Online Psychological Testing System (OPTS)

Name	:	Tan Kien Leong
Metric No.	:	WEK990233
Supervisor	:	Pn. Salimah Mokhtar
Moderator	:	Mr. Teh Ying Wah

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ABSTRACT

Online Psychological Testing System (OPTS) is an Internet-based system aim at provides a central place on the Internet to give information about the practice of psychology knowledge to the user.

The system architecture for OPTS, which is developed in web-based can be divided into client (web browser), web server and database server.

Before developing OPTS, researches have been done to understand various new concepts, which are relevant to this project. Among the topic are psychological questions, Internet, client/server concepts and other relevant topic. Questionnaire is used to get the feedback from the students in University of Malaya about their opinions with this project. Methodology used to develop this application is prototyping, where part of the system can construct quickly to understand and clarify the requirements and designs of the system.

OPTS can be divided into 2 sections, which are the Student and Administrator. At the end of the project, OPTS will expect to have security checking for authorized user, develop database to keep all the records, create database maintenance and creation of interactive homepages to deploy information to students.

OPTS is developed using Active Server Pages technologies on the Microsoft WindowsNT platform utilizing database created and stored from Microsoft Access 2000. It is believed that this web-based database system will gradually become an essential to everyone in the future.

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()nline Psychological Testing System (OPTS)

CHAPTER 1 INTRODUCTION

1.1 Project Overview

Nowadays, psychology has become important in our daily life. In Malaysia, this phenomenon hasn't become popular. Psychological testing represents one of the most important contributions of behavioral science to our society. Nevertheless, psychology will not only provide medical diagnosis among people, but it also can let us know deeply ourselves through some psychological testing question.

Since the psychology is getting more important nowadays, the Online Psychological Testing System (OPTS) is developed. It allows people to test themselves online. It was created to provide a central place on the Internet to give information about the practice of psychology to the user. It provides information about psychological testing in category friendship, family, nature, behavior, and career. This information can be helpful to consumers, psychologists, undergraduate and graduate students of psychology, and anyone interested in accurate information about the practice of psychology. It is designed specially for those people whom are very busy or shame to go to have psychological treatment. People can browse the information online anytime (24 hours) without leaving their house.

The project will emphasize on how the information required by the customers can be retrieved from the database server. The required information needs to be match with the data stored in the database before it can be retrieve.

1.2 Objectives and Significance of the Project

1.2.1 Aims and Objectives

The aim of this project is to provide sophisticated system in order for user easily tests the psychological question. Perhaps, it may consist of normal **OPTS** in Internet but the additional of some special features and functions become this system more unique.

To achieve this aim, objectives are set out as below:

- To achieve a simple and user-friendly system that will be carefully implement in order to draw all level of users to easily use the Web site, even for the first time to do testing.
- To investigate into the techniques and skills to publish and disseminate information on the web-based environment and produce a research document on web design techniques.
- To display and upload questions including the analysis.
- To expand the knowledge about psychology. Through OPTS, user is able to access to the website and provide fully available services, which operate 24 hours a day, 7 days a week, 365 days a year.

1.2.2 Relevance

The project is relevant because online psychology has suddenly opened a whole new avenue for people to test themselves. And in Malaysia, the online psychology testing phenomenon is slowly but surely catching on too.

In short, the benefits of OPTS can be summarized as follows:

- Reduction of time required to search for the psychology question
- · Timely data and information for more efficient psychology question search
- Availability of clear, concise and reliable information for better psychology question search
- To provide abundant information for local and overseas customers
- For easy analysis for the question through Internet
- Provide an easy-to-use and user friendly graphical user interface.

1.2.3 Significance

This project is significant because the World Wide Web platform independence, common browser graphical user interface (GUI) and easy deployment will enable companies to bring rich and powerful applications within reach of any customer with access to a browser.

In order to improve customer services, the project will provide comfortable environment to its customers. Customers may access OPTS from the comfort of their house, office or wherever their laptop takes them. They can easily escape from facing traffic jam problems, parking problems, smoke and air pollution environment. Customers may get the latest information interactively, without walk-in to the real shop and deal with the psychology book or take medical.

1.3 Project Scope

The coverage of this system is all types of psychology information. The target customers are psychology information seekers in Malaysia.

This project will cover the following areas:

- Develop a database system that capability to house all data pertaining to the system.
- Develop a collection of interactive web pages as interface of psychology question database system.
- Enable users to register and login easily as a member.
- Allow users to upload question to the system.
- Offer links to other resource as supporting.

1.4 Research Plans

Below are some of the plans used in this project:

- Research will begin with an analysis of the current online psychology testing system in Internet. This will provide a good understanding of the online system and the groundwork for the system design.
- The information related with psychology can be gathered from the journals, books, newspapers and magazines.
- A review on client/server architecture is also important. Besides, a study of available software and tools that can be used in this project will also be conducted.
- 4) Writing a research proposal for the outline of the project.
- 5) After identifying all the requirements and overall objectives for the system, a quick design then emerges. A quick design consists of the features needed by the software, steps to develop the software and others.

-4-

1.5 Expected Outcome

The expectation of this project are summarized as below:

- There are two main sections in OPTS Users section and Administrator section.
- Consist of Web site application, which contains a server site, web server, database server and client side.
- Simple and user friendly system:
- Standard graphic user interface across all web pages and also some interface across multiple browser display.
- Development of database to keep all the questions.
- Psychology information is list by category.
- Users can make question through the form and upload to internet.
- Users can make suggestions / comments through e-mails or mail to the address which specified by the administrator.

1.6 Project Limitations

The project would not cover all types of psychology question that available in the market.

1.7 Project Schedule

To achieve the project objectives, a project schedule is planned to manage the time for the tasks that needed to be accomplished.

Key Activity	Jun 2001	Jul 2001	Aug 2001	Sept 2001	Oct 2001	Nov 2001	Dec 2001	Jan 2002	Feb 2002
System Study									
Requirements Analysis									
Design									
Coding				i de la companya de la compan					
Testing									
Documentation	建度								

T	able	1.1:	Proi	iect	Sched	ule
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CHAPTER 2: LITERATURE REVIEW

In the process of developing OPTS, the part of the research is important. Research has been done to understand various new concepts, which especially focus on the information and information system. Study the fields of Internet, World Wide Web (WWW), Web based application component; client/server concepts and architecture are also important. A research also has been carried out to compare the current online psychological testing system.

2.1 Introduction

2.2 What is Information?

Information is data that have been put into a meaningful and useful context and communicated to a recipient who uses it to make decision. Information involves the communication and reception of intelligence or knowledge. It apprises and notifies, surprises and stimulates, reduces uncertainty, reveals additional alternatives them into action. [1]

Information consists of data, images, text, documents, and voice, often inextricably intertwined, but always organized in a meaningful context. Notice that data to be processed can be input, stored, or both. Another point to remember is the cycle of information. Data are processed through models to create information; the recipient receives the information and then makes a decision and takes action; this creates other actions or events, which in turn create a number of scattered data that are captured and serve as input; and the cycle starts all over again. [1]

2.3 Information System

An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization. Information system may also help managers and workers analyze problem, visualize complex subjects, and create new product. [1]

All information systems are made up of the six building blocks of input, models, output, technology, database, and controls. There are basic building blocks of all information systems. [1]

2.3.1 Input Block

Input represents all the data, text, voice, and images entering the information system and the method and media by which they are capture and entered. Input consists of transactions, requests, instructions, and messages. Generally, input allow protocol and format for proper content, identification, authorization, layout, and processing. [1]

2.3.2 Models Block

This block consists of logical-mathematical models that manipulate input and stored data, in a variety of ways, to produce the desired results of output. The models block also contains a description of some of the more popular modeling techniques used by system analysts to design and document system specifications. These techniques include decision tables and trees, structured English, data flow diagrams and others. [1]

2.3.3 Output Block

The product of the information system is output – quality information and documents for all levels of users. To large extent, output is guiding and influencing block of the other blocks. If this block's design does not meet the needs of the user, then the other blocks are of little consequence. Often, input and output are interactive. Input becomes output; output becomes input. Output can be produced on screens, printers, audio devices, or microfilm. [1]

2.3.4 Technology Block

Technology is the "toolbox" of information system work. It captures the input, drives the models, stores and accesses data, produces and transmits output, and helps control the total system. It does all the toil and grunt works and binds all the building blocks together. Technology consists of three main components: the computer and auxiliary storage, telecommunications, and software. [1]

2.3.5 Database Block

The database is where all the data necessary to serve the needs of all the users are stored. The database is treated from two viewpoints, physical and logical. The physical database is made up of storage media, such as tape, disk, diskettes, cassettes and others. This is how data are actually stored. The logical side of database is about how to search for, associate, and retrieve the data stored to meet specific information needs. [1]

2.3.6 Controls Block

All information systems are subject to variety of hazards and threats. Some of the controls are designed into system to ensure its protection, integrity, and smooth operation. [1]

2.4 What is Internet?

The Internet is an international computer network that connects millions of computers in just about every country in the world. It is understood that about 35 million people are connected to Internet. The Internet is a networked formed by cooperative interconnection of computer networks. [2]

In fact, the word "Internet" was coined from the words "interconnection" and "network". What this means is that many, many connecting networks, usually made up of differing kinds of computers and different technologies, are interfaced together so smoothly that the individual parts appear to be one network. This is accomplished by connecting networks using the same protocol: TCP/IP (transmission control protocol/internet protocol). TCP/IP is a common set of rules that allow the variety of systems to communicate. However, computers on non-TCP/IP networks can access the Internet through gateways that perform the necessary protocol translations and allow appropriate communication.

The Internet began in1969 when the US Department of Defence created an experimental computer network originally called the ARPANet. The ARPANet was designed to support military research and in particular, research about how to build computer networks that could withstand partial outages, meaning it would continue to function if one or more computer on the system were eliminated due to a bomb attack, backhoes cutting cables, etc.

There is no central authority, no governing body nor any overall organizational scheme to the vast amounts of information available. The Internet transfers/accesses data in five different ways: gopher, telnet, FTP (file transfer protocol), HTTP (World Wide Web) and e-mail. Each computer that is connected to the Internet is provided a unique address or URL (Uniform Resource Locator).

The main uses of Internet are do research, download software, education, business, Telemedicine, entertainment, send mail, IRC (Internet Relay Chat), news group, get information and etc.

