



University of Malaya

Faculty of Computer Science and Information Technology

Interactive First Aid Guidebook

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ABSTRACT

'Interactive First Aid Guidebook' is an information-based web sites that will be providing a comprehensive collection of multiple type of first aid situation and solution. The development of these web sites is to increase the awareness of First-Aid knowledge through Internet. Besides that, the development of this interactive-web-based web site is to aid and ease the process of learning first aid.

From the review of literature have enriched the understanding of Interactivity. *'Interactive First aid Guidebook'* will be a interactive web site in order to respond dynamically to user control by implementing the computer-aided instruction approach. The Computer-Aided instruction is one of the interactive teaching tools.

Database is an important element in developing a web page. Selecting the most suitable database and web server needs a comprehensive research and review from many database approaches. The study of many types of searching methods before implementing the combination of traditional and new searching methods for the first aid web site's search engine.

A survey was conducted to support the type of information that is essential and suitable to be included as part of the web sites module. Besides including an information-based module, there will be a multimedia based tutorial and a multilevel interactive test conceive of 3 categories; Beginner, Intermediate and Expert.

An analysis is required to identify the hardware platform for the web page development, hardware and software requirements, web server and database. During project analysis, there will be an evaluation on the advantages and disadvantages of web server, database and the programming language.

Methodology selection is an important process for the development process and the type of development approach that will be implementing in the project will be the evolutionary development. Before determine the methodology, a study of the drawbacks of this approach have been done in order to eliminate the unforeseen problems that will occur during the development process.

Designing user-friendly interfaces are important; hence improper designed user interactive will lead to a high level of user errors. This project interface design is at the initial stage and will be under modification during the developments process.

The major functionality that will be included in the project are learn module consists of basic and emergencies first aid, tutorial module, test module and search module. All the modules in '*Interactive first Aid Guidebook*' will be integrated with text, graphics, animation and multimedia to aid the learning process.

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I gratefully acknowledge the assistance and guidance of my supervisor, Mr. Ibrahim A. Abdurrazaq. Specifically, the very helpful insight and valuable advises provided throughout the duration when the Final Year Project was undertaken.

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At my final words, I would like to express once my sincere appreciation to those who helped to bring this proposal report to success.

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1.1 Project Overview

"Interactive First Aid GuideBook" is a multimedia and information based web site. This information based web site consists of text, audio, animation, video and graphics elements to deliver an effective and long-lasting memory on user.

Chapter 1

Interactive First Aid GuideBook is a multimedia and information based web site. This information based web site consists of text, audio, and/or video format and allow user to select an online instructions performed by an Instructor directly to the user. The online instructor available on the web site is a tutorial class that users can also be attend through the click of mouse. This Online First Aid GuideBook is available in Malaysia.

1.2 Project Objectives

The main objectives of my final project are:

1. To aid safety in learning first aid through web site to increase the awareness of importance of first aid in today's life.
2. To develop an interactive first aid guidebook that is easy to explore and understand to create a long-lasting memory in the process of learning first aid.
3. To help user to understand their level of understanding on first aid knowledge by including multilevel tutorial and test.

INTRODUCTION

1.1 Project Overview

"Interactive First Aid GuideBook" is a multimedia and information based web site. This information based web site consists of text, audio, animation, video and graphics elements to deliver an effective and long-lasting memory on user.

Interactive first aid will consist of combination of text, audio, and/or video format and allow user to select an online instructions performed by an Instructor directly to the user. The online Instructor available on the web site is a tutorial class that users are able to attend online with the click of mouse. This Online tutorial first aid classes is the first available in Malaysia.

1.2 Project Objectives

The main objectives of my final project are:

1. To aid society in learning first aid through web site to increase the awareness of importance of first aid in today's life.
 2. To develop an interactive first aid guidebook that is easy to explore and understand to create a long-lasting memory in the process of learning first aid.
 3. To help user to understand their level of understanding on first aid knowledge by including multilevel tutorial and test.
-

1.3 Project Definition

- Multimedia based interactive First aid web page for learning and obtaining information.
- Multimedia elements including combination of text, audio, animation, video and graphics.

1.4 Project Scope

This Interactive First aid guidebook will focus on three main modules. The main modules are:

1. Tutorial Module
2. Interactive Module
3. Search Module

LITERATURE REVIEW

2.1 Interactivity Definition

Interactivity is the property of any medium that responds dynamically to user control. Interactive reduces the time of information retrieval. This is because the more timely the arrival of information increased the level of curiosity and this will provide dissatisfaction. Interactivity will help in shorter the time period between the question and the answer, the more satisfying the process, and the greater the likelihood the information will be retained.

Whatever the guise of computer, computer-driven versions of traditional media are collectively called interactive media. Audio, video or animation is linked to the text, are often called multimedia.

Type of interactive:

1. Look things up for more information.
2. Navigate (example: "PLEASE TURN TO PAGE...")
3. Link words to other words
4. Remember the previous section and ability to return to the section.
5. Play audio, video, and animation
6. Organize and present information according to a nonlinear structure

Computers greatly enhance the power of interactivity because computers give us the ability to interact with text, images, audio and video in ways that improve the functionality of paper book. Interactivity offers efficient access and storage, and constructively adds functionality with multimedia elements.

2.2 The Elements of Interactivity

The specific elements that make any kind of media interactive are:

2.2.1 Basic Navigation

To be interactive, the basic function is the ability to display visual information such as text, picture, and video. Besides that, interactive must have the ability to provide a way for user to move through the information.

2.2.2 Searching

2.2.2 Hyperlinking

Interactive allows us to link any point to any other point. For example, we can click on a word with our mouse and jump to related information located in another part of the WebPages. This hyperlink is known as *hot spots* or *links*. A hot spot can be a word or phrase, a picture or graphic design, or part of a picture or a graphic design. A hot spot can trigger playback of an audio or video clip. Through hyperlinking, a new navigational system can be implemented that automates the task of locating the information.

The advantages of hyperlinking are that it presents a neatly organized hierarchy of information to the user and create more direct path to the desired information that is more efficient. Another advantages of hyperlinking are that it allows cross-reference and play the linked video or audio. In addition, the definitions, elaboration, explanations or exposition can be easily obtain by simply linking words and letting the user choose when further elaboration is needed.

The disadvantage of hyperlinking as a navigational tool is that it is easy to get lost within layers of hyperlinked locations as user skip from section to section.

To overcome this problem, it has become a standard practice in interactive media to put a link back to user's previous location and a link back to the beginning of the section on every screen or in a menu at a consistent location.

2.2.3 Searching

Besides that, interactive media can included a powerful ability by locating words or phrases within large volumes of text. A search function can locate every word in the text. The user can locate every occurrence of a useful word throughout a text.

Searching makes a phenomenal impact on information structure because it can create custom structure to suit the user's purpose. Searching can be used to locate a word or phrase within a large amount of online material encompassing many different publications located on computers all over the world.

Electronic storage allows the use of powerful search engines, computer programs that locate words or groups of words in text. Using search engines, users can efficiently locate both very general and very specific information.

2.3 Type of Interactive

2.3.1 Interactive Nonfiction

2.3.1.1 Manuals, Tutorials and Training

Procedural manual can benefit as much from multimedia as from the organizational ability of interactive technology. Manuals tend to tend with procedural descriptions that best illustrated in video, animation, or a series of images with voice-over narration. In first aid course, it is nearly difficult to adequately explain the correct procedure for performing CPR using only text and picture in a book. The use of interactive tools allows user to search the information, which facilitate access and hence increase the content's value.

Tutorials allow the user to follow along and actually perform some of the tasks being taught. Any task that can be represented on a screen with user input via a mouse, touch screen or some other device can be very helpful in learning situations because the user can instant feedback.

A training manual could be shown on a screen along with text-based or voice-over diagnosis. Many different interactive techniques such as keep test score results, and track improvement can accompany this training manual.

2.3.1.2 Computer-Based Training (CBT) and Computer-Aided Instruction (CAI)

Computer-based training and computer-aided instruction have been important interactive teaching tools. In the past, CBT and CAI often implemented by complex hookups of laser disc players and computers. Now, CBT and CAI are done largely by compact self-contained systems, such as computers with CD-ROM drives, or by online systems

2.3.1.3 Health Information and Diagnosis

Books dealing with health and medicine have inherent problems with information organization. In fact, the problem with the majority is that the information may be there but locating information can be daunting. In some cases, the technical vocabulary can be serious barriers. Search and retrieval functions and the user's ability to create customized organizational structure can be immense help in turning data into useable information.

Interactive technologies make it possible to locate diseases by symptom, physiological function, or bodily system. In fact, diagnosis becomes possible in a way that is impossible in a paper book.

In addition, multimedia can provide animated example of first-aid techniques such as Heimlich maneuver or CPR, integrated into the appropriate of the information structure.

2.3.2 Interactive Fiction

Fiction, by its nature, is the product of creative mind and perhaps does not required the search or information organization capabilities offered by interactive media. However, as with any art form, fiction writing undoubtedly will evolve in respond to interactive technology. New technologies offer creative opportunities, and experimental fiction writers are actively inventing new kinds of interactive prose such as "live" fiction novels on WebPages and fiction newsgroups.

The types of interactive fiction are:

1. User-selectable Multiple-plot Branching and character and environmental Attributes.
2. Hand-Eye Games
3. Environmental Exploration.

2.4 Database Approach

2.4.1 Traditional Full Text Database

Traditional full text database systems are the most common and are the easiest to set up. Well-suited to a wide variety of database needs, the traditional approach to full text search databases is the most appropriate choice in most cases.

