repeatedly, perhaps and daily. Most of the user use standard built-in Windows solution for this task. For most simple searches it works great, however, it frequently fails or is inadequate when performing complex searching tasks.

Naturally, there is a desire to have more advanced and powerful file searching application with extended capabilities that would look and work just like built-in solution from Microsoft.

Then it would be able operate such software without any additional training. Thus, there are exists various kind of software that makes the file searching more reliable and effective. A LAN Searching System is a system in order to develop a prototype of searching application. It also a program that accentuate a security of data, and only the admin that have a User ID and password can use it, as long as their computer are connected to network.

1.2 Problem Statement

These are many of file searching utilities have been produce in open source and windows environment. These utilities are so important for users in order to search their significant files or documents. With thousands of files in the computer, there surely come a time when need to locate one.

Nowadays, it cannot be denying that difficult to search files or folders from one computer to one computer because it can be a poor time management if the files is not met. Sometimes, the users always faced with problems during searching process such as fails or insufficient when performing complex searching tasks and also cannot search files in the network because the utilities not provide that function. This LAN Searching System is developing to help the user to search and detect files or folders that have been saving in those computers on localhost or network.

1.3 Objective

There are a few objectives that need to fulfill in developing the system. The objectives are as below:

a) To develop a prototype of searching files system using client-server architecture.

b) To implement a real-time searching method to system.

1.4   Scope

The scopes of developing this project are:

a) Allows communication between server and client.

b) The LAN Searching System implemented in Windows XP environment.

c) Communication between client and server in same LAN, but not apply VLAN.

d) The data that being used for this system is for Technical FSKKP UMP unit.

e) The Searching LAN Searching System developed by using Microsoft Visual Basic 6.0.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, all related subject with this project are studied. They are two main sources which are from book that related with programming language Visual Basic 6.0 and internet. This chapter also described about the technique, internet protocol, IP Addresses and language that have been used in order to complete this system.

The research is very important to this project, it can help to build up the searching file system. The research about searching file must been done and the examples that related to the searching file tools must been found from the internet before build up the project.

2.2 Peers-to-Peer Architecture

A peer-to-peer network, also called a workgroup, is commonly used for home and small business networks [1]. In peer-to-peer networking, all participants in a network are approximately equal [2].

The peer-to-peer architecture is a way to structure a distributed application so that it consists of many identical software modules, each module running on a different computer [3]. The different software modules communicate with each other to complete the processing required for the completion of the distributed application [4].

In general, a peer-to-peer network is most appropriate for arrangements where there are less than ten computers located in the same general area. The computers in a workgroup are considered peers because they are all equal and share resources among each other without requiring a server [5]. Each user determines which data on their computer will be shared with the network. Sharing common resources allows users to print from a single printer, access information in shared folders, and work on a single file without transferring it to a floppy disk [1].

The peer-to-peer architecture is a way to structure a distributed application so that it consists of many identical software modules, each module running on a different computer [3]. The software of most peer-to-peer applications can be divided into the three layers, which are the base overlay layer, the middleware layer, and the application layer. The base overlay layer deals with the issue of discovering other participants in the peer-to-peer system and creating a mechanism for all the nodes to communicate with each other [3]. This layer is responsible for ensuring that all the participants in the nodes are aware of the other participants. Functions provided by the base layer are the minimum functionality required for a peer-to-peer application to run [3].

The middleware layer includes additional software components that could be potentially reused by many different applications [3]. Function included in this layer include the ability to create a distributed index for information in the system, providing publish subscribe facility and security services [3]. The functions provided in this layer are not necessary for all applications, but they are developed to be reused more than one application [3]. Finally, the application layer provides software packages intended to be used by human users and developed as to exploit the distributed nature of the peer-to-peer infrastructure [3].

The peer-to-peer (P2P) architecture is a more flexible architecture, where each computer is able to have equivalent responsibilities, and so they are referred to as peers. Peer-to-peer applications use many computers to solve a problem and thus are likely to provide a more scalable solution than a server-centric solution, which relies on a single computer to perform the equivalent task [6]. In general, using multiple computers would tend to improve the scalability of the application

compared with using only a single computer [6]. Peer-to-peer architecture provides for increased reliability and scalability in a more cost efficient manner and allows for interoperation across multiple administrative domains [6].