2.5 What is World Wide Web?

WWW is an Internet Navigator tool through which the Internet users can access the other front ends, Navigators, information, services and resources. One of the major problems with the existing Internet was very unorganized and unconnected. It was a vast library that had no central index. It was a treasure house of information, but unfortunately no way of accessing the information. The solution to this problem that emerged is known as WWW (World Wide Web). [3]

Englishman Tim Berners-Lee invented the World Wide Web in 1990 while working at CERN, the European Particle Physics Laboratory. At first, the Web was set up as a way for scientists to share information with each other. It has since become a worldwide success because it makes it very easy for computer novices to browser through text, graphics, and multimedia. [4]

WWW is an information system based on hypertext, which offers a means of moving from document to document (usually called to navigate) within a network of information. WWW uses the concept of a page for viewing information. Each page is actually a single text file written in something called Hypertext Markup Language, or HTML. This HTML file is retrieved from a remote computer, know as the HTTP Server, by a WWW browser, and is used to determine the appearance of that particular WWW page. An HTML document can contain pointers to other HTML documents, graphics, files, sounds, and even description for buttons and other onscreen elements for displaying data. This interconnection of HTML documents on computers all over the Internet, each containing pointers to other HTML documents on other computers on the Internet, is where the term "web" came form. [5]

2.6 Web-based application component

Developing the web-based application relies on many network and application components working together to deliver the information to the requesting client.

2.6.1 Web Browser

A browser is a software program that acts as an interface between the user and the inner workings of the Internet, specifically the World Wide Web. A browser is also referred to as a web client that acts in conjunction with a web server. The browser acts on behalf of the user by contacting a web server and requesting information and receiving information and then displaying it on a screen. [6]

There are many different browsers. All perform the same basic functions (transferring hypertext document), but many have specific features that are unique. Some commonly used browsers include Microsoft Internet Explorer, NCSA Mosaic, Netscape Navigator and Spry Mosaic. The first browser for the Web was Mosaic. This browser developed by Mark Andreossen in 1993.

Browsers can be text-based or graphical. A graphical browser allows the user to see more of what the WWW has to offer (graphics, photographs and multimedia) and can make the Internet easier and more intuitive to use.

2.6.2 Web Server

A web server is a software program running on a computer connected to the Internet. The term ' web server' is also used sometimes to refer to the computer on which the software is running. More often, the computer is called a server and is running more software than just web server software. Some examples of Web Servers are MS Internet Information Server for Windows NT, Personal Web Server for Windows 98. [7]

The purpose of a web server is to respond to request for WWW files. When you surf the WWW, you are sending requests to web servers all over the country or world. The servers are sending back various files that are used to construct the web pages you see. [8]

When a Web browser tries to access the information stored in a database, Web server acts as the client to the Database server. The Web server accepts the query from the browser and passes the query to the Database server. Moreover, the Web server also formats the results into HTML, and sends the result back to the browser.

2.7 Web Programming Technologies Consideration

2.7.1 Active Server Pages (ASP)

An Active Server Page (ASP) is an HTML page that includes one or more scripts (small embedded programs) that are processed on a Microsoft Web server before the page is sent to the user. An ASP is somewhat similar to a server-side include or a Common Gateway Interface (CGI) application in that all involve programs that run on the server, usually tailoring a page for the user. Typically, the script in the Web page at the server uses input received as the result of the user's request for the page to access data from a database and then builds or customizes the page on the fly before sending it to the requestor. [9]

ASP is a feature of the Microsoft Internet Information Server (IIS), but, since the server-side script is just building a regular HTML page, it can be delivered to almost any browser. You can create an ASP file by including a script written in VBScript or JScript in an HTML file or by using ActiveX Data Objects (ADO) program statements in the HTML file. You name the HTML file with the ".asp" file suffix. Microsoft recommends the use of the server-side ASP rather than a client-side script, where there is actually a choice, because the server-side script will result in an easily displayable HTML page. Client-side scripts (for example, with JavaScript) may not work as intended on older browsers. [10]

An Active Server Page is a standard HTML file that has been extended with additional features. It contains HTML tags that will be interpreted and displayed by a Web browser. Anything that could normally place in an HTML file - Java applets, blinking text, client-side scripts, client-side ActiveX controls can also place in an Active Server Page.

An Active Server Page has four important features that make it unique:

- S Can contain server side scripts with the server-side scripts, users can create Web pages with dynamic content.
- S Provides a number of built in objects by using the built in objects accessible in an ASP, users can make their scripts much more powerful. These objects allow users to retrieve information from and send information to browsers.
- S Can be extended with additional components ASP comes bundled with a number of standard server-side ActiveX components. These components allow users to do such things as determine the capabilities of different Web browsers or includes a page counter on a Web page.
- S Can interact with a database By using a special collection of objects, the ActiveX Data Objects (ADO), users can use SQL within the Active Server Pages.



Figure 2.1 How Active Server Pages interact in a Web-based application.





2.7.2 Common Gateway Interface (CGI)

The Common Gateway Interface (CGI) is a standard way for a Web server to pass a Web user's request to an application program and to receive data back to forward to the user. When the user requests a Web page (for example, by clicking on a highlighted word or entering a Web site address), the server sends back the requested page.

However, when a user fills out a form on a Web page and sends it in, it usually needs to be processed by an application program. The Web server typically passes the form information to a small application program that processes the data and may send back a confirmation message. This method or convention for passing data back and forth between the server and the application is called the common gateway interface (CGI). It is part of the Web's HTTP protocol. [11]



Figure 2.3 The concept of CGI programs

The common gateway interface provides a consistent way for data to be passed from the user's request to the application program and back to the user. This means that the person who writes the application program can makes sure it gets used no matter which operating system the server uses (PC, Macintosh, UNIX, OS/390, or others). It's simply a basic way for information to be passed from the Web server about your request to the application program and back again. Active Server Pages instead runs in the same process as the Web Server, more handling client requests faster and more efficiently. It is much easier to develop dynamic content and Web applications with Active Server Pages.

Besides, ASP also does better than other web application tools. ASP leverages the existing skills and knowledge, data sources, components, and applications to quickly bring them to the Web. Active Server Pages is based upon the leading industry standards, making it easy to build, maintains, and evolves powerful interactive Web applications.

2.8 Programming Language & Scripting Language Consideration

A programming language has a vocabulary or words, which often called commands or statements. It also has syntax rules for putting the words together into sentences. The programming languages are very precise and designed to tell the computer exactly what is supposed to do and how it should respond to every situation.

2.8.1 Hypertext Markup Language (HTML)

HTML (Hypertext Markup Language) is the set of "markup" symbols or codes inserted in a file intended for display on a World Wide Web browser. The markup tells the Web browser how to display a Web page's words and images for the user. The individual markup codes are referred to as elements (but many people also refer to them as tags).

HTML is a standard recommended by the World Wide Web Consortium (W3C) and adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes. The current version of HTML is HTML 4. However, both Internet Explorer and Netscape implement some features differently and provide non-standard extensions. Web developers using the more advanced features of HTML 4 may have to design pages for both browsers and send out the appropriate version to a user. Significant features in HTML 4 are sometimes described in general as dynamic HTML. Due to the fact that HTML couldn't provide the real programming power for web programmers, many alternatives such as JavaScript and VBScript are used for building dynamic interaction and content. They complement HTML.

2.8.2 Scripting Language

A scripting language is very similar to a programming language. The difference is that the scripting language has been scaled down and trimmed up so that it only has the bare essentials. Instead of having a vocabulary of hundreds of commands, a scripting language may have several dozen. But the ones that are left are the key commands that use every day.

2.8.2.1 VBScript

VBScript is a subset of the Visual Basic language and is Microsoft's entry into the Internet scripting languages arena. For developers who are familiar with Visual Basic, they will recognize much of the VBScript language and syntax. VBScript is very easy to learn and implement. Microsoft has created and optimized this scripting language specifically for the Internet. Microsoft's Internet Explorer supports the use of VBScript by providing the VBScript run-time interpreter.

VBScript uses procedures and functions to process the application needs. In general, script languages are easier and faster to code in than the more structured, compiled languages such as C and C++ and are ideal for smaller programs of limited capability or that can reuse and tie together existing compiled programs.

VBScript is Microsoft's answer to Netscape's popular JavaScript. Both are designed to work with an interpreter that comes with a Web browser - that is, at the user or client end of the Web client/server session. VBScript is designed for use with Microsoft's Internet Explorer browser together with other programming that can be run at the client, including ActiveX controls, automation servers, and Java applets. Although Microsoft does support Netscape's JavaScript (it converts it into its own JScript), Netscape does not support VBScript. For this reason, VBScript is best used for Intranet Web sites that use the Internet Explorer browser only. [12]

2.8.2.2 JavaScript

JavaScript is an interpreted programming or script language from Netscape. It is somewhat similar in capability to Microsoft's Visual Basic, Sun's Tcl, the UNIX-derived Perl, and IBM's REXX. In general, script languages are easier and faster to code in than the more structured and compiled languages such as C and C++. Script languages generally take longer to process than compiled languages, but are very useful for shorter programs. [13]

JavaScript performs the same type of scripting extensions as VBScript. Netscape collaborated with Sun Microsystems to develop JavaScript as a scripting language to accentuate the Java programming language. Like VBScript, JavaScript is interpreted at runtime. Users must use a browser that includes a JavaScript runtime interpreter.

Many publications use the terms JavaScript and Java interchangeably. JavaScript is not Java. The Java programming language enables users to create applets and applications. These programs are precompiled programs that execute specific functions. Users can insert Java applets into the web page or call Java programs on the server to process more extensive application logic. JavaScript, on the other hand, is an interpreted scripting language that resides within the context of an HTML page. The browser, with the help of a JavaScript run-time interpreter, translates the script along with the rest of the HTML when the web page is downloaded from the server. JavaScript, by nature, doesn't possess the strength or robustness of the Java programming language. JavaScript borrows much of its syntax from the Java language.

JavaScript is used in Web site development to do such things as:

- S Automatically change a formatted date on a Web page
- S Cause a linked-to page to appear in a popup window
- S Cause text or a graphic image to change during a mouse rollover

JavaScript uses some of the same ideas found in Java, the compiled object-oriented language derived from C++. JavaScript code can be imbedded in HTML pages and interpreted by the Web browser (or client). JavaScript can also be run at the server as in Microsoft's Active Server Pages (ASPs) before the page is sent to the requestor. Both Microsoft and Netscape browsers support JavaScript, but sometimes in slightly different ways. [14]

2.8.2.3 SUMMARY

While considering the programming languages to be used for development, it is crucial to understand the functional and non-functional requirement of the system as stated before this. Below is the summary of the criteria that is considered while selecting an appropriate programming language:

- S A web-based programming language
- S The programming language must be able to support database communication
- S A dynamic programming language to create non-static web pages
- S A server-side and client-side programming language.
- S A programming language to support ease of building a graphical interface as the system interacts a lot with end users

Both VBScript and JavaScript have strengths and weaknesses, and this makes choosing the right scripting language for Web page or Web development project a challenge. Other users might also view the strengths that some users see in VBScript and JavaScript as weaknesses. This is because of the primary technologies to which they are linked. Just as VBScript is tied to Microsoft technologies, JavaScript is tied to Netscape. VBScript works best in Microsoft Internet Explorer. JavaScript works best in Netscape Navigator.