The traditional full text search systems are generally composed of two parts, which are sometimes integrated. Set up begins with a collection of text information, usually represented by several text files, and builds indexed that will be employed when searches are performed. In essence, the pre-processor builds a list of words found in each of the text files, along with other reference information. Specific target words can be selectively included or excluded in most cases.

The second part of the system scans the resulting list when a user performs a search. When successful matches are found, system will displays a list of matching files the user can select from, and then the associated text can then be displayed. This is the reason why it is preferable to have a collection of text information rather than a single file or a handful of relatively large files. Display and the typical search methodology work best when numbers of smaller files are used.

Traditional full text search systems allow keyword searching. Some allow multiple keyword, proximity and phase searching.

2.4.2 Relational Database

There are different ways to organize data in a database but relational databases are one of the most effective. Relational database systems are an application of mathematical set theory to the problem of effectively organizing data. In a relational database, data is collected into tables (called relations in relational theory).

A table represents some class of objects that are important to an organization. Each table comprises columns and rows (attributes and tuples in relational theory). Each column represents some attribute of the object represented by the table.

When organizing data into tables, there are many different ways to define tables. Relational database theory defines a process, normalization, which ensures that the set of tables defined will organize the data effectively.

2.4.3 Database Architecture

Microsoft® SQL Server™ data is stored in databases. The data in a database is organized into the logical components visible to users. A database is also physically implemented as two or more files on disk.

When using a database, you work primarily with the logical components such as tables, views, procedures, and users. The physical implementation of files is largely transparent. Typically, only the database administrator needs to work with the physical implementation.

2.4.4 Client/Server Database

In client/server database architecture, the database files and DBMS software reside on a server. A communications component is provided so applications can run on separate clients and communicate to the database server over a network. The SQL Server communication component also allows communication between an application running on the server and SQL Server.

Server applications are usually capable of working with several clients at the same time. SQL Server can work with thousands of client applications simultaneously. The server has features to prevent the logical problems that occur if a user tries to read or modify data currently being used by others.

While SQL Server is designed to work as a server in a client/server network, it is also capable of working as a stand-alone database directly on the client. The scalability and ease-of-use features of SQL Server allow it to work efficiently on a client without consuming too many resources.

2.4.5 Structured Query Language (SQL)

To work with data in a database, a set of commands and statements (language) must be defined by the DBMS software. There are several different languages that can be used with relational databases; the most common is SQL. Both the American National Standards Institute (ANSI) and the International Standards Organization (ISO) have defined standards for SQL. Most modern DBMS products support the Entry Level of SQL-92, the latest SQL standard (published in 1992).

2.5 Searching Methods

2.5.1 Multiple Keyword Searching Method

Multiple keyword searching is generally Boolean in nature. Boolean searches allow the use of logical operators (and, or, not) separating the multiple keywords. A Boolean keyword search needs to use a smaller documents, which each analogous to a single article, rather than a few large or single text files. This is because the scope of the search may be too wide to provide useful results when the matching text is displayed.

2.5.2 Proximity Searching Method

Proximity searching is a technique whereby the user can specify that two or more keywords fall within a certain number of words. With a proximity-capable, a user can specify as part of the search criteria that the words lie within the search words.

2.5.3 Phase Searching Method

Phase searching allows user to type in a sentence fragment and locate the entire phase they want. This is important for many applications, especially when multiword searches are required.

Keyword searching, even with proximity capabilities, we can yield reliable results for these searches, since only presence, not word order, is taken into consideration. Besides that Phrase and proximity searching are technologically more difficult to implement than plain or Boolean keyword searches.

2.5.4 New Searching Method

2.5.4.1 Hypertext

Hypertext searching is very similar to traditional full text searching. Hypertext refers to linkages between separate documents. Others than links, hypertext systems share most features of traditional full text search tools. But traditional full text search usually have completed automated preprocessing systems, hypertext systems have elaborate authoring systems to build the documents libraries, along with potentially labyrinthine inter-document links.

2.6 Survey

2.6.1 Survey Objectives

The survey objectives are:

- To find out the age category of people who usually get information on first aid
- To know the ways they usually get the first aid information and the purpose of getting first aid information.
- To find out the type of first aid information that suitable to be included in the project
- To survey on the popularity of first aid web site on the Internet.
- To understand the first aid knowledge level on 4 type of age category.

2.6.2 Survey Introduction

On the 3rd of July 2000 to 15th of July 2000, a survey have conducted to assist me on the literature review to find out more on type of first aid information that can included in the final year project. In order to provide more useful information to suit today's first aid environment. The survey have targeted on 3 types of places to undergo the survey research. The places are University of Malaya, University Hospital and Secondary School.

2.6.3 Survey Target Respondents

In University of Malaya, the questionnaire have distributed to 2 types of category. The first category was the undergraduate from 1st year student to final year student and the second category was the lecturer and staff of University of Malaya. Total of 60 respondents involved in the survey.

For University Hospital, the target group was the emergency staff in the emergency Unit and the nurses in the hospital. UH was chosen as one of my research place because the staff in UH are well expose to the first aid environment where there are skilful in performing first aid for patience especially the staff in the Emergency Unit. This category's information can helps in determine the type of first aid information that most suitable to be included in the web sites. The First Aid test will be categorized as beginner, intermediate and expert first aid.

Two separates survey have conducted on secondary school, which are Sekolah Menengah Sultan Abdul Samad and Sekolah Menengah Azlan Shah, Petaling Jaya. The target age group for this category is below 18 years old. This type of category have chosen to find out how far the secondary school students had exposed to first aid in school and whether they had access to the Internet to look for information on first aid and the purpose of the first aid information.

PROJECT ANALYSIS

3.1 Survey Analysis

3.1.1 Survey Result

From the survey that have conducted, the finding obtain is that 95 % of the respondents do have an Internet access and only 5 percent do not have an Internet access. Majority of the respondents get Internet access through schools or universities. 40 percent out of 95 percent of the respondents obtain Internet access through Cyber café or at home. While others get Internet access through office or friends.

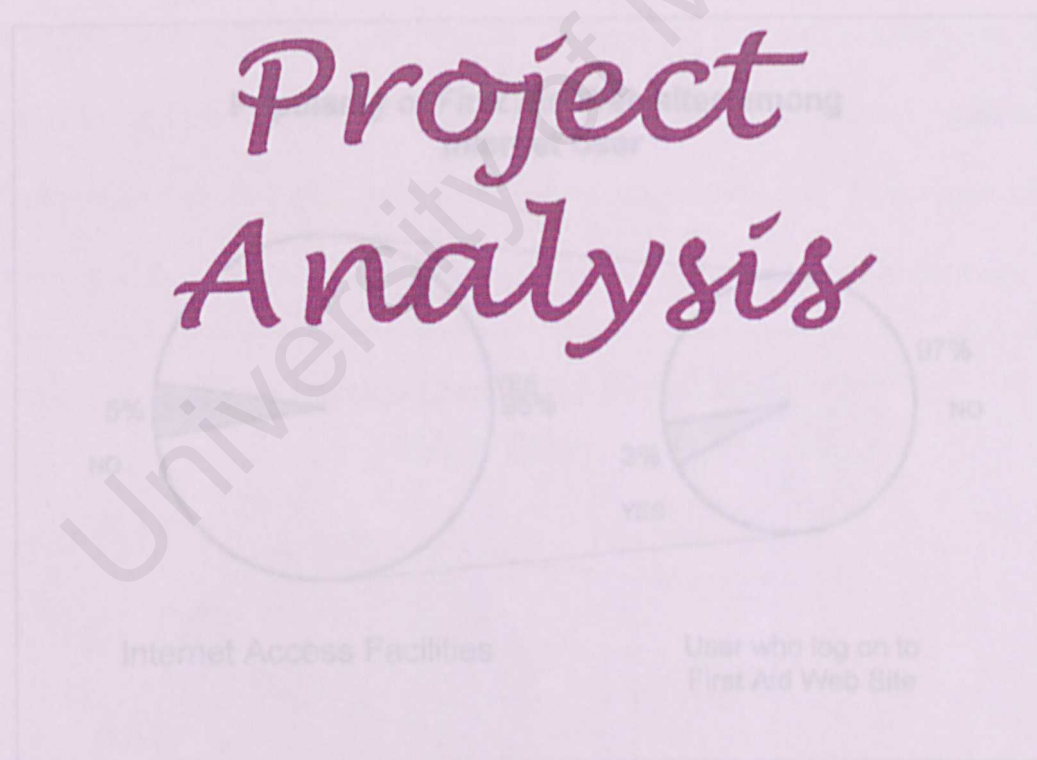


Figure 3-1: Popularity of First Aid Web Sites among Internet User.