2.3   Transmission Control Protocol / Internet Protocol (TCP/IP)

Transmission Control Protocol/Internetworking Protocol (TCP/IP) is a type of internet protocol used as a protocol in UMP network environment. It is responsible for the delivery of packets between host computers.

IP is a connectionless protocol. It does not establish a virtual connection through a network prior to connecting transmission as it is the job for higher level protocols [7]. TCP/IP is a set of protocols, or protocol suite that defines how all transmissions are exchanges across the internet [8]. An internet under TCP/IP operates like a single network connecting many computers of any size and type. Internally, an Internet is an interconnection of independent physical networks such as LANs linked together by internetworking devices.

The TCP/IP protocol is made of five (5) layers: physical, data link, network, transport and application [9]. At the transport layer, TCP/IP defines two protocols, Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) [9]. At the network layer, the main protocol defined by TCP/IP is Internetworking Protocol (IP), although there are some others protocols that support data movement in this layer [9]. Internetworking Protocol (IP) is the transmission mechanism used by TCP/IP protocols [10].

TCP/IP is widely used for connectivity to the Internet and as a standard routable protocol for an organization-wide internetwork (a collection of private networks that are all connected and span an organization) [11]. TCP/IP has become the standard protocol used for interoperability among many different types of computers [11]. This interoperability is one of the primary advantages to TCP/IP [11]. Because of its popularity, TCP/IP has become the standard for Internetworking [11]. Historically, the size and speed of TCP/IP had been its two primary

disadvantages [11]. TCP/IP is a relatively large-sized protocol stack, which can cause problems in Microsoft MSDOS-based client computers [11].

However, on graphical user interface (GUI)-based operating systems, such as, Windows 95 or Windows 98, the size is not an issue and the speed is about the same as Internetwork Packet Exchange (IPX). TCP/IP is used by UMP because it is a protocol that ensures reliable, ordered, and unduplicated delivery of data, handles flow control, connection oriented and provides explicit connection creation and termination. Others advantages of TCP/IP are:

a) Very well suited for medium to large networks.
b) Designed for routing.
c) Used worldwide for connecting to Internet.

2.4   IP Address

An IP address is an identifier of every computer and other devices such as gateway, router and bridge. It is a 32-bit number that is written in four different sections where each section represents different information that was being created. An IP address is unique to avoid it from overlapping or intersecting with other IP address that is already being used.

2.5   NetBEUI Protocol

NetBEUI is provided in all current versions of Windows [11]. This protocol is the simplest and easiest to configure of the protocols provided. It is a very fast and efficient protocol [11]. NetBEUI is mainly used in small peer to peer networks. NetBEUI is not a routable protocol [11].

The advantages of using NetBEUI include its small stack size (important for MS-DOS-based computers), its speed of data transfer on the network, and its compatibility with all Microsoft-based networks [11].

The major disadvantage of NetBEUI is that it does not support routing [11]. It is also limited to Microsoft-based networks [11]. The third-party products are manufactured by companies that are independent of Microsoft. Microsoft makes no warranty, implied or otherwise, regarding the performance or reliability of these products [11].

2.6   Client/Server Architecture

The term client/server was first used in the 1980s in reference to personal computers (PCs) on a network [12]. The actual client/server model started gaining acceptance in the late 1980s [12]. The client/server software architecture is a versatile, message-based and modular infrastructure that is intended to improve usability, flexibility, interoperability, and scalability as compared to centralized, mainframe, time sharing computing [12].

Client/server architecture is any network-based software system that uses client software to request a specific service, and corresponding server software to provide the service from another computer on the network [13]. "A client is defined as a requester of services and a server is defined as the provider of services [14]. A single machine can be both a client and a server depending on the software configuration". In client/server architecture, an application is modeled as a set of services that are provided by servers and a set of clients that use these services.