2.8.3 Database Consideration

Two DBMS were analyzed in this session

2.8.3.1 Microsoft Access 2000

2.8.3.1.1 Overview

Microsoft Access 2000 for the Windows 95 and Windows NT operating systems provides relational database power to give the information need to make better decisions. It integrates data from spreadsheets and other databases, and is the easy way to find answers, share information over Intranets and the Internet, and build faster business solutions. Access 2000 allows users to generate, analyze and create reports without hours of work. It integrates ease of use from the data entry point to printing in HTML. With data access interface paradigm such as Remote Data Object (RDO) and Data Access Object (DAO), Ms Access can be used as a database in a client/server or an n-tier architecture system.

2.8.3.1.2 Benefits

- ☆ From beginning to advance users, this relational database is powerful yet easy to use. Features such as the Help Wizard make it easy to find answers to questions about using Access 2000, and help users get the most from their software tools.
 - Y Share timely information across the workplace or the world. Access 2000 has several features that integrate network, Intranet and Internet features, allowing users to produce professional reports on paper, online or in HTML.
 - Access 2000 is scalable. From home businesses to corporations, it's the only database that will grow with users as their business grows.

2.8.3.2 Microsoft SQL Server 7.0

2.8.3.2.1 Overview

Microsoft SQL Server version 7.0 is the most robust database for the Windows Family, the Relational Database Management System (RDBMS) of choice for a broad-spectrum of corporate customers and Independent Software Vendors (ISVs) building business applications. Customer needs and requirements have driven significant product innovations in ease of use, reliability and scalability and data warehousing.

SQL Server 7.0 is a scalable, reliable, flexible and high-performance database management system. It is capable of supporting thousands of concurrent users, processing millions of transactions per day. Moreover, it provides the means for building and deploying large-scale distributed applications, making it the best platform for the largest and most mission-critical database applications. Besides, it also provides clustering support and can expand to use up to 3 GB of memory. [15]

MS SQL Server is a suitable database engine for powering Web site. Combined with Microsoft Internet Information Server and the SQL Server Internet Connector, customer has complete Internet database publishing capabilities. It supports for heterogeneous replication to non-SQL Server databases including Microsoft Access, ORACLE and so on. SQL server's replication uses ODBC as the connection mechanism.

2.8.3.2.2 SQL Architecture

SQL Server's integration with the operating system provides the following important features:

- Portability SQL Server can run on different operating system and hardware platforms. SQL Server 7.0 can also run on the Windows 9.x operating systems.
- ☆ Network Independence The Windows NT and the Windows 9.x operating systems support several different types of network protocols. This level of support extends to the client-side connectivity of SQL Server. This enables users to choose the network protocol that best fits the present and future needs. TCP / IP, IPX / SPX, named pipes, AppleTalk, and Banyan Vines are currently supported.
- Reliability Windows NT and SQL Server provide crash protection, memory management, preemptive scheduling, and remote management. These types of features enable users to keep SQL server up and running 24 hours a day, 7 days a week. [15]

2.8.3.3 Summary

Ms Access is created for small office or home user to use for storing data in relational format. Ms SQL Server 7.0 outperformed Ms Access because Ms Access is smaller engine and not truly client / server. Its use as a server system in a larger implementation is somewhat limited, but it still provides an unmatched development environment for database work. Ms Access is quite slow in processing transaction compared to Ms SQL Server 7.0

2.9 Psychological Overview

2.9.1 History of Psychology

The word *psychology* was coined in the sixteenth century from the Greek term *psyche*, meaning "soul", and *logos*, meaning " the study of a subject". Thus, the initial meaning of psychology was " the study of the soul". This reflected the early interest of theologians in topics that are now considered the province of psychologists. Psychology has continued to be defined by its subject matter, which has changed over time. By the late nineteenth century, when psychology emerged as a science, it had become " the Science of Mental Life". [16]

Beginning in the second decade of the twentieth century, many psychologists believing that a true science can study only directly observable, measurable events abandoned the study of the mind in favor of the study of overt behavior. This meant that most psychologists moved from studying mental experiences, such as thirst or anger, to studying their observable manifestations, such as drinking or aggression. Consequently, by the 1920s psychology was commonly defined as " the scientific study of behavior". This definition was dominant until the 1960s, when there was a revival of interest in studying the mind. As a result, psychology is now more broadly defined as "the science of behavior and mental processes". [16]
2.9.2 What is Psychological Testing

Basically, the function of psychological testing is to measure differences between individuals or between the reactions of the same individual on different occasions. A psychological test is essentially an objective and standardized measure of a sample of behavior. Psychological tests are like tests on any other science, in so far as observations are made upon a small but carefully chosen sample of an individual's behavior. In this respect, the psychologist proceeds in much the same way as the chemist who tests a shipment of iron ore or a supply of water by analyzing one or more samples of it. If the psychologist wishes to test the extent of a child's vocabulary, or a clerk's ability to perform arithmetic computations, or pilot's eye-hand coordination, he examines their performance with a representative set of words, or arithmetic problems, or motor tests. Whether or not the test adequately covers the behavior under consideration obviously depends upon the number and nature of items in the sample. [17]

2.9.3 The First Experiment Psychologists

The early experimental psychologists of the nineteenth century were not, in general, concerned with the measurement of individual differences. The principal aim of psychologists of that period was the formulation of generalized descriptions of human behavior. It was the uniformities rather than the differences in behavior that were the focus of attention. Individual differences were either ignored or were accepted as a necessary evil which limited the applicability of the generalizations. Thus the fact that one individual reacted differently from another when observed under identical conditions was regarded as a form of "error". The presence of such error, or individual variability, rendered the generalizations approximate rather than exact. This was the attitude toward individual differences that prevailed in such laboratories as that founded by Wundt at Leipzig in 1879, where many of the early experimental psychologists received their training. [18]

2.9.4 The Scientific of Psychology

Francis Bacon (1561-1626): " if a man will begin with certainties, he shall end in doubts; but if he will be content to begin with doubts, he shall end in certainties." [19]

Immanuel Kant (1724-1804) "though all our knowledge begins with experience, it by no means follows that all arises out of experience. For on the contrary, it is a compound of that which we receive through impression, and that which the faculty of cognition supplies from itself."

Hermann von Helmholtz (1821-1894) " I have found that there is a measurable period of time during which the effect of a stimulus consisting of a momentary electrical current applied to the iliac plexus of a frog is transmitted to the calf muscles at the entrance of the crural nerve."

2.10 Research on Other Online Psychological Testing System

2.10.1 Queendom

Queendom [20] is a good example of online shopping because once users entered the web site, they can browse to psychology question without sign up as a member. The modules available at the Web site are as follows:

Modules			
About Us	Contact Us	Advertising	Newsletter
Sign up	What's New	Search	

Table 2.1 Modules that are found at Queendom

2.10.1.1 Description of modules

- 1) About Us Briefly explain the company's business profile, product and services.
- 2) Contact Us Guide the user on how to get contact with them.
- 3) Advertising Advertise the other website
- 4) Sign up Allow user to sign up as a member
- 5) What's New Introduce new information to the user.
- 6) Search Search module allows user to locate / browse web pages related to their desired question, it also enable user to find information regarding the question



Figure 2.4 Structure Chart of Queendom Web sites

2.10.2 Comparison among Queendom and OPTS

2.10.2.1 Queendom

The system developed by Queendom is more user-friendly and simple. Users will feel more comfortable to browse the Web site without any doubts. Besides, users can browse into any module and look through the contents of the web page. The question test procedure is easy to understand by most of the users.

However, the numbers of question offered are very limited. User may found disappointed with the limited choice of the question. Moreover the description on category of the questions is not provided. If the user needs to know further details of the question, they will feel disappointed because the manufacturer links are not provided. The user interfaces are not attractive. Therefore, it cannot attract more users.

On the other hand, the Web site is very complicated and users must read the guidance patiently before browse the Web site. This may cause a long time to browse the Web sites and some of the users may feel frustrated with the Web site. Besides, the guidance provided is too confusing and not easy to understand.

2.10.2.2 OPTS

As the other testing systems, OPTS will also provide a more attractive, simple and user friendly system. OPTS will include the necessary selection category for user to find the desire question. The selection category is reasonable and able to fulfill the users' requirements. The Queendom didn't provide many categories and this may not meet some user needs. Besides, OPTS will include the upload function. User can upload question that they think it is professional and useful to other people.

2.11 Online Psychological Testing System Using New Approach

There are many modules found in the system as discussed before. These modules are important and contribute to the contents of a system. The existing modules will be studied and enhanced to make the OPTS a useful and effectiveness system.

₩ Web-based System

OPTS is a Web based system and it enables the user to testing online. Users can select and upload question without leaving their home.

Y User Friendliness

It is a user friendliness system that offers a much simple, easier, integrated and attractive way for user to testing the question online and also for administrator to implement their database management and database maintenance process.

Y Effectiveness and Efficiency

After the user has completely key in the searching criteria, the result will be display instantly to the user without any delay. Besides, the administrator can easily access the user's order records for database management purpose.

𝗡 Database Update

The user's information will be updated automatically to the database. This will simplified the managing and maintenance process.

Y Security

OPTS provides more security system. Only the authorized users can access to the system. Besides, the user and administrator particular details are keeping properly to prevent unauthorized users.

Online Psychological Testing System (OPTS)

Y Accuracy

OPTS can process the analysis more accurate.

2.11.1 Conclusion

Research had been carried out on available psychology testing system via Internet. The aim in literature review is to study and investigate all the information related to the project. It will provide sufficient information to develop a better system in order to eliminate the problems faced by current system.

OPTS will be an effective and efficiency system and it enable users to do psychology question online smoothly and effectively.

CHAPTER 3

System Analysis

This phase involves all the activities necessary to determine the system requirements. A requirement is a feature of the system or a description of something the system is capable of doing in order to fulfil the system's purpose. Requirements are divided into two categories: functional and nonfunctional requirements.

3.1 Methodology

3.1.1 Methodology Overview

There are many types of development model in the software engineering such as Waterfall model, Spiral model and others. During the development of this project, the prototyping model is selected since the prototyping model allows all of parts of a system to be constructed quickly to understand or clarify system needs.

Prototyping consists of building an experimental system rapidly and inexpensively for end users to evaluate. By interacting with the prototype, user can get a better idea of their information requirement. The prototype endorsed by the users can be used as a template to create the final system.

The prototyping is a working version of an information system or part of the system, but it is meant to be only a preliminary model. Once operational, the prototype will be further refined until it confirms precisely to user's requirement. For many applications, a prototype will be extended many times before a final design is accepted. Once the design has been finished, the prototype can be converted to a polished production system. [21]

3.1.2 Prototyping

Prototype is a partially developed product and involved in the early stages of the development where there was a high degree of uncertainty in the several areas of the system requirements. It enables users and developers to examine some aspect of the proposed system and decide if it is suitable or appropriate for the finished product.

Prototyping model allows all or part of a system to be constructed quickly to understand or clarify issues. The requirements or design require repeated investigation to ensure that the developer, user, and customer have a common understanding both of what is needed and what is proposed.