Even though, users are exposed to Internet but only 3 percent of the respondents have gone across the first aid web sites on the Internet. The total of 97 percent do not

PROJECT ANALYSIS

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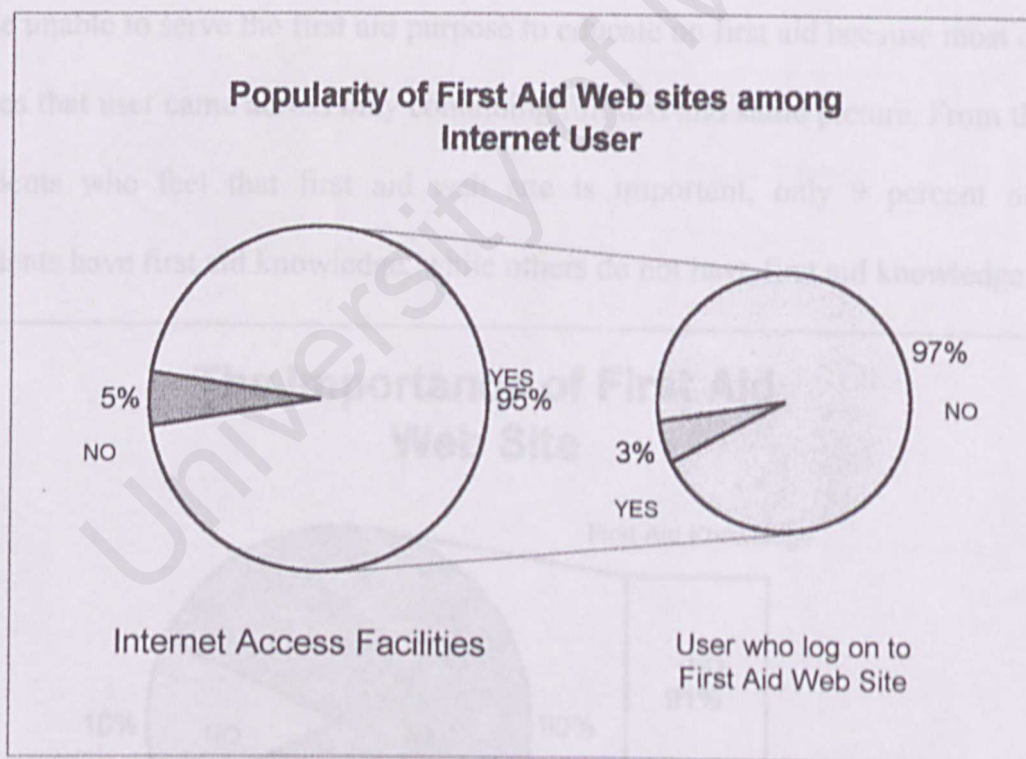


Figure 3.1: Popularity of First Aid Web Sites among Internet User.

Even though, users are exposed to Internet but only 3 percent of the respondents have come across the first aid web sites on the Internet. The total of 97 percent do not

aware the existing of first aid web sites in the Internet. Besides that, most of the users responded that their do not obtain first aid information through the Internet. For those who do log on for first aid web sites are for academic requirements purposes where they are exposed through the school society such as St. John Ambulance. Others reason that users log on for first aid web sites are to obtain first aid information, enrich first aid knowledge and something were co-incidentally come across a first aid web site on the Internet

Most of the users feel that First aid web site is important and is suitable to be developed for many reasons but still unable to obtain interest and awareness of the web site. This supported by 90 percent of the respondents feel that first aid web sites are important. Only 10 percent feel that first aid web sites are not important because this web site unable to serve the first aid purpose to educate on first aid because most of the web sites that user came across only containing full text and static picture. From the 54 respondents who feel that first aid web site is important, only 9 percent of the respondents have first aid knowledge, while others do not have first aid knowledge.

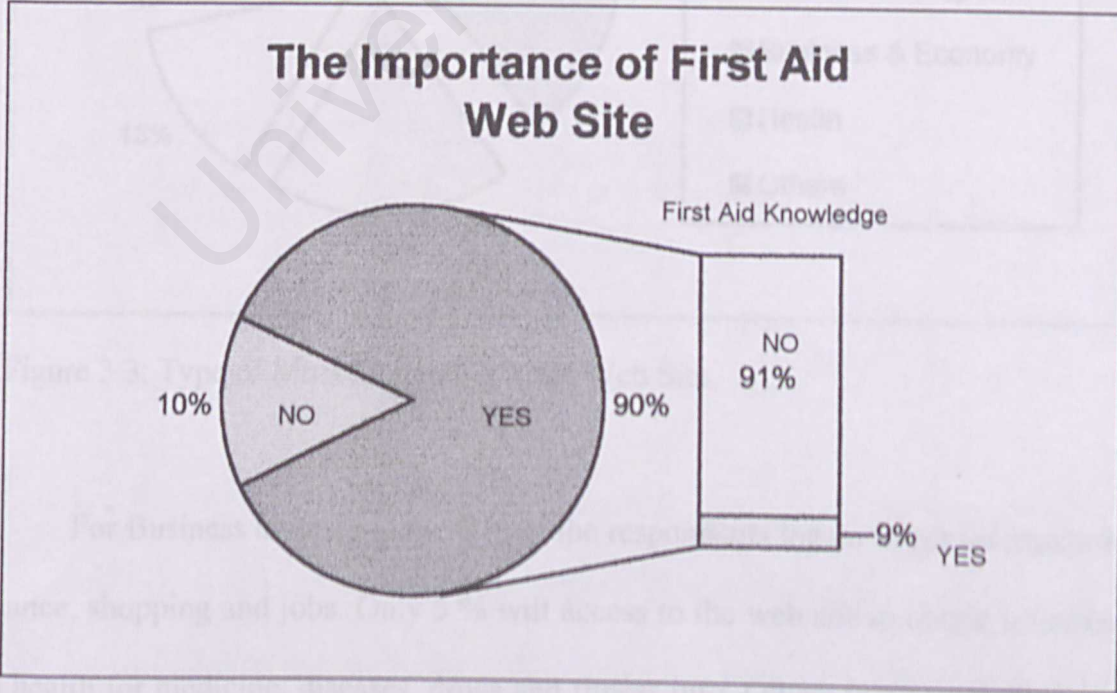


Figure 3.2: The Importance of First Aid Web site.

From the survey that have conducted is found that most of the Internet users log on to the web site for entertainment purposes such as cool links, movies, humour and music. Followed by News and media, 19 % where users can get full coverage on news and TV schedule. 13 % of the respondents log on to the Internet for education purposes. While others log on are for getting information on college and university. Besides that, 11% of the respondents access to Internet for recreation and sport purpose such as traveling and outdoors activity information.

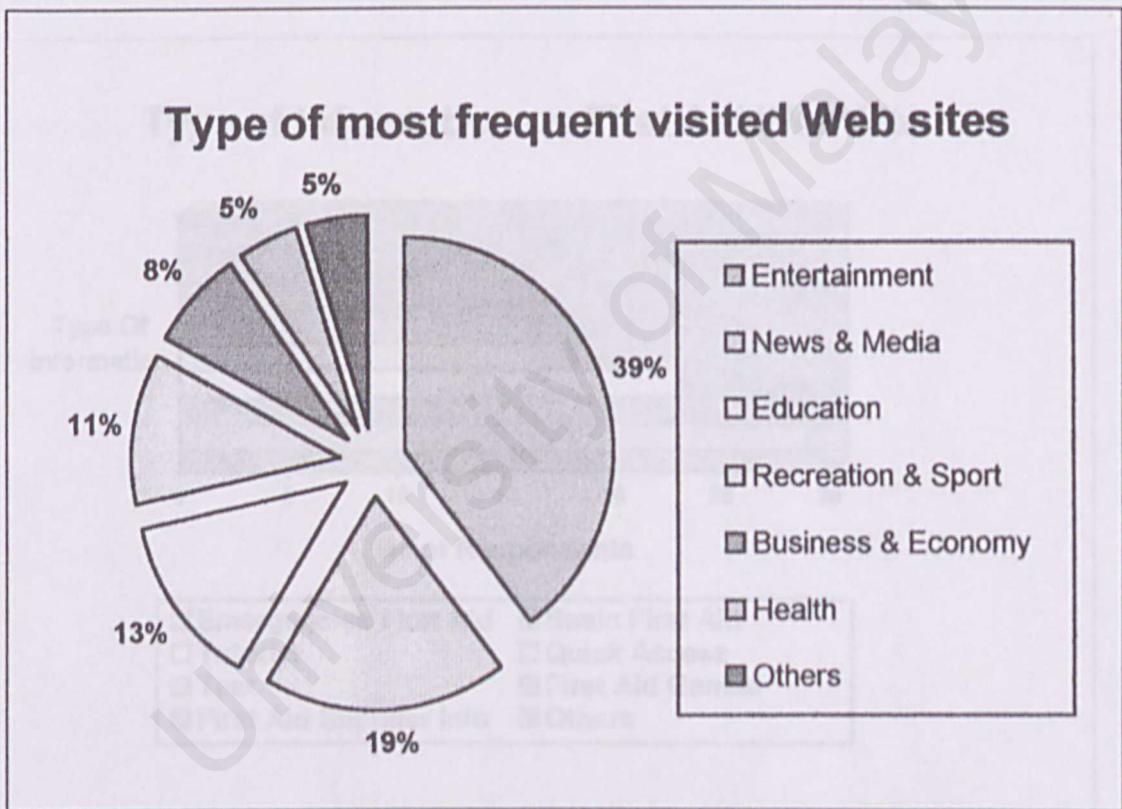


Figure 3.3: Type of Most Frequent Visited Web Site.

For Business and economy, 8 % of the respondents log on to get information on finance, shopping and jobs. Only 5 % will access to the web site to obtain information on health for medicine, diseases, drugs and fitness info. Others will log on for arts and humanities, governments, reference, social science and society & culture.

The type of information that will be included in the ‘*Interactive First Aid Guidebook*’ is base on the respondents’ selections through the survey that conducted. Respondents were given a range of choices including Emergencies First Aid Information, basic first aid information, interactive tutorial, Test on first aid, quick access on first aid, games on first aid and first aid supplier information. From the survey, more that 25 of the respondents selected Emergencies and Basic first aid as the essential Information that must be included in the web site because most of the respondents do not have the basic first aid knowledge and need guidance on how to handle an emergencies situation.