The simplest client/server architecture is called a two-tier client/server architecture where an application is organized as a server (or multiple identical servers) and a set of clients [15]. With two-tier client/server architectures, the user system interface is usually located in the user's desktop environment and the database management services are usually in a server that is a more powerful machine that services many clients [15]. Processing management is split between the user system interface environment and the database management server environment [15]. The database management server provides stored procedures and triggers [15].

There are a number of software vendors that provide tools to simplify development of applications for the two tier client/server architecture [16]. One major advantage of the client/server model was that by allowing multiple users to simultaneously access the same application data, updates from one computer were instantly made available to all computers that had access to the server [17]. However, as the number of clients increased, the server would quickly become overwhelmed with client requests [17].

Also, because much of the processing logic was tied to a monolithic suite of applications, changes in business rules led to expensive and time-consuming alterations to source code [17]. Although the ease and flexibility of two-tier products continue to drive many small-scale business applications, the need for faster data access and more rapid developmental timelines has persuaded systems developers to seek out a new way of creating [17].

2.7   Current System

Before develop the LAN Searching System, the research about the existing system, comparison about the current technique, methods and tools have been done to get the general idea about the system that gone to be develop.

2.7.1   Instant File Name Search 1.3
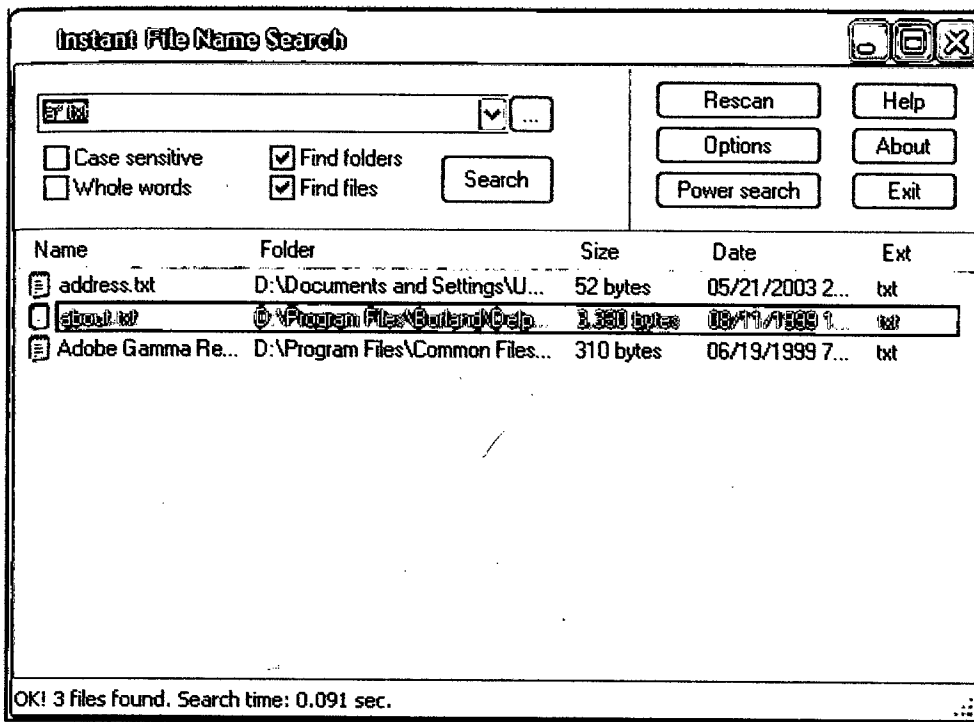
Figure 2.1: Current system, Instant File Name Search 1.3

Instant File Name Search 1.3 is a software tool to find files by their content. Instantly search files by name on your computer or local network. It provides content search (full-text search) functionality based on Microsoft Indexing Service included in Windows 2000/XP/2003. Instant File Name Search scans a computer for all files to facilitate lightning-quick searches.

The rather bland-looking interface has few buttons and boxes, so searching process will get oriented in no time. The program locates files and folders by a keyword or a filter. It also, although the software claims it can search for files over a LAN, but it never managed to successfully do so. Still, since it doesn't cost a dime.