A prototype is a development model of a system for test purpose. The prototype is reviewed by the end user and repeatedly revised to create a final acceptable model. Through prototyping, developer can revise forms, input screens, databases, and processing methods, submit them to a limited number of system end users for testing, and revise them again if necessary for the final design.



Figure 3.1: Prototyping Model

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3.1.2.1 Steps on Prototyping

Figure 3.1 shows a four-step model of the prototyping process. The steps consist of the following:

1. Identify the user's basic requirements.

The system designer (usually an information systems specialist) work with the user only long enough to capture the user's basic information needs.

2. Develop a working prototype

The system designer creates a working prototype quickly. The prototyping may only perform the most important functions of the proposed system, or it may consist of the entire system with a restricted file.

3. Use the prototype

The user is encouraged to work with the system to determine how well the prototype meets his or her needs and to make suggestions for improving the prototype.

4. Revise and enhance the prototype

The system builder notes all changes requested by the user and refines the prototype accordingly. After the prototype has been revised, the cycle returns to step 3. Step3 and 4 are repeated until the user is satisfied.

When no more iteration are required, the approved prototype then becomes an operational prototype that furnishes the final specifications for the application.

3.1.2.2 Advantages of Prototyping

- i. User Orientation one major objective of prototyping is to develop systems that meet user needs to a greater extend.
- Fast Development Time it can take a few weeks or months to obtain meaningful results, compared to the traditional approach, which can take years for the complete system to be in operation.
- iii. Fewer Errors Prototyping allows errors to be detected earlier.
- iv. More Opportunity for changes with prototyping, the user can see and work with the outputs from each subsystem or component as it is being developed, enabling the user to suggest changes during the development process.
- v. Changing the System Early in its Development

3.2 System Approach

A system is a regularly interacting or independent group of elements forming a unified whole. Thus, a system is a collection of related parts treated as a unit where its components interact. Therefore, different systems can be developed in different ways. To develop a system, a lot of information need to be gathered about the system itself, the procedures involved to develop the system and the methodologies used develop the system. All this information can be obtained from various sources.

There are a number of ways of gathering information from the users. One way is through interviews. Another is to use questionnaire. A third is through observation of user activities and behaviors. In this project, questionnaire is use to gather the information of user knowledge and opinions surf net and psychology testing.

3.2.1 Questionnaire

Questionnaires are an information-gathering technique that allows systems analysts to study attitudes, beliefs, behaviors, and characteristics of several key people in the organization who may be affected by the current and proposed systems. Questionnaires may be used to determine how widespread or limited a sentiment expressed in an interview really is.

Questionnaire had been distributed randomly to the students in University of Malaya. Most of the respondents are students from Faculty of Computer Science and Information Technology (FSKTM) since it is easier for me to allocate them.

The questionnaire is only distributed to the students since students are the largest group of psychology testing users. Meanwhile, this system is design to provide facilities for people to do psychological question.

The opinions and feedback from students, although can not be viewed as a general responds (especially to represents those non-students opinions), but the results collected could be more or less useful in analyzing the contents & requirement of the system that are going to be developed.

3.2.2 Reason Using a Questionnaire

- The students need to be questioned are widely dispersed (different faculty of the same university).
- This is an exploratory study and requires gauging overall opinion before the systems project is given any specific direction.
- Problem sensing is done so that any problems with the current ordering processes are identified.
- The questions are easy to design and feedback and opinions are easy to collect from users.

3.2.3 Questionnaire Design

The combination of open-ended questions and closed questions are chosen in the questionnaire. Closed question is chosen to limit the response options available to the respondent and eventually ease the analysis and interpretation of their responses without using a computerized content analysis program. Open-ended question is chosen to gather all possible responses to the questions from the respondents. The design of the questionnaire is attached in Appendix.

3.2.4 Questionnaire Results

50 questionnaires were randomly distributed to the students in University of Malaya. Responses gained through the closed questions are quantified and tabulated. Responses to questionnaires using open-ended questions are analyzed and interpreted in other ways.

Student Surfing Internet	Total (x / 50)	Percentage (%)
Always	22	44
Usually	15	30
Sometimes	13	26
Seldom	0	0
Never	0	0

3.2.4.1 Internet Surfing among Students in University of Malaya



Figure 3.2 Percentage of Internet Surfing among students

The statistical reveal that majority of the students in University of Malaya always surf the Internet. Figure 3.2 shows that 44% of the respondents surf the Net always, 30% of the respondents surf it usually and 26% of them surf it sometimes.

Because of the fact that most of the students in University of Malaya are always exposed to Internet, they are familiar with the Internet. There is no problem to put the psychological question online. Beside that, the user interface will have more graphical display to lead the students more easily while doing OPTS.

3.2.4.2 Psychological testing question

Doing psychological testing question	Total (x / 50)	Percentage (%)
before	and the second second second	a saliderri de the
Yes	44	88
No	6	12





 Table 3.3 Statistical Result on How Frequency Students do Psychological Question

 Frequency Students do psychological

 Total (x / 50)

 Percentage (%)

question		
Always	4	8
Usually	7	14
Sometimes	20	40
Seldom	13	26
Never	6	12



Figure 3.4 Percentage of How Frequency Students do Psychological Question

The majority of the students in University of Malaya have been doing psychological testing question before. Figure 3.4 show that 8% of the respondents always do the psychological question, 14% of the respondents usually do the psychological question, 40% of them sometimes do the psychological question, 26% of them seldom do the psychological question, and 12% of them never do the psychological question.

Table 3.4 Statistical Result on Isn't Students Like To Do Online Psychological Testing Question

Is they like to do online psychological testing question	Total (x / 50)	Percentage (%)
Yes	43	86
No	7	14



Figure 3.5 Percentage of Isn't Students Like To Do Online Psychological Testing Question

Online Psychological Testing System	Total (x / 50)	Percentage (%)
Extremely Useful	20	40
Very Useful	23	46
Useful	5	10
Often Useful	2	to the 4 can be
Rarely Useful	0	0



Figure 3.6 Percentage of the Necessity of Online Psychological Testing System

A total of 96% of the respondents strongly support the Online Psychological Testing System. They find that the Online Psychological Testing System as useful, very useful and extremely useful.

Below are some of the reasons why the respondents like to do online psychological testing question, which are given by them:

- Can more understanding ourselves
- Sometimes the analysis is accurate and could be trust
- For fun
- The question is too long
- Very interesting
- Easy to access and retrieve
- Save money

3.3 Web Development Tools Analysis

3.3.1 Introduction

The main task in this section is to identify suitable programming technologies and languages to develop the system. There are many web development tools that can be used to built a successfully Web site. A good Web site normally can meet the users needs and facilitate the users to interact with the system. Hence, the Web site needs to be maintained.

Analysis was done to choose the most suitable programming technologies and languages. The consideration was based on database, server, web programming technologies, programming language and development tools. Besides, the availability of the related development tools was also important factor to determine whether it is an ideal solution.

3.3.2 Architecture of Web Site

A complex, interactive Web site is typically composed of a number of separate components. These components may all be developed or run on the same computer, or they may be spread over a number of different computers such as the following:

- Development Workstation (runs the Visual InterDev software)
- Web Server (with Microsoft Personal Web Server Extension)
- Web Browser (views the completed Web pages)
- Database Server (optional)

3.3.2.1 Development Workstation

The development workstation is used to create and edit content, and the content is automatically uploaded to the Web Server. Normally, the workstation runs the Visual InterDev software that provides a number of different ways to view the Web site and access its components during development.

3.3.2.2 Web Server

The Web server stores the content that comprises the Web site under development. When Visual InterDev updates this content after it has been created or modified on the development workstation, it uses the FrontPage Server Extensions to update the final Web site on the Web server.

Users can access the Web Server for development purposes from the workstation, using either Visual InterDev or FrontPage. The Web Server is also responsible for delivering the final content to users browsing the site via the World Wide Web.

3.3.2.3 Web Browser

Any Web Browser can be used during the development process to view Web pages after they have been created or modified. Uses of the completed Web site also use a Web browser to view the pages. It is recommended to use different Web browsers during the development of a Web site to ensure compatibility between various programs, such as Internet Explorer and Netscape Navigator.

3.3.2.4 Database Server

Data connections can be made from Web projects to databases stored on a database server. Visual InterDev enables users to create a new database and to create and edit database elements transparently from the workstation. Database tables can be defined and modified on the server, and queries can be designed and tested. When the Web pages are browsed on the Web server, the Web server makes an independent connection to the database server to execute queries and extract the data.



Figure 3.7 The Web site / Visual InterDev development architecture environment.

From figure 3.7 above, note that Visual InterDev is use on the development client machine to design and build the application. The interface directly with the development web server machine as well as the development database server. These interactions are distinct in nature. In other words, client developer maintains a network connection to the web server and interacts with files on the server. Developer can use the Preview in Browser menu option to view the web pages and test the look and feel of the interface.

For database access, developer is connected through an ODBC connection over the network. This architecture assumes that the network contains separate database and web server machines and that these machines are on the same network



Figure 3.8 The Visual InterDev production architecture environment.

Base on the figure above, the user requests information from the web server, which in turn makes the determination to retrieve data from the database server. At this point, the database connection exists between the web server and the database server. No direct connection exists between the client machine and the database server. Client machine in the deployment architecture environment lives vicariously through the web server. In this model, the browser serves as the window to application's world.

3.3.3 Server Consideration

3.3.3.1 Windows NT Server 4.0

Windows NT is the Microsoft Windows personal computer operating system designed for users and businesses needing advanced capability. Windows NT Server is designed for business machines that need to provide services for LAN-attached computers. The Server is required, together with an Internet server such as Microsoft's Internet Information Server (IIS), for a Windows system that plans to serve Web pages. [22]

Windows NT Server is an ideal platform for building custom applications because it contains strong Web services with Internet Information Server 4.0 (IIS services). It provides an open, flexible environment for implementing powerful, highly customizable applications that share interfaces and other common elements that make them work together.

Windows NT Server also provides an outstanding platform for a wide range of services and applications and to be a super, high-performance, high-availability network operating system. It also includes features designed to make it easier to install, use, and manage than ever before. It is the cornerstone of Microsoft's commitment to reducing customer's "total cost of ownership" because it greatly simplifies the tasks associated with managing the network environment.

Windows NT Server offers a complete set of utilities for server administration. Administrative wizards give a single pane view of eight commonly used administrative functions, allowing for centralized administration of common server and directory service tasks. The rich features of Windows NT Server make it an ideal network operating system - but it also does much more. It is the ideal platform for enterprise computing, providing a unified, high-performance environment for the Web, for building applications, for streaming media, and for communications and collaboration.

The main reason of choosing Microsoft Windows NT Server 4.0 as a platform to deploy a web server is due to its competitive price, robustness, scalability and its secure NTFS file system. Microsoft Windows NT Server gives developers their choice of languages, protocols, user interfaces, and application architecture. Besides, this platform is required if either Ms SQL server or IIS or both are used in this project.