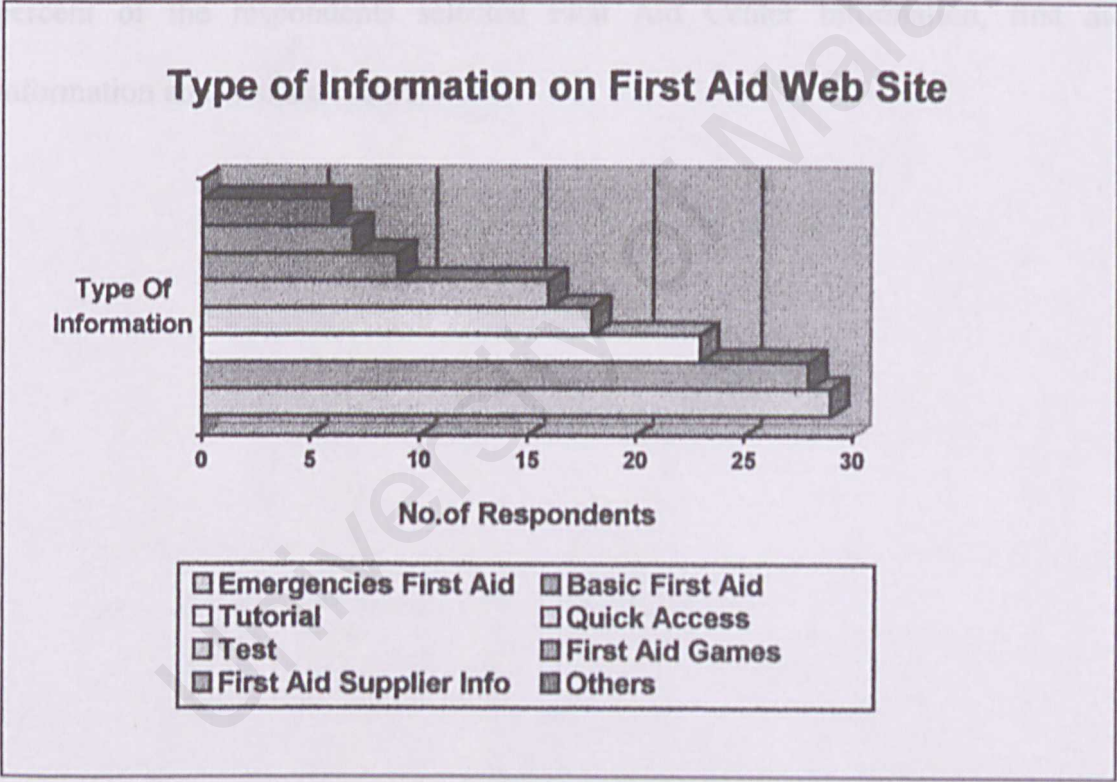


Figure 3.4: Type of Information on First Aid Web Site.

While 23 of the respondents selected tutorial, followed by Quick Access on first aid information with 17 numbers of respondents. Respondents also selected test on first aid to be included in the web site in order to help them to evaluate their first aid knowledge and understanding after follow-up the tutorial.

Less than 15 percent of the respondents select first aid games to be included in the *'Interactive First Aid Guidebook'*. Even though some of the respondents agree that this first aid games will most properly attract the younger generation Internet user but they feel that this Information based web site should be design to provide first aid information rather than a games based first aid web sites.

While only 5 percent of the respondents required First Aid supplier Information on the Internet because most of the first aid equipment and components can be obtain in the pharmacies and stores such as Guardian, George Town and Watson. Others 4 percent of the respondents selected First Aid Center Information, first aid kit information and first aid chatroom.

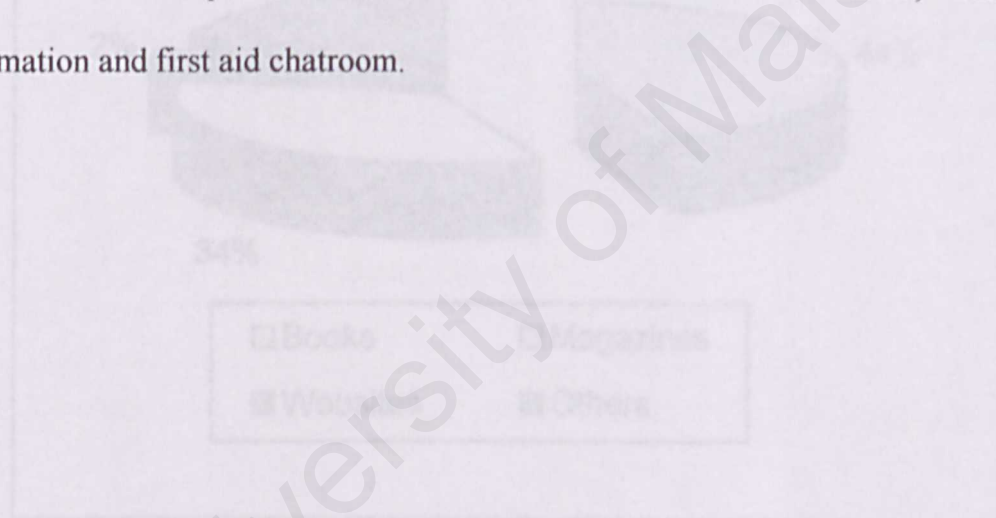


Figure 3.5 Ways of Getting First Aid Information

The unpopularity of web site as a source of information or for the learning process on first aid is because most of the web sites available on the Internet are not interactive and majority of the websites available on the Internet is for business purposes where users need to pay for the first aid courses.

Most of the respondents do not practice on getting information through Internet as a main source on first aid. For school society such as St. John Ambulance, they learn

3.1.2 Survey Finding

The survey have conducted for a duration of 2 weeks, which found that the most popular ways of getting information on first aid is through books and magazines. Others will get information through friends or newspaper. Only 2 percent of the respondents search through web site for first aid information.

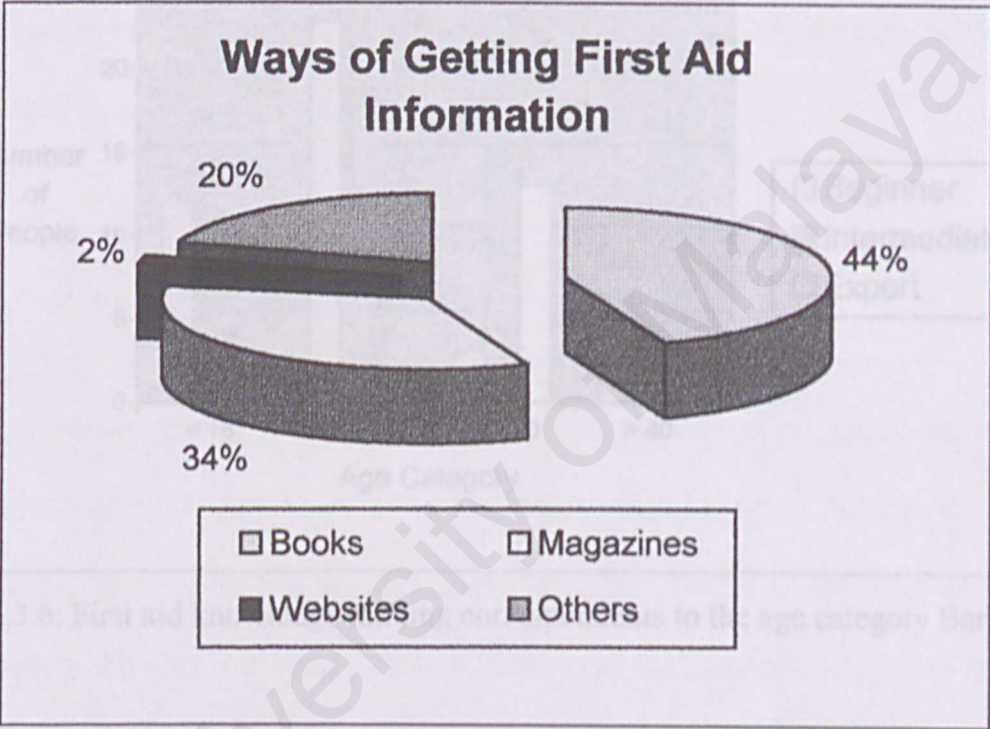


Figure 3.5: Ways of Getting First Aid Information.

The unpopularity of web site as a source of information or for the learning process on first aid is because most of the web sites available on the Internet are not interactive and majority of the websites available on the Internet is for business purposes where users need to pay for the first aid courses.

Most of the respondents do not practice on getting information through Internet as a main source on first aid. For school society such as St. John Ambulance, they learn

first aid through professional instructor and books and they do not explore to the web site as a first aid guidebook.