2.8   Programming Language

The language that had been chosen in developed this system is Microsoft Visual Basic 6.0. This language is chosen based on the advantages it offers. For developing the LAN Searching System, the study on the Microsoft Visual Basic has been made.

2.8.1   Introduction to Visual Basic (VB)

Visual Basic is an object-oriented programming development system for creating applications that run under any of the Microsoft Windows environments [18]. It has the following two major components:

(i) An extensive collection of prewritten tools, called controls [18]. These controls are accessible as icons within a graphical programming environment for creating customized windows components [18].

(ii) A complete set of program commands, derived from Microsoft's implementation of the classical Basic programming language [18]. The command set includes features that embrace contemporary programming practices [18].

The overall approach to Visual Basic programming is twofold [18]. The first one is to create a user interface that is appropriate to the particular application at hand [18]. The second is to add a group of basic instructions to carry out the actions associated with each of the controls [18].

2.8.2 Visual Basic Program Development Process

In general terms, the process of writing a Visual Basic program consists of several steps [18]. There are:

(i) Decide what the program is supposed to do. Be specific as possible [18].

(ii) Create user interface, using Visual Basic's program development tools [18]. This is generally involves two related activities [18]. They are drawing the control within their respective forms and the other one is defining the properties of each control [18].

(iii) Write the Visual Basic instructions to carry the actions resulting from the various program events [18]. This generally involves writing a group of commands, called an event procedure, for each control (though certain controls, such as labels, do not have an event procedures associated with them) [18].

(iv) Run the program to verify that it is executes correctly [18].

(v) Repeat one or more steps if the results are incorrect, or if the program does not respond as been intended [18].

2.8.3 Object-related Concept

There are several terms in Visual Basic that used in the events and the event procedure [18]. There are:

(i) Form: In VB, a window is called a form [18]. Each form includes a title bar at the top [18]. A form may also include a menu bar, a status bar, one or more toolbars, and slide bars [18]. A user area (called client area) occupies the remaining space within the form [18].

(ii) Controls: The icons with which the user interacts are called controls [18]. Commonly used controls include command buttons, option buttons, check boxes, labels, text boxes, picture boxes and menus [18]. The user will typically activate a control to produce an event [18].

(iii) Objects: Forms and controls are referred to collectively as objects [18]. Most objects are associated with events; hence, objects may include their own unique event procedures [18]. Objects are also associated with their own properties and methods [18].

(iv) Properties: Objects include properties that generally define their appearance or behavior [18]. The choice of properties depends on the type of object [18]. For example, the name, the caption, height, width, background color, location and font are some of the more common properties associated with a command button [18].

(v) Method: Some objects also include special program statements called methods [18]. A method brings about some predefined action affecting the associated object [18]. For example, show is a method that can be used with a hidden form to make it visible [18].

2.8.4 Advantages of Visual Basic (VB)

Visual Basic is chosen as the programming language in this project development based of few criteria's that it's provides. Visual Basic is a simple and easy to learn programming language. Things that may be difficult to program with other language can be done in Visual Basic very easily. With Visual Basic the user can develop windows based applications and games. Visual Basic is much easier to learn than other language, and yet it is one of the powerful programming language. Besides, the structure of the basic programming language is very simple, particularly as to the executable code.

CHAPTER III

METHODOLOGY

3.1 Introduction

Project Methodology is an important part to design and develop project especially in LAN Searching System. It will show what are the methodologies and methods that will be used to develop and build up the system. Before choose the suitable methodology for the project, the developer is considering made a research that related with the project.

Methodologies are comprehensive, multiple-step approaches to systems developments that will guide people work and influence the quality of the final product. Most methodologies incorporate several development techniques. The systematic procedure by which a complex or scientific task is accomplished is called as techniques. Techniques are particular processes that will follow by to ensure that the work is well thought-out, complete and comprehensible to others.

3.2 Project Method

The project method that will going to use is System Development Life Cycle (SDLC). SDLC is a common methodology for the system use to develop, maintain and replace information system.