3.3.3.2 Web Server

3.3.3.2.1 Microsoft Internet Information Server

Internet Information Server (IIS) is a group of Internet servers (Web or HTTP, FTP, and Gopher) and other capabilities for Microsoft's Windows NT and Windows 2000 Server operating systems. With IIS, Microsoft includes a set of programs for building and administering Web sites, a search engine, and support for writing Web-based applications that access databases. Microsoft points out that IIS is tightly integrated with the Windows NT and 2000 Servers in a number of ways, resulting in faster Web page serving.

Web developers can use Microsoft's Active Server Page (ASP) technology, which means that applications - including ActiveX controls - can be imbedded in Web pages that modify the content sent back to users. Developers can also write programs that filter requests and get the correct Web pages for different users by using Microsoft's ISAPI interface. ASPs and ISAPI programs run more efficiently than Common Gateway Interface (CGI) and server-side include (SSI) programs, two current technologies. Microsoft includes special capabilities for server administrators designed to appeal to Internet Service Providers (ISPs). It includes a single window (or "console") from which all services and users can be administered. Individual customers can customize the administrative windows for access.

IIS includes security features and promises that it is easy to install. It works closely with the Microsoft Transaction Server to access databases and provide control at the transaction level. It also works with Microsoft's Netshow in the delivery of streaming audio and video, delayed or lives. [23]

The only drawback of IIS is that it must run on NT platform. Besides, it lacks of objectstore, messaging, and collaborative computing components. Since IIS architecture is tightly integrated with Windows NT, it will inherit the NTFS file system security. In order to provide real industrial strength database services, IIS requires Microsoft SQL server 7.0. This is also part of the reasons why Ms SQL Server 7.0 is chosen in this project as the back-end database, discussed in the previous section. ()nline Psychological Testing System (OPTS)

3.3.4 Development Tools Consideration

3.3.4.1 Visual InterDev

3.3.4.1.1 Overview

Microsoft Visual InterDev is a software development environment for creating and managing World Wide Web sites. It's part of the Microsoft Visual Studio suite of development tools and enables users to easily incorporate Visual InterDev and other projects with a single workspace GUI. [24]

In addition, Visual InterDev enables users to incorporate advanced features into the Web sites that go a long way beyond the use of HTML. Client-side (ActiveX) and server-side (Active Server) scripts, database access, and more are readily available to you through Microsoft's Active Platform technologies, full supported by Visual InterDev.

Integration with Internet Information Server and Personal Web Server provides the option of working on the Web sites either online or offline. Many of the built-in features of InterDev make it one of the most powerful development environments for creating interactive Web sites.

Microsoft Visual InterDev 6.0 is the latest version of the award-winning integrated web application development system for professional programmers. The new version enables Web teams to design, build, debug, and deploy cross-platform Web applications faster than ever before.

Visual InterDev 6.0 also features a new integrated WYSIWYG editor for ASP & Dynamic HTML pages, enhanced database programming tools, and end-to-end debugging facilities for multi-tier applications built with HTML and Script.

For advanced Web site development, Visual InterDev supports both client and server side scripting. A Script Wizard enables you to quickly generate client and server side scripts with a point and click interface. ActiveX controls and Java Applets can be embedded into pages as well as server side components for Active Server Pages.

3.3.4.1.2 Benefits

Visual InterDev provides a comprehensive and integrated development environment that offers the following features and benefits:

Ease of Use

Visual InterDev offers a seamless environment that includes several database tools under one integrated roof. For this reason, Visual InterDev is very easy to use. Users don't have to migrate between separate tools and environments to build the database connection calls as well as the formatted HTML web pages. Also, the Visual InterDev development environment provides toolbar and menu options to guide user through the process of adding database functionality into the web page.

Visual Environment

Visual InterDev, as the name indicates, provides a visual environment with which to build the applications. This intuitive environment includes the Visual Data Tools, which enable the user to visually construct the MS Access statements and immediately test the results. MS Access users love the interface of the tools because of the similarities between the two environments. The Visual Data Tools provide the same type of benefits to the database calls.

Rapid Application Development

Visual InterDev provides an environment that enables the user to rapidly build database connectivity and integration into their application. Our modern age requests, and sometimes demands, instantaneous information all the time. Visual InterDev promotes the theory behind rapid application development by supporting both PC desktop and server databases.

Robustness

Visual InterDev provides the best of both worlds - robustness and ease of use. For some databases, user also can edit and manage the database components. Visual InterDev supports all of the major ODBC-compliant databases including MS Access, Oracle, Sybase, Informix, IBM DB2/2, MS SQL Server, Microsoft FoxPro, and Borland Paradox.

3.3.4.2 Microsoft Visual Basic 6.0

Visual Basic is a Microsoft Windows programming language. Visual Basic programs are created in an Integrated Development Environment (IDE). The IDE allows the programmer to create, run and debug Visual Basic conveniently. IDE allow a programmer to create working programs in a fraction of time that it would normally take to code programs without using IDEs.

Microsoft Visual Basic 6.0 is for rapid development of Windows-based client/server applications, as well as Web application, and middle-tier business components. We can use VBScript to write applications that run on the desktop computer with Internet Explorer. Also, we can use VBScript on the server side to work with Internet Explorer. Visual Basic 6 has sharpened the focus on Internet development; it extends the ability to write server-side applications for Microsoft's Internet Information Server

3.3.5 Others Considerations

3.3.5.1 Ulead 3D Cool

Ulead 3D Cool software package is one of the products of Ulead System, used to design animated images – icons and Web banners. Some animated icons for HOME have been designed for this OPTS project. This software package is easy to use and able to create and design animated pictures. The pictures can be save in animated GIF files.

3.3.5.2 Adobe Photoshop 5.0

Adobe Photoshop 5.0 software packages is one of the products of Adobe Systems Incorporated, used to design the graphic pictures and images. Most of the pictures and images in the system interface will be design using this software. The pictures can be save in GIF or JPG or JPEG files.

3.3.6 Technologies Analysis Conclusion

Analysis was done on the constraints, limitations and advantages of the strategies discussed above, it is decided that this project to be built using ASP technology with VBScript as its main server side scripting language. The approach choice is due to the fact that it is simple to implement and no extra addition software requirement needed besides Windows NT and Internet Information Server 4.0. On the other hand, JavaScript is used as client side scripting in order to support a wider range of type of web browsers.

There are vast different web servers in the market, Microsoft Internet Information Server 4.0 is choose as the web server. The reasons on this are due to its support for ASP and IASP, tight integration with Microsoft NT Server 4.0 security system and Microsoft Access database management system.

For the Web site testing, Ms Internet Explorer 4.0 is used to test the Web site because it is the only one browser that displays error messages when ASP scripting generated errors.

3.4 Requirement Analysis

A requirement analysis is carried out to fulfil the system's purpose. A requirement is divided into two categories: functional and nonfunctional requirements. Lastly in this phase, an analysis on run-time requirement is made to ensure smooth development in later stages.

OPTS is required to provide psychology information. The functional requirement is divided into 2 major distinct sections that are the user section and the administrator section. The user section will be accessible to the user. Only authorized user will access the administrator section.

3.4.1 Functional Requirement - Entire system

Functional requirements are function or subsystem that are mandatory to the system. The absence of the function requirement will make the whole system incomplete. The following are the functional requirement for the **OPTS**.

Data Input

The system should enable to convert raw data from users input into system's databases format, or to accept direct entry from keyboard. These raw data are converted into a database, which is in the form of ASCII text file to perform faster queries.

3.4.2 Functional Requirements - User Section

3.4.2.1 Sign Up Module

This module will allow the users sign up as a member. The user, who has register, as member will be allow to upload psychological questions online. The purpose of encourage the users to join as members is to survey the effectiveness of Web site and administrator will be enable to manage or maintain the database easily. This will further improve the web to suite the users' requirement. Besides, the brochures can also be sending to the users according their preference.

3.4.2.2 Member Login Module

This module will enable the member to login to the Web site as member and enjoy their benefits. In the login section, member is required to enter their login ID and password. Once the verification processes of login ID and password are done, user will be allowed to login and views the web site as a member. This module also allows user to change their password as for security purposes.

3.4.2.3 Question Module

This module enables user to select or search the desire question according to their preference. There are 5 sub-modules under this module; there are career, friendship; family, nature, and behavior.

3.4.2.4 Upload Module

This module is the most important part of the system. User can use the form which prepare by OPTS to upload their question.

Administrator can view the question and proceed to check whether the question is suitable or not.

3.4.2.5 Information Board Module

There are many sub-modules in this module. The purpose of this module is to provide all the information about the web site and online transactions knowledge to the user.

- About Us This web page briefly describe OPTS.
- Upload Instruction A simple and clear instruction will be provided to let user know how to upload question online without any confusion occur. This is very important to ensure the user that uploading is easy and simple.
- Feedback / Suggestion Users can make suggestions / comments through e-mails or mail to the address which specified by the administrator. The suggestions and comments can be composed and send directly. A dialog box will be providing for them to write the messages.
- Hot News Users can receive the updates psychology question news. Updates may be supplied to members (through daily or weekly basics) via e-mail. A hot news section will be display on Web site and update frequently.
- Glossary Key words or key phrases are displaying to enable the users to find out definition or terms regarding psychology question.

3.4.3 Functional Requirements - Administrator Section

3.4.3.1 Administrator Login Module

Administrator is required to enter their Login ID and password to access the system. An authentication and authorization process is vital to the system in order to protect its web pages and database from any non-authorized user. This will increase the security level of the system. Besides, administrator is allowed to change the password for security reasons. Old password must be keyed in before any changes can be made to ensure that the valid user is making the changes. Confirmation upon the new password is needed.

3.4.3.2 Database Maintenance Module

The module consists of two sub-modules: User information and Question information.

- User Information The administrator is able to add in new user in this sub-module. The login ID should be created uniquely for each user. Besides, the administrator is also allowed to update the details of the user that may collected by telephone, fax or mail. Furthermore, those users who have bad records will be deleted or being blacklisted.
- Question Information The functions provided are almost same as the user information. At the same time of viewing the question, the administrator can add in the new question or edit the previous question in the database. Besides, the new features of existing psychology question can be update with this module. Nevertheless, the outdated question should be deleting from the database.

3.4.3.3 Analysis & Statistic Module

This module will enable the administrator to get the analysis on the most demanded question in the Web site. The administrator can print out the analysis or user information.

3.4.3.4 Add New Administrator Module

There is a need to create a Login ID for a new administrator. This module can accomplish the task. The new administrator can change the password using the Administrator Login module afterwards.

3.4.3.5 Information Board Update

All the information in embedded in the database has to be update to attract more user. Therefore, the administrators need to update themselves with current psychological information. In this module, all the information of news and glossary are update frequently. Besides, the administrator also has to keep track the feedback or suggestions from the users.