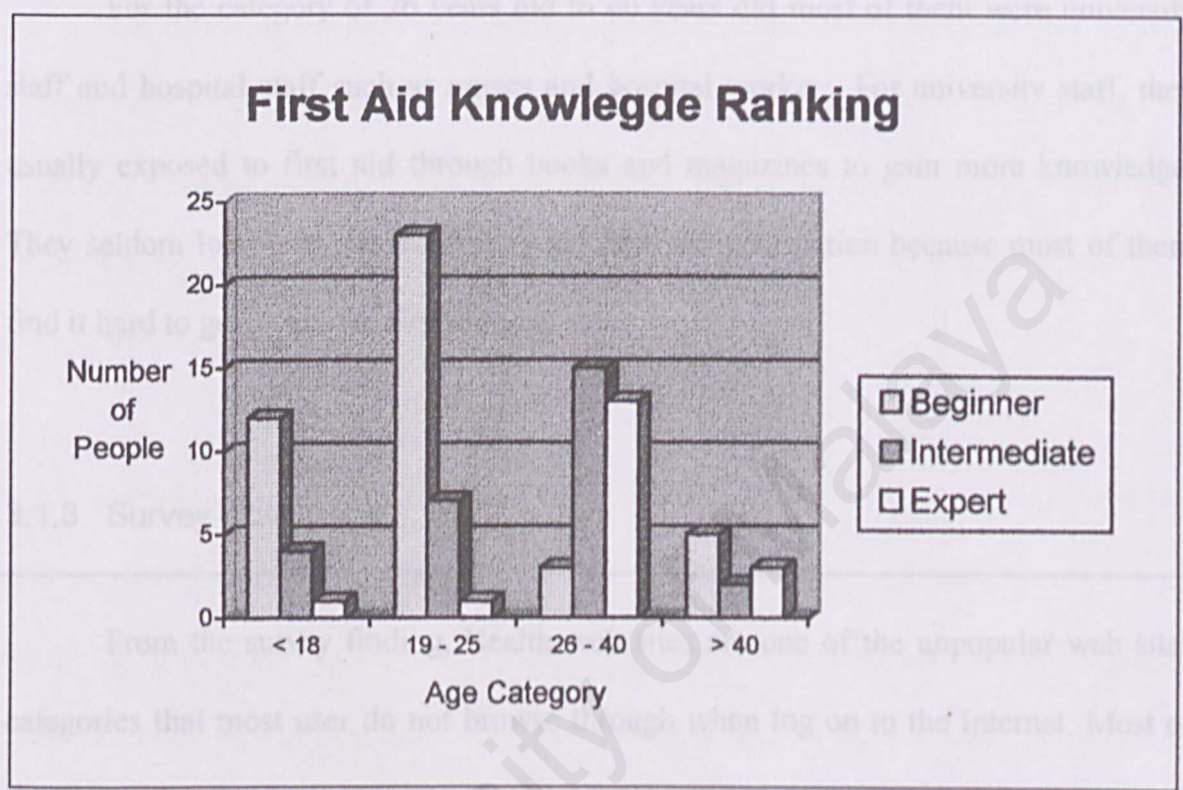


Figure 3.6: First aid knowledge ranking corresponds to the age category Bar Chart.

Besides that, is also found that the respondents in the age category of 19 years old to 25 years old, which consist of undergraduates' university, were lack of first aid knowledge even though most of them think that first aid knowledge is essential and important to today's life. For those who are first aiding expert, they are expose to first aid knowledge during school day while joining school society such as St. John Ambulance.

While for the first age category that 18 years old and below, they were more likely to be exposed to the first aid environment where most of them are required to

join at least one uniform society in school co-curriculum. They also exposed through books and studies. Sometimes they do exposed to first aid practice during society first aid training.

For the category of 26 years old to 40 years old most of them were university staff and hospital staff such as nurses and hospital workers. For university staff, they usually exposed to first aid through books and magazines to gain more knowledge. They seldom log on to the Internet to get first aid information because most of them find it hard to get a suitable first aid web site.

3.1.3 Survey Conclusion

From the survey finding, Health web sites are one of the unpopular web sites categories that most user do not browse through when log on to the Internet. Most of the first aid web sites are categorize under '*Health*' and '*Business*' type of web site. This makes the first aid web sites unreachable to the Internet users who log on for entertainment, education, New & media, and others web sites. Therefore, '*Interactive First Aid Guidebook*' will be categorize as education and entertainment website because of the interactive tutorial and test.

The type of information that will be included in the web site correspondent from the survey that have conducted are Basic First Aid, Emergencies First Aid, First aid tutorial, First aid test and Quick Access on First Aid. The First Aid Test will be based on 3 categories; Beginner, Intermediate and Expert.

3.2 Hardware Platform

3.2.1 Windows NT

For choosing the hardware platform to be implemented in the final year project, *"Interactive First Aid Guidebook"* is whether in UNIX platform or Windows NT platform. After the literature review, is concluded that the project will be developing on Windows NT platform. This is because most of the users use Windows operating system and is much more accessible to the average user.

Windows/Intel (Wintel) system have been crossing over into enterprise sector and are very popular for high-end application and web server solutions, is not just an operating system but also a networking environment. Windows NT Server 4.0 comes with its own web server software, Internet Information Server (IIS), and HTML authoring software. This helps in setting up an intranet or Internet site because it becomes very simple. Windows NT even has native support for its own streaming solution, NetShow.

Windows Server meets the needs of a broad spectrum of users, from corporate intranets to Internet Service Providers hosting Web sites. Windows NT is a good solution of server platform because many users have a complete Windows Enterprise. Perhaps the biggest benefit to use Windows NT is that a growing number of vendors are writing server for NT systems.

3.2 Web Server

3.2.1 Hardware Requirements

3.2.1.1 Internet Information Server 5.0 (IIS)

- Pentium II or above
- 32 MB or 64 MB Memory
- 65 MB hard disk Space or 3.2 GB
- Windows 9x or Windows NT Workstation with SP4, Windows NT Server with SP4, or Windows NT Enterprise with SP4.
- Internet Explorer 4.01 or above.

3.2.2 Advantages

IIS is integrated at the operating system level with improved protection. The integration increases the security for Web applications.

By default, IIS runs all applications in a common or pooled process that is separate from core services. In addition, administrators can still isolate mission-critical applications that should be run outside of both core IIS and pooled processes.

3.3 Web Server

3.3.1 Internet Information Server 5.0 (IIS)

The web server that will be used in my final project is Internet Information Server 5.0 (IIS). This web server is available in Windows NT Server 4.0. Internet Information Server 5.0 (IIS) is fully integrated at the operating system level and Windows Server lets organizations add Internet capabilities that weave directly into the computing infrastructure.

3.3.2 Advantages

IIS is integrated at the operating system level with improved protection. The integration increases the reliability for Web applications.

By default, IIS runs all applications in a common or pooled process that is separate from core IIS processes. In addition, administrators can still isolate mission-critical applications that should be run outside of both core IIS and pooled processes.

3.4 Database

3.4.1 Microsoft® SQL Server™

Microsoft® SQL Server™ is a Structured Query Language (SQL) based, client/server relational database. Microsoft SQL server is also a RDBMS (Relational Database Management System) with better data integrity to avoid getting errors from the database. SQL Server can support many databases, and each database can store either interrelated data or data unrelated to that in the other databases.

Database diagrams graphically represent the tables in your database. The database diagrams display the columns contained within the tables, relationships between the tables, and indexes and constraints attached to the tables.

3.4.2 Advantages

- Microsoft® SQL Server™ is designed to work effectively in two environments, in two-tier or multitier client/server database system and in desktop database system.
- Ease of installation, deployment, and use because SQL Server includes a set of administrative and development tools that improve your ability to install, deploy, manage, and use SQL Server across several sites.

3.5 Programming Languages

- Scalability. The same database engine can be used across platforms ranging from laptop computers running Microsoft Windows® 95/98 to large, multiprocessor servers running Microsoft Windows NT®, Enterprise Edition.
- Data warehousing. SQL Server includes tools for extracting and analyzing summary data for online analytical processing (OLAP). SQL Server also includes tools for visually designing databases and analyzing data using English-based questions.
- System integration with other server software. SQL Server integrates with e-mail, the Internet, and Windows.

3.5.2 Microsoft Active Server Pages (ASP)

Microsoft Active Server Pages (ASP) lets developers create dynamic content by using server-side scripting and components to create browser-independent dynamic content. ASP provides an easy-to-use alternative to Common Gateway Interface (CGI) and Internet Server Application Programming Interface (ISAPI) by letting content developers embed any scripting language or server component into their HTML pages. ASP pages provide standards-based database connectivity and the ability to customize content for different browsers. ASP also provides error-handling capabilities for Web-based applications.

3.5 Programming Languages

3.5.1 HTML (Hypertext Markup Language)

The web page will be built using HTML as a basic computer language. HTML is a markup language that tells the web browser how to display the text and the graphics including font size and style. HTML lets developers describe the format of a Web document. The advantage of using HTML is HTML is just a text, so it can transfer across modems and telephone lines quickly. While the disadvantage of HTML is that HTML is limited in what it can display and unable to create dynamic contents

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ASP provides performance-enhanced versions of its popular installable components. These objects scale reliably in a wide range of Web application environments. ASP supports the new scripting technology, Windows Script Components by turning business logic script procedures into reusable COM components for Web applications and other COM-compliant programs.

ASP has a feature for determining the exact capabilities of a browser. When a browser sends a cookie describing its capabilities (such a cookie can be installed by using a simple client-side script), developers can create an instance of the Browser Capabilities Component that retrieves the browser's properties as returned by the cookie. Developers can use this feature to discover a browser's capabilities and adjust an application accordingly.

ASP ability to sense when executing requests are blocked by external resources and automatically provides more threads to simultaneously execute additional requests while continuing processing. If the CPU becomes overburdened, ASP curtails the number of threads in order to reduce the constant switching that occurs when too many non-blocking requests are executing simultaneously.

Traditionally, Web developers have been unable to prevent others from reading their scripting code. ASP supports a new script encoding utility provided with Microsoft Visual Basic Scripting Edition (VBScript) and Microsoft JScript 5.0. Web developers can apply an encoding scheme to both client and server-side scripts that makes the programmatic logic unreadable. When unencoded, the logic appears in standard ASCII characters. Encoded scripts are decoded at run time by the script engine, so there's no need for a separate utility. Although this feature is not intended as a secure, encrypted solution, it can prevent most casual users from browsing or copying scripts.

3.5.3 JavaScript / JScript

JavaScript can be divided into 3 distinct parts: the core language, client server and server side extensions. The core language contains the fundamentals that mostly comply with the ECMAScript standard. JavaScript offers the ability to manipulate the web page's Document Object Model (DOM) and the various browsers' Object Models. Besides that, JavaScript also allow to write standalone components, CGI programs, utilize key server-side objects such as ASP and ADO, and even to program an operating system's shell. In additional, JavaScript has the ability, through Netscape's LiveConnect technology, to interact with actual Java code.