SDLC provides a consistent framework of tasks and deliverables needed to develop systems. The SDLC methodology may be condensed to include only those activities appropriate for a particular project, whether the system is automated or manual, whether it is a new system, or an enhancement to existing systems. The SDLC methodology tracks a project from an idea developing information systems through a multi step process from investigation of initial requirements through analysis, design, implementation and maintenance. There are many different models and methodologies, but each generally consists of a series of defined steps or stages. There are six phases being classified for SDLC methodology for this project. The phases are:

a) Project Identification and Selection.
b) Project Initiation and Planning.
c) Analysis.
d) Design.
e) Implementation.
f) Maintenance.

The figure 3.1 below showed the flow of the Systems Development Life Cycle (SDLC) that being used.
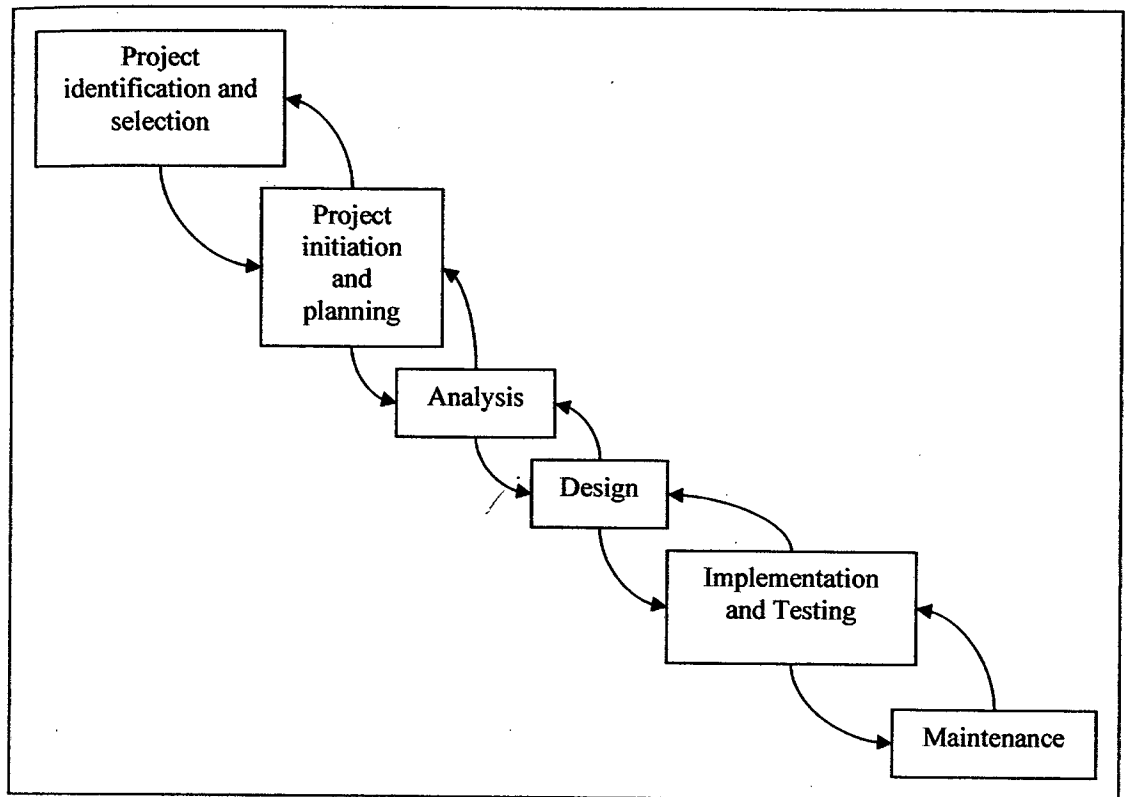
Figure 3.1: The System Development Life Cycle

3.2.1 Project Identification and Selection

In the first phase of the SDLC is the aim to find the suitable project name by referring to the supervisor and also the opinion from other lecturers. Information about the system that has been developed is collected in this phase. This is done through surveys on the internet about comments on searching files in network or in localhost and through a study on searching files or folders system that used in Windows XP.