3.4.4 Non-Functional Requirement

Non-functional requirements are essential definition of the system properties and constraints under which a system must operate. The following states the non-functional requirement for the OPTS.

3.4.4.1 User friendliness

The design of the system's interface should be user friendly and easily understood. Generally, the design of all the interfaces should conform to the following:

- · Consistent, in term of screen design and error messages displayed
- Accommodation of any level of user
- Appropriate error handling with associated error messages
- High degree of understandability and avoid too much of memorization of events and commands for the users.

3.4.4.2 Correctness

Correctness is the extent to which a program satisfies its specification and fulfills the users mission objectives.

3.4.4.3 Efficiency

Efficiency in computer technology means a process or procedure that can call or accessed in an unlimited of times to produce similar outcomes or output at a creditable pace or speed.

3.4.4.4 Modularity

Modularity is a key function in good program design. The working of the system will be broken into modules so that distinct functions of objects could be isolated from one to another. This characteristic makes testing and maintenance much easier. In OPTS, modularity of program module is applies from the beginning as this will leaf to easy modification in future and because it is modular in design; other shell modules can be combined or joined easily.

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3.4.4.5 Reusability

The extent to which a program or part of the program can be reused in other application – related to the packaging and scope of the functions of the program performed.

3.4.4.6 Maintainability

Maintainability may be defined qualitatively as the ease with which software can be understood, corrected, adapted and enhanced.

3.4.4.7 Expandability

The degree to which architecture, data or procedure design can be extended.

3.4.4.8 Reliable, Accurate and Robust

The system should be able to perform accurately the search functions as requested by the users and able to eliminate duplicate records, which always maintains an accurate database. Besides, the reliability of a system such as does not produce dangerous and costly failures when it is being used is important to reliable the users while using the system. Robustness is refers to the quality that causes a system to be able to handle, or at least avoid disaster in face of unexpected data.
3.5 Hardware & Software Requirements

3.5.1 Server Hardware Requirement

The server computer requirements are:

- A server with at least Pentium 166MHz processor
- At least 32MB RAM
- Network interface card and network connection with recommended bandwidth at 10 Mbps or more
- Other standard computer peripherals.

3.5.2 Server Software requirement

Table 3.6 The server software requirements for developing OPTS

Software Components	Description
Windows 2000	Network operating system
Internet Information Server (IIS) 4.0	Web-server service
Microsoft Access 2000	Database connectivity interface driver
Ms Internet Explorer 5.0	Precondition for ASP installation

3.5.3 Client Hardware Requirement

The client hardware requirements are quite minimal as long as it has a reasonable amount of RAM and reasonable quality dial-up connection line.

The recommended configuration is:

- At least 32MB of RAM
- Network connection through existing network configuration or modem (at least 28.8 Kbps)

3.5.4 Client Software Requirement

The client software requirement falls on the browser used by the users. It requires system that can run Microsoft Internet explorer 4.0 and above.

CHAPTER 4 System Design

System design is a creative process of transforming the problem into a solution. It is used to design, and implement improvements in the functioning of business that can be accomplish through the use of computerized information system.

- System Architecture
- > Data Flow Design
- > Data Modeling Design
- > User Interface Design

This is a very important part in the system development process. Normally this phrase takes the major time period of the total time spent in the process. It plays a great role in resulting the appropriate product and ensures the product's quality. If the design fulfills the user requirements then the next phrase and till the end of the development process would be smooth and successful.

4.1 Overview of OPTS Architecture

The overview of OPTS architecture to be built after the feasibility study is shown in figure 4.1.



Figure 4.1 OPTS Architecture

OPTS using client / server applications that are deployed from a Web site require an architecture that is robust, secure, and scalable, and that can accommodate rapidly changing technologies.

4.2 System Functionality Design

System functionality design is based on the system requirements stated in chapter 3. It translates the system requirements into system functionality. This design focuses on the system structure design and data flow design.

4.2.1 System Structure Chart

The system structure is used to depict high level abstraction of a specified system. The use of structure chart is to describe the interaction between independent modules. Major functions from the initial component part of the structure chart, which can be broken into detailed sub-components.

OPTS consists of 2 sections: User and Administrator sections. Each of the two components is further divided into many modules.



Figure 4.3 Structure Chart for OPTS - User Section



Figure 4.4 Structure Chart for Question Sub-system (User Section)



Figure 4.5 Structure Chart for Information Board Sub-System (Member Section)





Figure 4.7 Structure Chart for Database Maintenance Sub-System (Administrator Section)

4.2.2 Data Flow Diagram

Data flow diagram (DFD) is the graphic model of the flow, use and transformation of the data through a set of processes. DFD depicts the broadest possible overview of a system inputs, processes, and outputs, which correspond to data movement through the system.

Most modules or sub modules of data flow in OPTS are very similar and occur in a rather straightforward manner. Therefore, they are represented in one generalize DFD. Below are the DFD for the function in OPTS. The components of the DFD are explained below:

Component	Description
Data Flow	 The flow of data or information from one object to another. Arrow denoted the direction of data flow. Each data flow is labeled with the name or details of the information represented by the data flow.
ID Stored Data	 Hold data for a time within the system Comprise two sections: Identifier information Description of the data stored
Data Store	Lote DR O
Entity	Any objects
Process	 Transform the input data to output data Represented by rectangle shape Comprise two or three sections: 1. Top section contains the identifier information 2. Center section contains a description of the process 3. Lower section contains the physical or computer program information

Table 4.1: The four basic symbols used in data flow diagrams



Figure 4.8 Data Flow Diagram for System Overview



Figure 4.9 Data Flow Diagram for User Section - Member



Figure 4.10 Data Flow Diagram for Question Selecting and Uploading Module



Figure 4.11 Data Flow Diagram for Administrator Section



Figure 4.12 Data Flow Diagram for User Section - Non-Member



Figure 4.13 Data Flow Diagram for Information Board

4.3 Database Design

The relational database model is used in database implementation for OPTS. The database is constructed using the Microsoft Access 2000. The design objectives are:

- Purposeful information retrieval
- · Efficient Data Storage
- Data Availability
- Efficient updating and retrieval
- Data integrity

The attributes of the database are listed below:

Database Name	OPTS
Data Source Name (DSN)	OPTS.mdb
Туре	Microsoft Access
Usage	Keeps the records of the system
Number of Tables	14

Table 4.2 OPTS Database General Profile

4.3.1 Data Dictionary

Data Dictionary (DD) is a repository of all the elements in a system. It is a logical characteristic of current systems data stores. DD identifies processes where the data are used and where immediate access to information is needed. It also serves as the basic for identifying database requirements during system design.

The data dictionary may be used to:

- Validate the data-flow diagram for completeness and accuracy.
- · Provide a starting point for developing screens and reports.
- Determine the contents of data stored in files.
- Develop the logic for data-flow diagram processes.
- A Data Dictionary entry should contain specific categories of information including:
- · Name and aliases of the data item
- Description of the data item
- · Permissible range of the data item
- Data elements related to the entry
- Its allowable length in information
- Any other pertinent editing information

The Data Dictionary table of OPTS is shown as below:

4.3.1.1 User Profile

Table : Person (Member and Administrator)

Description : User Profile for member and administrator

Field Name	Data Type	Length	Index	Description
UserID	Text	9	Primary	Login ID as reference for each
Freld Name 11	Non Trees La	egth is in	Key	member
Password	Text	9		Member password
Verpassword	Text	9		Verify Member password
GivenName	Text	50	100	Member given name
FamilyName	Text	50		Family name (surname)
Maintenance	Yes/No	-		Yes=True
				No=False
Staff	Yes/No	-	No.	Yes=True
ouun			No.	No=False
StreetAddress1	Text	50		Member home address
StreetAddress2	Text	50		Member home address
City	Text	50		City of the address
State	Text	50		State of living
Postcode	Text	50		Post code of the state
Country	Text	50		Country
LastLogin	Date/Time			Last time member login

Table 4.3 Data Dictionary for Person Relation

4.3.1.2 Hit

Table : Hit Description : Count how many time question click

Table 4.4 Data Dictionary for Hit Relation

T' 1131	Data Type	Length	Index	Description
Field Name	Data Type	Longer	Duimant	Number set
SetID	Int	4	Key	Number set
Triat	Int	4		Total of question click
Hittime	Int			Last time question
LastActivity	Date/Time	-		Last time question

4.3.1.3 Upload

Table : Upload Description : Upload question

Field Name	Data Type	Length	Index	Description
QuestionID	AutoNum ber	4	Primar y Key	Identity for each question
TotalOuestion	Int	4		Number of Option
SetID	Int	4		Number set
Description	Memo	-		Description of question
NoOuestion	Int	4		Number Question
ItemStatus	Yes/No	-		Yes=Active No=DeActive
SellerID	Int	4		Member ID
add	Int	4		Number option
ListingDate	Date/Time	-		Date and time upload the question
Category	Test	50		Category of question
Option1	Text	50		Description of Option1
Option2	Text	50		Description of Option2
Option3	Text	50		Description of Option3
Option4	Text	50		Description of Option4
Option5	Text	50		Description of Option5
Option6	Text	50		Description of Option6
Option7	Text	50		Description of Option7
mark1	Int	4		The mark for Option 1 in this question
mark2	Int	4		The mark for Option 2 in this question
mark3	Int	4		The mark for Option 3 in this question
mark4	Int	4		The mark for Option 4 in this question
mark5	Int	4		The mark for Option 5 in this question
mark6	Int	4		The mark for Option 6 in this question
mark7	Int	4		The mark for Option 7 in this question

Table 4.5 Data Dictionary for Upload Relation

4.3.1.4 Analysis Information

Table : Analysis

Description : Analysis

Field Name	Data Type	Length	Index	Description
AnalysisID	Int	4		Identity for a analysis
SetID	Int	4	-	Number set
MarkL	Int	4	and pertil	The lower mark
MarkH	Int	4		The higher mark
TotalAnalysis	Int	4		Total analysis
NoAnalysis	Int	4		No analysis
Analysis	Memo	-		Analysis
NoOuestion	Int	4		The question

Table 4.6 Data Dictionary for Analysis Relation

4.4 Entity-Relationship Model Design

The Entity-Relationship (ER) model is a high-level conceptual data model developed by Chen (1976) to facilitate database design. A conceptual data model is a set of concepts that describe the structure of a database and the associated retrieval and update transactions on the database. The main purpose for developing a high-level data model is to support a user's perception of the data, and to conceal the more, a conceptual data model is independent of the particular DBMS and hardware platform that is used to implement the database.

4.4.1 E-R Model Symbols

The standard symbols, official explanation of the symbols and what they actually mean are all given in the table 4.7 shown below.