Jscript is Mircosoft's own implementation of the ECMAScript standard. Jscript do not run under Netscape browsers s client-side code. Besides that, JScript alsohas some restrictions being run as server-side code because JScript only can run under IIS and as WSH (Windows Script Host) scripts.

4.1 Evolutionary Development

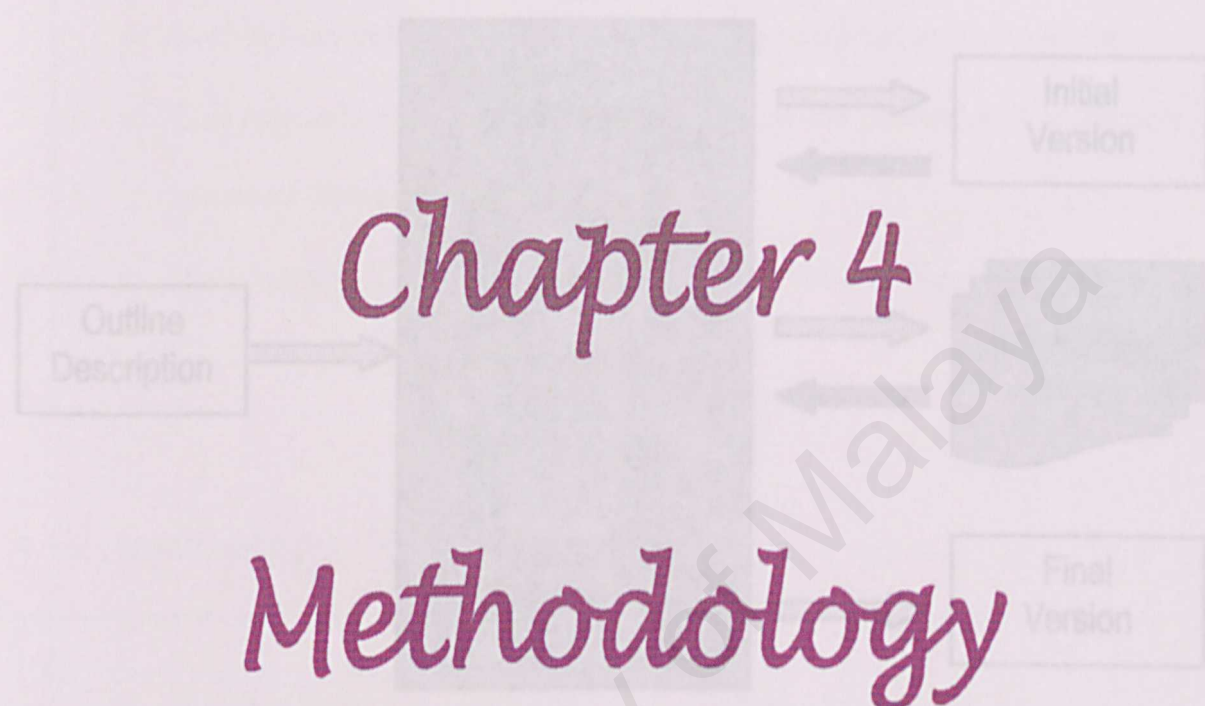


Figure 4.1: The Evolutionary Development Process Diagram

Evolutionary development is based on the idea of developing an initial implementation, exposing it to comment and refine through many versions until an adequate version has been developed. Rather than have separate specification, development and validation activities, these three activities are carried out concurrently with rapid feedback across these activities.

The type of evolutionary development will be the exploratory programming where the objective of the process is to work with the user to explore the requirements and deliver a final version. The development starts with parts of the module and the version evolves by adding new features and functions as proposed.

METHODOLOGY

4.1 Evolutionary Development

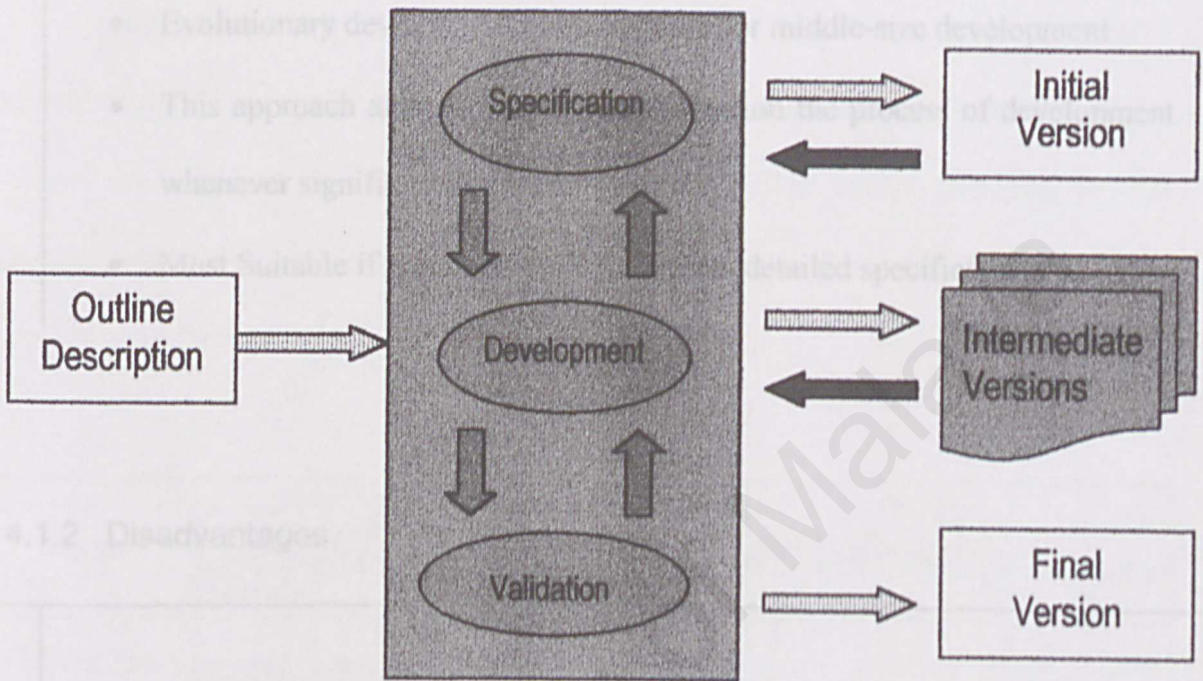


Figure 4.1: The Evolutionary Development Flow Diagram

Evolutionary development is based on the idea of developing an initial implementation, exposing to comment and refine through many versions until an adequate version has been developed. Rather than have separate specification, development and validation activities, these three activities are carried out concurrently with rapid feedback across these activities

The type of evolutionary development will be the exploratory programming where the objective of the process is to work with the user to explore the requirements and delivery a final version. The development starts with parts of the module and the version evolves by adding new features and functions as proposed.

4.1.1 Advantages

- The evolutionary approach to development is more effective than waterfall approach in producing version that most meet the needs of user
- Evolutionary development is appropriate for middle-size development
- This approach also avoids re-implementation the process of development whenever significant changes are required.
- Most Suitable if it is impossible to express detailed specification.

4.1.2 Disadvantages

- Visibility of the process for each version may not be clearly recognized to measure the progress and will cause overlapping of functionality.
- May lead to unstructured development process because the continual change tends to corrupt the structure and evolution is likely to be difficult and costly

4.2 Planning

4.2.1 Project Schedule

This project will be divided into 7 phases, the phases may be implemented concurrently which mean more that one phase can be running at the same time. The phases are literature review, learning development tools, system analysis, system design, prototyping, testing and documentation. The planed duration for each phase are stated in the table below:

Phase	Jul-00				Aug-00				Sep-00				Oct-00				Nov-00				Dec-00				Jan-01				No.of Weeks
	Week				Week				Week				Week				Week				Week				Week				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Literature Review																									6				
Learning Development Tools																									15				
Prototyping																									6				
System Design																									11				
System Analysis																									8				
Testing																									14				
Documentation																									28				

Table 4.1: Final Year Project Schedule

4.3 Procedure

Understanding the terminology, developments methodology, application software, and programming languages are important for implementing a comprehensive web site for my final year project, “Interactive First Aid Guidebook”. Therefore the first stage or the initial stage of the project is the Literature Review. After the Literature Review, the development platform, server, database, and programming languages to be used in the project will be verify and will proceed to the next stage of learning the development tools.

The concept of pictorial descriptions and prototyping – “what you see is what you get” approach will be used for application development. Prototyping approach is a development of the actual menus, dialog boxes, image windows, video windows, the user interface metaphor for audio and video, and report formats. Prototyping will be used during the design stage that provides an interactive, which means that users are able to view the interface in terms of content and form as well as the sequence of functions. The benefit of prototyping is the ability of fine-tuning at every stage of the developments.

The next stage will be the detailed application design specifications. This portion will be including the information model, the object model, and the system design after modification from the initial design suggested at prototyping stage. Then, the modeling of database where there will be including the database design, verification of database fields and normalization will required in this portion.

After the prototyping, database and application design are completed, a performance analysis and design verification at this stage are required to ensure that the designed system will meet the objectives and perform at the expected levels.

All the audio and video objects, multimedia objects and services objects can be design and integrated at the Information System designing stage. Documentation process will be running concurrently through out the developments process in order to fully document the detailed for each of the stages within the project.