Symbol	Official Explanation	What it really means	
	Entity	A class of persons, places, or things.	
	Associative entity	Used to join two entities	
	To 1 relationship	Exactly one	
	To many relationship	One or more	
	To 0 or more relationship	Can be zero, one, or more	

Table 4. /: Symbol for E-K mo



Figure 4.14: The Entity-Relationship Model for OPTS

4.4.2 Relationship

The relationship of OPTS database is below:

4.4.2.1 User - category

- ✤ 0/more : 0/more
- * one user can select many category of question
- a category of question can selected by many user

4.4.2.2 Administrator - category

- ✤ 0/more : 0/more
- * one administrator can select many category of question
- * a category of question can selected by many administrator

4.4.2.3 Category - Question

- * 1 : many
 - one category can has many questions
 - * a question must has at least one category

4.4.2.4 Question - Choice

- * 1 : many
- One question can has many Option
- * a choice must has at least one question

4.4.2.5 Choice - Analysis

- * 1:1
- a choice only has one analysis
- * an analysis only has one choice

4.5 Draft – User Interface Design

The Human-Computer Interface (HCI), commonly called the user-interface is doorway into an interactive software application. The interface is the system for most users. However well or poorly designed, it stands as the representation of the system. The interface must help users and businesses get the information they need in and out of the system by addressing the following objectives:

- 1. Effectiveness as achieved through the design of interfaces that allow users to access the system in a way that is congruent with their individual needs.
- Efficiency as demonstrated through interfaces that both increase the speed of data entry and reduce errors.
- User consideration as demonstrated in the design of suitable interfaces and by providing appropriate feedback to users from the system
- 4. Productivity as measured by ergonomically sound principle of design for user interfaces and workspaces.

As information of OPTS displayed in Web pages form, it is also important to consider the web pages design. Below are some consideration taken when design the user interfaces of web sites:

- Form layout presentation
- Form appears as it is suppose to when rendered by different browsers.
- Resolution of the page elements (graphics, animation and so on).
- The speed of modem used to download pages.

4.5.1 OPTS Screen design

Screen design in OPTS is presented in form of web document on the browser. Therefore, the form of web document containing components like text, graphic, input fields, buttons and so on which normally can be found in the web document. Since OPTS is developed using ASP, thus this web-based application is supported by VB6, which can convert Ms Access database into HTML dynamically, as requested by the users.

4.5.2 General Consideration when Designing User Interface

- Be consistent, which mean use a consistent format for menu selection and data display. Use of consistent label, standard abbreviation is also necessary.
- Offer meaningful feedback such as display appropriate error message when the user has dome or key in something wrongly.
- Reduce the command that must be memorized in order to carry out any operations.
- Combo boxes will be used instead of text boxes to minimize any complex logic operations.
- The system should able to forgive mistakes so that it could protect itself from failure due to user mistakes.

4.5.3 Draft - Output Design

Output is information that has presented to user through the information system. The presented information either is production of output as hardcopy to the printer or softcopy to the screen. For this project, the output design is to get a draft how the information needed by the user being performed.

For this system, result of request for hand phone searching is the major outputs. Reports written in Visual Basic will be used to display relevant data retrieve from the database.

CHAPTER 5 SYSTEM IMPLEMENTATION

System implementation is a process to convert the system requirements into program codes. This phase also describes how the initial and revised process design put into the real work. Therefore, system implementation involved the translation of the software representation produced by the design into a computer readable form. This phase at times involves some modifications to the previous design.

OPTS was developed modularly using the top-down approach which involves building the high-level software modules that are refined into functions and procedures.

5.1 Development Environment

Development environment has certain impact on the development of a system. Using the suitable hardware and software will not only help to speed up the system development but also determine the success of the project. The hardware and software tools used to develop the entire system is as discuss below:

5.1.1 Hardware Configurations

The following hardware specifications have been used to develop OPTS system :

- 233 MHZ Pentium Processor
- 64MB SD RAM
- 2.1 GB Hard Disk
- Other standard desktop PC components

5.1.2 Software Configurations

There are a lot of software tools, which are used in designing and writing report. The design process involves the drawing and design of graphics, structure chart, data flow diagram and other foundation implementations of the software development. The purpose of this graphically logical design to provide an overall view of system and interconnection between the modules. Visio Technical is used to design and Microsoft Word for report writing.

A vast array of software tools used in the development of OPTS and is illustrate in table 5.1 below.

Software	Usage	Description
Microsoft Windows 2000	System Requirement	Operating System (OS)
Internet Information Server 5.0	System Requirement	Web Server Host
Microsoft Visual InterDev	System Development	Coding the web pages
Internet Explorer 5.0	System Development	Viewing the web pages
Active Server Pages	System Development	Coding the web pages
Hyper Text Markup Language (HTML)	System Development	Coding the web pages
Microsoft Access 2000	Database	Build the database to store and manipulate the data
Macromedia Director 8.0	User Interface Design	Image design and creation
Adobe Image Ready 1.0	User Interface Design	Image design and creation

Table 5.1 List of the software tools used to develop OPTS

5.2 System Development

The design must be translated into the form that can be understood by the machine. The code generation step performs this task. OPTS is accomplished with the well and detailed design and coding.

5.2.1 Platform Development

The platform development will include setting up the Windows 2000, and configure the IIS server.

5.2.1.1 Setting Windows 2000 Server

Before the system is being developed, it needs to run under Windows 2000 Server. During the installation of Windows 2000, the hard disk is formatted to ensure a more stable. Several steps are involved during the installation.

- First, install Windows 2000.
- After that, Internet Information Server 5.0 and Microsoft Transaction Server.

5.2.1.3 Configure Internet Information Server

After installing the IIS, the virtual directory is created so that the user can access the application. The users can access the application through the following address: http://localhost/welcome.asp

5.2.2 Web Pages Coding

An Active Server Page is primarily a scripting environment. Languages used to develop an ASP are HTML and VBScript or JavaScript. The challenge of coding in ASP is to determine and separate the HTML source code from the scripting counterpart.

The scripting language used by the ASP application is specified by using the statement <% (a) LANGUAGE ="VBSCRIPT"%>. This statement is placed at the beginning of the ASP application. The LANGUAGE word keyword can be set equal to any supported

scripting language, such as JavaScript. For client-side scripting, they must be delimited by the <SCRIPT LANGUAGE="VBScript">....</SCRIPT> tags.

On the other hand, server-side scripting requires the RUNAT attribute set to server so that the script should be executed on the server rather than the client (browser). ASP subroutines can also be placed directly in the server-side code between the <% and %> delimiters.

Below is an example taken from the project file name "register.asp":

• When the "Submit Registration" button is press, the web page will passed data to the "AddUser.asp" page to add a user.

<FORM ACTION="AddUser.asp?Update=<%=Request("Update")%>" NAME="frmUser" METHOD="POST" onSubmit="return VerifyData()">

Display a text field to get a user name and store it in the variable "UserID".

<input type="text" name="UserID" value="<%= Session("UserID")%>">

```
If the length of variable UserID is more then 8 letter then display it as an error

if (document.frmUser.UserID.value.length > 8)

{

alert ("Your userID must between 1 to 8 letter");

return false;

}
```

Preparation of a HTML and ASP document involves endless cycle of testing and modifying of the ASP source codes, loading the file in the browser for viewing and validating and then going back to make further changes where necessary.

5.2.3 Database Connection

ActiveX Data Object (ADO) is used to store and retrieve data from a database. ADO is a group of objects designed to provide a simple programming interface to database.

All communication with a database takes place through an open connection. Before any information can be inserted into or retrieved from a database, a connection with the database must be opened. The ADO connection object serves the purpose. Below are a few steps to follow in order to open a database connection.

- Create an instance of the Connection object to open a connection with the database.
- Call the Open method of the Connection object to actually open the connection.
- Once the connection has finished, call the Close connection to close the connection and free the associated system resources.
- Set the name of the object to nothing.

There is methods to open a connection with the database. Here is examples:

<%

Dim objConn

Set objConn = Server.CreateObject("ADODB.Connection")

objConn.Open "Provider=Microsoft.Jet.OLEDB.4.0; " & _

"Data Source= F:\Documents and Settings\Administrator\Desktop\final2\OPTS.mdb"

objConn.Close %>

5.2.4 Development Tool - Microsoft Visual InterDev

This tool enables easy performance of the many complex programming and database tasks required in the creation of a Web site, as well as the incorporation of HTML formatting and layouts, graphics and other multimedia components.

When working on a Web site with Visual InterDev and performing tasks like adding files to the site or editing any of the existing files, this tool creates a second copy of the files on the local computer. This is called the working copy. Whenever these working copies are saved, Visual InterDev updates the file on the Web server as well.

CHAPTER 6 SYSTEM TESTING

Testing is the process of exercising or evaluating a system by manual or automatic means to verify that it satisfied requirements or to identify differences expected and actual results. Testing can uncover different classes of errors in a minimum amount of time and with a minimum amount of effort.

Four types of testing are being used for the Online Psychological Testing System; there are unit testing, module testing, integration testing and system testing. The following are the testing that was carried out under this stage.

6.1 Unit Testing

The unit testing technique is to ensure that the stand-alone program fixes the bug without side effects. After one new module is developed, it is tested independently in order to assure their accuracy and to find faults in the modules. There are three kinds of testing strategy carried out for the unit testing. The following sessions explain the testing strategies that were carried out throughout the project.

6.1.1 Code Reviewing

The codes are examined line by line in order to make sure that many uncovered semantic errors during implementation could be revealed. In reviewing the code, the correctness of coding was identified by comparing it to the original design of the program flow. When the logic and flow of the program were identified, the code was commented so that it can be traced in the future.

The code was also examined and debugged in order to identify any fault coding such as data and syntax faults. It is difficult to debug the error in ASP, as there were no proper ASP debugger and tester used in the project. Usually, the "Response Write" command is inserted into the code to exam the value of the variable. The example below is taken from the project name "delete.asp".

```
<%
Set rsItems1 = Server.CreateObject("ADODB.Recordset")
if request("fordelete").Count>0 then
for intcount=1 to request("fordelete").Count
rsItems1.Filter = "SetID = " & Request("fordelete")(intcount)
rsItems1.Open "Upload", objConn, adOpenDynamic , adLockOptimistic, adCmdTable
```

```
do while not rsItemsI.EOF
rsItems1.Delete
rsItems1.movenext
loop
```

```
rsItemsl.close
nex1
end if
```

%>

<%

The code can be debugged as below:

By using the "Response write" command, a value can be printed on the browser. Thus, it was used as the 'watch' value of the variable. However, if the code is simpler and written with full of confidence, the work will be redundant by using this technique to test the value of certain variable.

After the testing, the final system is in accordance with the system specifications.

6.1.2 Test Cases

After reviewing the codes, test cases are developed to show that the input is properly converted to the desired output. This approach is used as some set of structural input is given and output is observed. This strategy is needed to identify the variance between the prototype and the requirement. In this testing, we input different set of data to the program. For example to test the logon module, we input different login ID and password to test the program. With this, the reaction of the program to the input data could be tested. This could identify the program's faults, which probably happen in normal condition.