SYSTEM DESIGN

5.1 Function-Oriented Design

5.1.1 Registration Module

There will be 2 types of registrations for user. The types of registration available are as below:

1. New Member Registration
2. Member Registration

5.1.1.1 New Member Registration

For new registration, users will be able to register to obtain an Identification (ID) number. This ID will be generated by the user, for record tracking. Users who are already registered will be able to register to obtain an Identification number. This ID will be a registration form for user to fill in. After submitting the form user will be able to obtain an ID Number and required to enter a new password for that particular member ID or username.

5.1.1.2 Member Registration

For member, users have to log in every time they wish to take the First Aid Online test in the web site. Users are able to retrieve previous history and personal records from the database whenever the user log in as a member by using the member ID and the password.

SYSTEM DESIGN

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5.1.1 Registration Module

There will be 2 types of registrations for user. The types of registration available are as below:

1. New Member Registration
2. Member Registration

5.1.1.1 New Member Registration

For new registration, user needs to register as a member to obtain an Identification (ID) or username that will be key in by the user, for record tracking. Users who logs on to this web site have to register to obtain an Identification number (ID) to recognize the user. There will be a registration form for user to fill in. After submitting the form user will be able to obtain an ID Number and required to enter a new password for that particular member ID or username.

5.1.1.2 Member Registration

For member, users have to log in every time they wish to take the First Aid Online test in the web site. Users are able to retrieve previous history and personal records from the database whenever the user log in as a member by using the member ID and the password.

5.1.2 Tutorial Module

In first-aid tutorial, there will be instructions followed along by the user in step-by-step manner. There will be a First Aid Online Instructor to guide the first aid tutorial. Users are able to view the online video where the first aid will be demonstrated online to the users.

5.1.4 Search Module

5.1.3 Interactive Test Module

For Interactive Test Module, user will be given a situation with multiple solutions and options, which users are required to select one correct solution for the situation and marks will be given.

The First Aid Test will base on 3 categories that include Beginner, intermediate and expert level.

Test Module Categories:

1. Beginner
2. Intermediate
3. Expert

There are recommended the user take the beginner level test at first. After users pass the beginner level, users can proceed to the next level of the test. The first aid test ended in the expert level test.

There are no restrictions on the number of time the test can be taken.

Users are able to access the Online Test whenever user login to the Online Test Center.

The score that the users had obtained from the preview test will be saved in the database. When the same user visited the web site again, their history record can be retrieve from the database.

5.1.4 Search Module

This section give user the ability to find or search the first aid they are looking for. This portion helps user to save a lot of time without searching the whole web site. All the first aid will be categorize in alphabetical order.

Besides that, the search module helps the user to access on common type of first aid and action within the website easily and ease user on searching for the first aid needed.

The search module will be using SQL to locate the first aid information from the database, which match the keyword key in by the user.

5.1.5 Other Modules

5.1.5.1 Multimedia Module

User can also view a multimedia presenting on the first aid in form of video and audio. This Multimedia module will be elements from the combination of text, audio, animation, video and graphics.

5.1.5.2 Help Module

User can use the help assistant if their faced any difficulties or problems regarding the tutorial and also the rules and regulations of the tests.

Figure 5.1: Main Menu Navigation Functionality

The major functions are navigation functionality, Access Control functionality, Search functionality and the feedback functionality. The Navigation functionality will consist of the standard navigation bar where the navigation bar will be same for all the web pages. This navigation bar will be the shortcut to all the entire menu available within the web site. Besides that, the main menu of the homepage will be included a banner, this banner functionality is randomly select from a range of graphic and the description from the database. This banner will rotate the graphic within certain time such as in every 5 seconds.

5.2 Architectural Design

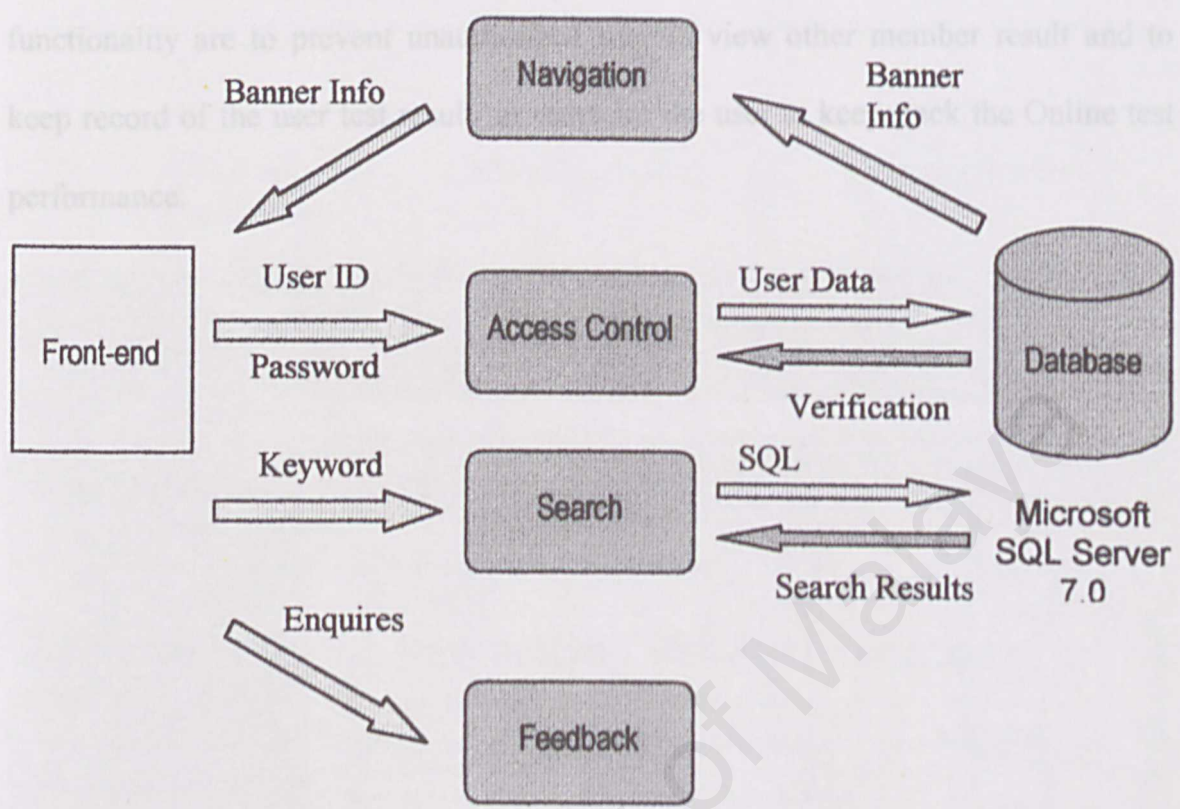


Figure 5.1: Main Menu Navigation Functionality

The major functionalities are navigation functionality, Access Control functionality, Search functionality and the feedback functionality. The Navigation functionality will consist of the standard navigation bar where the navigation bar will be same for all the web pages. This navigation bar will be the shortcut to all the entire menu available within the web site. Besides that, the main menu or the homepage will be included a banner, this banner functionality is randomly selects from a range of graphic and the description from the database. This banner will rotate the graphic within certain time such as in every 5 seconds.

For the access control functionality, user will require to key in the password along with the user's ID, which was keyed by the user during Online Test Registration, to log in to the First Aid Online Test. The Purpose of the access control functionality are to prevent unauthorized user to view other member result and to keep record of the user test result, in order for the user to keep track the Online test performance.