6.1.3 Other Users

After the two testing has been used, the beta version of the system is launched to other users for testing purpose. This is to identify the fault that may incur in any other unexpected condition. The testing involved with random data in random situation. From the testing, the feedback is collected from the user. This feedback provides some important information about the usability and reliability of the application.

6.2 Module Testing

After the unit testing, the module testing which include the user module testing and the administrator module testing is performed. One administrator and some product's data have to be created in performing the testing. The testing was carried out to ensure that the codes under the module function accordingly when all units of code are integrated. If the error is exist in a particular module, then the related part of the module that goes wrong can be identify and unit testing is used to identify the errors.

6.3 Integration Testing

When the individual modules are working correctly and meet the objectives, these modules are integrated into a working system. In other words, integration testing is the process of verifying that the system modules work together as described in the system and program design specifications

During the integration, all the module prototypes were combined and tested in a testing environment. The testing environment was consistent for all the modules in terms of interface, user authentication and function calling procedures. The program flow and the testing needs for each of the modules were reviewed and identified. Then, the program flow for the entire system were reviewed and tested. After that, the entire system was tested with some test cases. Finally, the system is published to let the other users to test it.

6.4 System Testing

The last testing procedure done is system testing. Testing the system is very different from unit and integration testing. The system testing is to ensure that the entire application, of which the modified program was a part, still works. It is used to test the integrated system and verify whether it meets the specified requirements.

OPTS is tested whether it meets specific performance efficiency objectives in performance testing. Data integrity testing is used to verify that the data is stored in a manner where it is not compromised under updating, restoration or retrieval processing in OPTS.

CHAPTER 7 SYSTEM EVALUATION & CONCLUSION

OPTS was evaluated to identify the strengths and the limitations of system. Besides that, proposals or recommendations are made for the future enhancement of the system. Nevertheless, there is many problem encountered during the system development. These problems have been resolved eventually.

7.1 System Strengths

There are several advantages in OPTS as listed below:

7.1.1 User Friendly Interface

The interface of the system is user-friendly and consistent where a standard and systematic homepage design is given. OPTS is developed based on the event-driven programming. GUI components such as command button select list and tables are used to attract the users to navigate through the system. Users have the controls of the system flow by just a click on the text / image with hyperlink.

Besides, the Web pages are provided sufficient, brief order instructions and guidance on the interface to enable the user to use the system effectively. The user-friendly interfaces of OPTS will shorten the learning curve and reduce training cost, which includes money and time.

7.1.2 Ease to Use

OPTS is very easy to use. The commands and the layouts are simple and well organized. Therefore, it is easy to learn up, use and understandable. The simplicity of system also enables the users to perform their task and handle it easily.
7.1.3 Custom Password System

Creating a custom-authentication system prevents unauthorized users from viewing pages that they don't have permission to access. User can only view and update their question after login his/her ID and password.

This security issue is taken into consideration for the administration maintenance module. It is used to avoid the unauthorized users from harming the data stored in the database. Only the administrator is allowed to enter this module with the specified admin ID and password.

7.1.4 Reliable System with Effective Errors Handling

Input of the users is validated and verified to prevent errors caused by the invalid input. If there is an input failure occurred, an error message is generated and displayed to inform the user about the error. For example, there is an error message will be prompted for retry login when customer input the invalid login ID or / and password.

7.1.5 System Transparency

System transparency refers t the condition where the users do not need to know where the database resides, how are the system structure, its database management system and anything related to the system built. The users are just required to know how to communicate with the user interface.

7.1.6 Able to Provide Database Maintenance

Administrators able to do housekeeping for database maintenance. They can add, delete, update, the records.

7.1.7 Dynamic Database Access Capability

For the data to be useful, it is organized and stored in the form of database. It is includes all the information displayed in the OPTS system such as images and the coding. Furthermore, data manipulation can be done easily and effectively. It is real-time database information and any modification or changes that made to the records can be updated instantly into the database.

7.1.8 Easy Accessibility

This system is a web-based application and can be accessed easily using the Web browser. The Web browser needed especially Internet Explorer 4.0 and above, which could be downloaded free from Microsoft's Web site.

7.3 Project Problems and Solutions

A lot of system analysis needs to be done on technologies and programming concepts before starting to develop OPTS. The basic knowledge needed as a foundation in building an application of this nature involves studies in fields such as the Internet, Information Systems and Online Psychological Testing System. There are some sections that highlight the problems found during the development of OPTS system and the solutions of it.

7.3.1 Difficulties in Determining Scope of the System

It is impossible to build a full scale complete system within the time give frame. OPTS includes user and administrator section in online testing, online uploading, online registration and etc. This system also involved the Web application and database implementation. It is a huge program.

Many discussions were held with project supervisor to outline the scope of project to be built during in the initial states of the project.

7.3.2 Inexperience in the Chosen Programming Language

Since there was no prior knowledge of programming ASP and HTML, there was an uncertainty on how to organize the codes in a Web page. These new programming languages and concepts were never taught before and to implement such an application requires a fair grasp of the language.

Although it took time for me to learn the new technology, choosing to program in ASP proved to be wise move. Most of the problems faced were manageable through browse the Internet for related materials and referring to the reference books available in the market. Discussion with friends using the same technology was a great help. A more efficient was through trial and error during the coding phase.

7.4 Future Enhancement

The system will be maintained through the lifetime of the system because the user requirements will vary from times to times. Therefore, enhancement in the future will extend the usability of the OPTS system. Moreover, the system limitations should be improved to enhance the functionality.

There are several enhancements that could extend the usability of the developed system:

7.4.1 Provide Online Help

A comprehensive online help should be added to the system. It is to provide the timely response to users' queries and requirements in documentation.

7.4.2 Enhance User Interface

The system should enhance the user interface of the system from times to times. OPTS will become well publicized if its Web pages are enhanced to be more attractive, impressive and interactive. Adding more meaningful and user-friendly elements such as 3D images, animation images and sounds may achieve this enhancement.

7.5 Conclusion

Overall, OPTS has been successfully in achieving and fulfilled the objectives and requirements. The aim of this project is to develop an Online Psychological Testing System through Internet. OPTS is not just an online testing system useful for the general users but also includes an administration module for the maintenance purpose.

It achieves paperless environment because OPTS is replaced the traditional printed testing system. This system enables the question viewing and testing faster and efficient. Furthermore, the Web-based characteristic of this project enables the users enjoyed OPTS at anywhere and anytime.

This project is very important and beneficial. A lot of knowledge, skills and experience were gained throughout the development of the system. These include knowledge in setting up windows 2000 server, Internet technologies, and coding. Programming in HTML, ASP, VBScript and JavaScript proved to be a valuable experience. It provides very powerful features to create highly interactive and dynamic Web pages.

Finally, this project has given me a profound impact in management and communication skills. All the problems faced and experiences gained during the system development should be useful in the advancement of my career in the future. This is because the era is now moving towards Internet technology that requires decent technical and practical knowledge in development of Web application and deploying the network systems and functionality.

BIBLIOGRAPHY

- [1] John G. Burch & Gary Grudnitski, 1989, Information Systems 5th Edition, New York, John Wiley & Sons, Inc.
- [2] FAQ HELPDESK, <u>http://scfn.thpl.lib.fl.us/menu/production/faq.html</u>, Suncoast Free-Net
- [3] Frequently Asked Questions, 1998, <u>http://netcom.net.pk/info/faq.html</u>, NetWork Communications
- [4] WORLD-WIDE WEB, http://www.internet-architects.com/Resources/nettools/web.html
- [5] World Wide Web, <u>http://helpdesk.uvic.ca/resource/network/www.html</u>
- [6] Information Literacy Topics 15 minutes series Web Browsers, http://www.lib.utc.edu/pages/web4_browsers/sld01.html
- [7] What is Web Server?, <u>http://slatertech.com/intranetting/tsld007.htm</u>, Last updated: August 4, 1998
- [8] 15-minute Series What is The World Wide Web, <u>http://telcom.coos.k12.or.us/WhatIsTheWWW/server.htm</u>, InterNIC (Internet Network Information Center)
- [9] What is Active Server Pages?, http://asp-help.com/getstarted/ms/aspdocs/roadmap.asp
- [10] An ASP You Can Grasp: The ABCs of Active Server Pages, http://msdn.mirosoft.com/LIBRARY/BACKGRND/HTML/MSDN_ASPOVER. HTM
- [11] Eugene Eric Kim, 1996, CGI Programming Unleashed, Indiana, Sams.net Publishing
- [12] Microsoft Visual Basic Scripting Edition What is VBScript?, 1996 http://asp-help.com/getstarted/ms/aspdocs/roadmap.asp
- [13] Microsoft Jscript What is Jscript?, 1996, http://asp-help.com/getstarted/ms/aspdocs/roadmap.asp
- [14] msdn Online Web Workshop Clinick's Clinic on Scripting#1: VBScript or Jscript?, <u>http://msdn.Microsoft.com/workshop/languages/clinic/vbsvjs.asp</u>

- [15] Stephen Wynkoop, 1999, Special edition Using Microsoft SQL Server 7.0, Que Corporation
- [16] Lester M. Sdorow, 1998, Psychology, McGraw-Hill
- [17] Anne Anastasi, 1961, Psychological Testing, The Macmillan Company
- [18] Boring E.G., 1950, A history of experimental psychology, Appleton-Century-Crofts
- [19] Kelly G.Shaver & Roger M. Tarpy, 1993, Psychology, The Macmillan Company
- [20] Online Psychology Testing, http://www.queendom.com
- [21] Kenneth E. Kendall & Julie E. Kendall, 1999, System Analysis & Design 4th Edition, Prentice Hall International
- [22] Windows NT Server 4 Unleashed, Sams.net Publishing
- [23] MSDN online Web Workshop, For Starters:#12. Rise of the Serving Class: Internet Information Server 4.0, 1999, http://msdn.microsoft.com/workshop/essentials/forstarters/starts031698.asp
- [24] AIS Network offers full support for Visual InterDev 6.0, 1998, http://www.aisnetwork.net/hosting/Interdev.html

Online Psychological Testing System (OPTS)

Questionnaire

Title: Online Psychological Testing System

Please circle the number that best suggest your opinion about each topic. Remember to circle ONE number for each question.

1) How often do you surf Net?

1) HOW OHEN UU	you suit net?			
Never	Seldom	Sometimes	Usually	Always
1	2	3	4	5
2) Did you do ps	ychological testin	g question before?		
Yes	No			
1	2			
3) How often you	do the psycholog	gical question?		
Never	Seldom	Sometimes	Usually	Always
1	2	3	4	5
4) Do you like to a	do online psychol	logical testing question	on?	
Yes	No			
1	2			
Please state you	r reason:			

5) The online psychological testing system is

Extremely	Very	Useful	Often	Sometimes	Rarely
Useful	Useful		Useful	Useful	Useful
1	2	3	4	5	6

Thank you very much for your response.

APPENDIX III

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