Figure 5.2: Initial Main Menu Design for Interactive First Aid Guidebook

5.3 User Interface Design

5.3.1 Main Menu Design

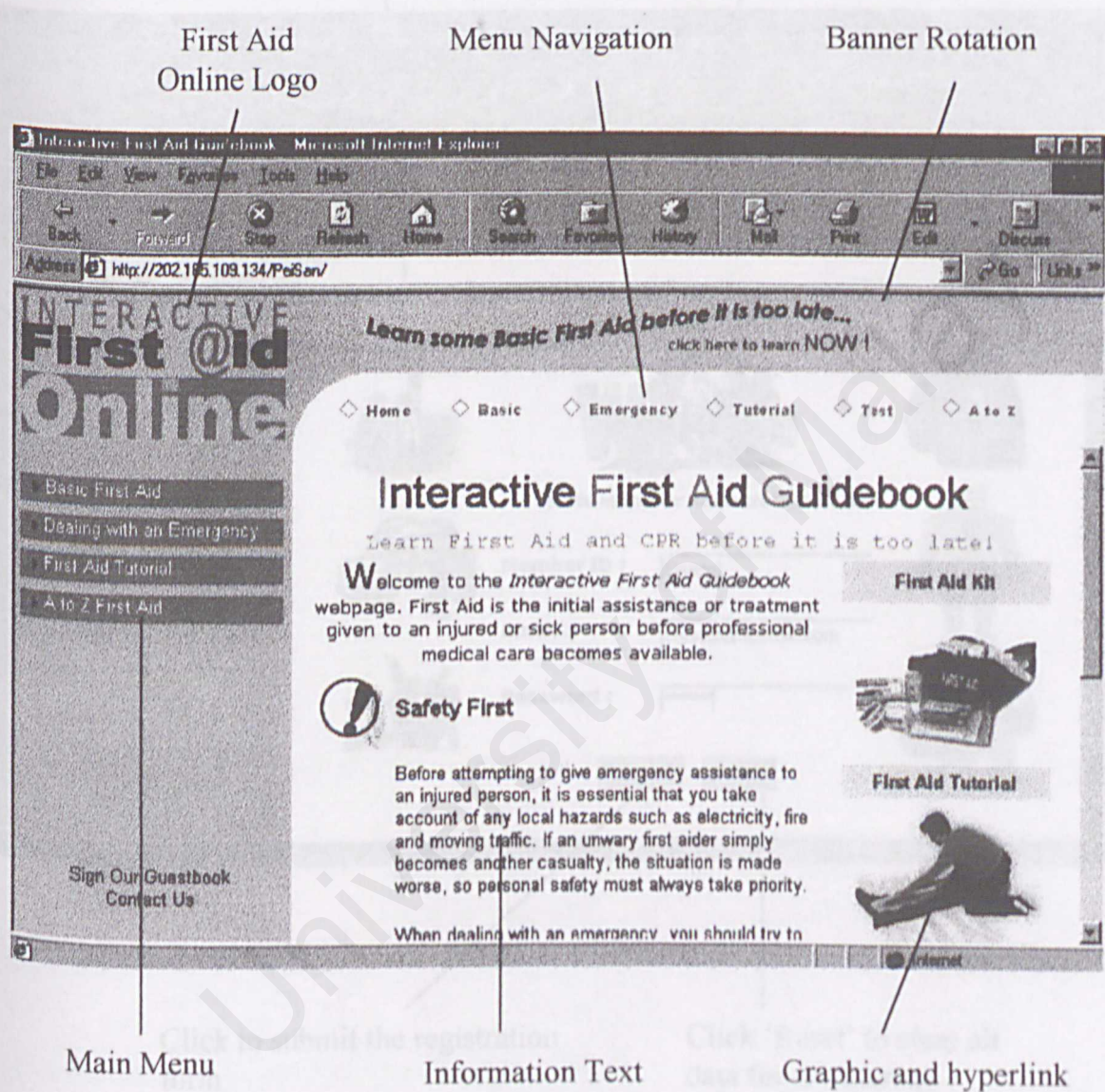


Figure 5.2: Initial Main Menu Design for Interactive First Aid Guidebook

5.3.2 Registration Interface

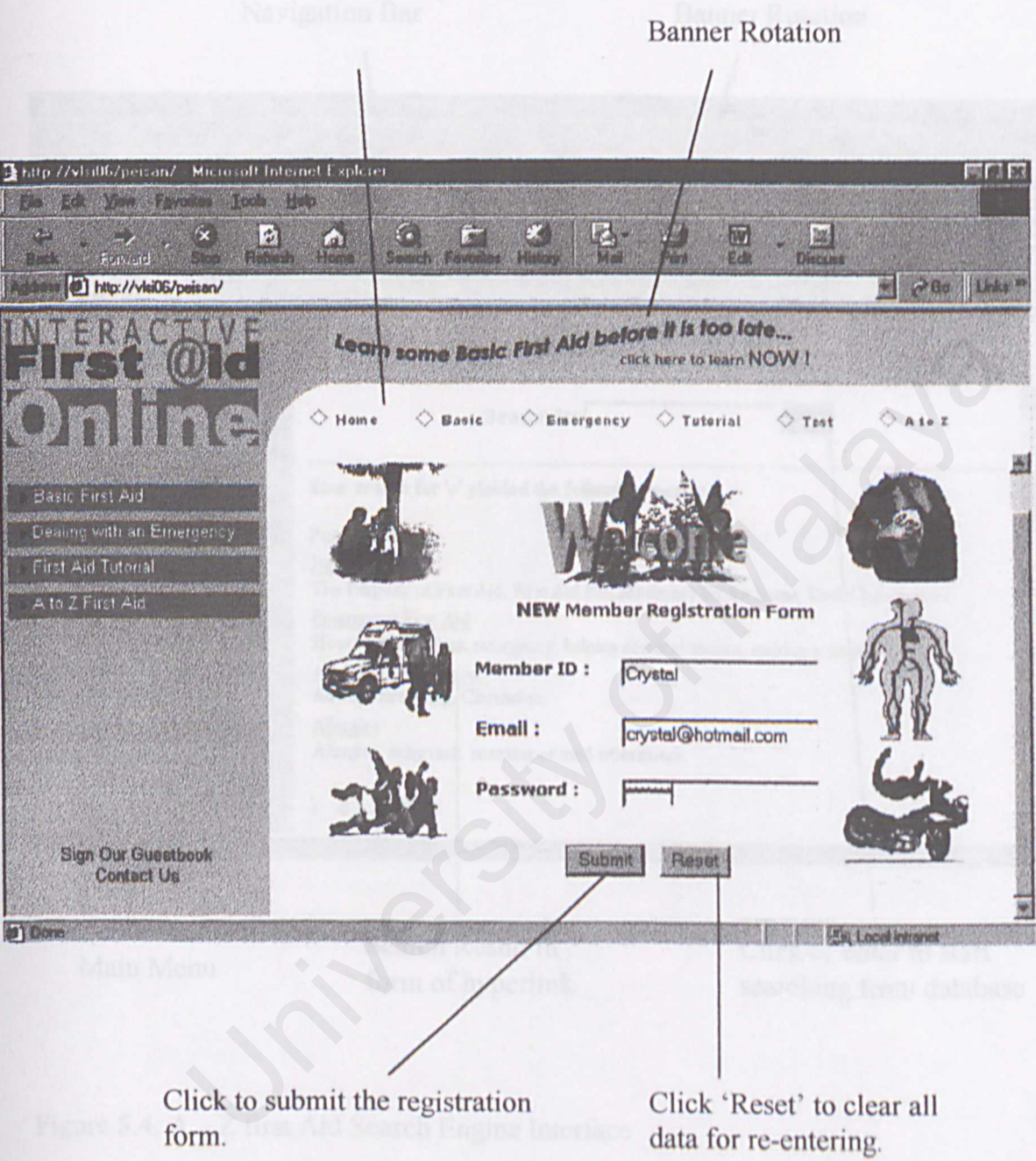


Figure 5.3: New Member Registration Form

5.3.3 Search Interface

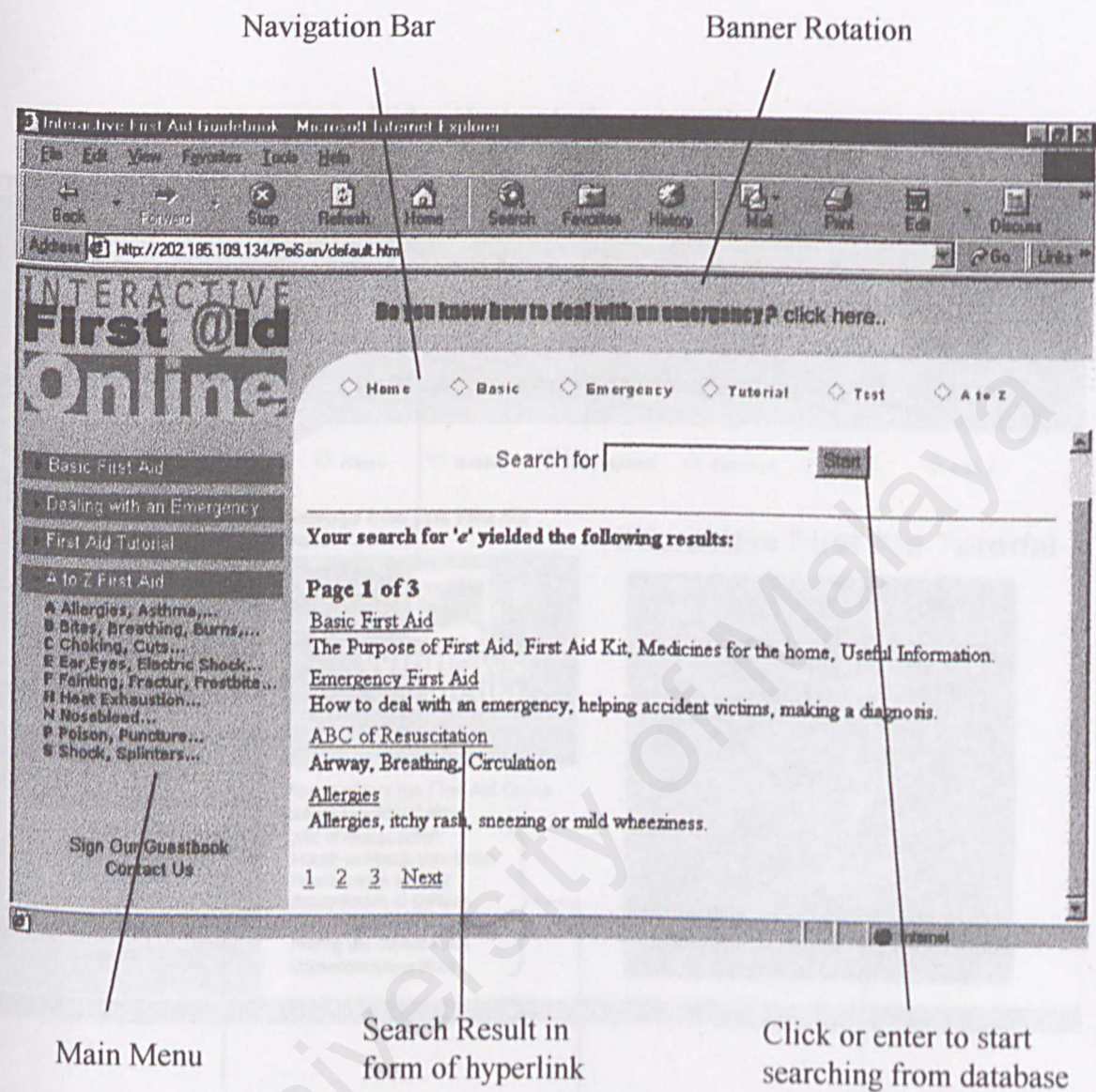
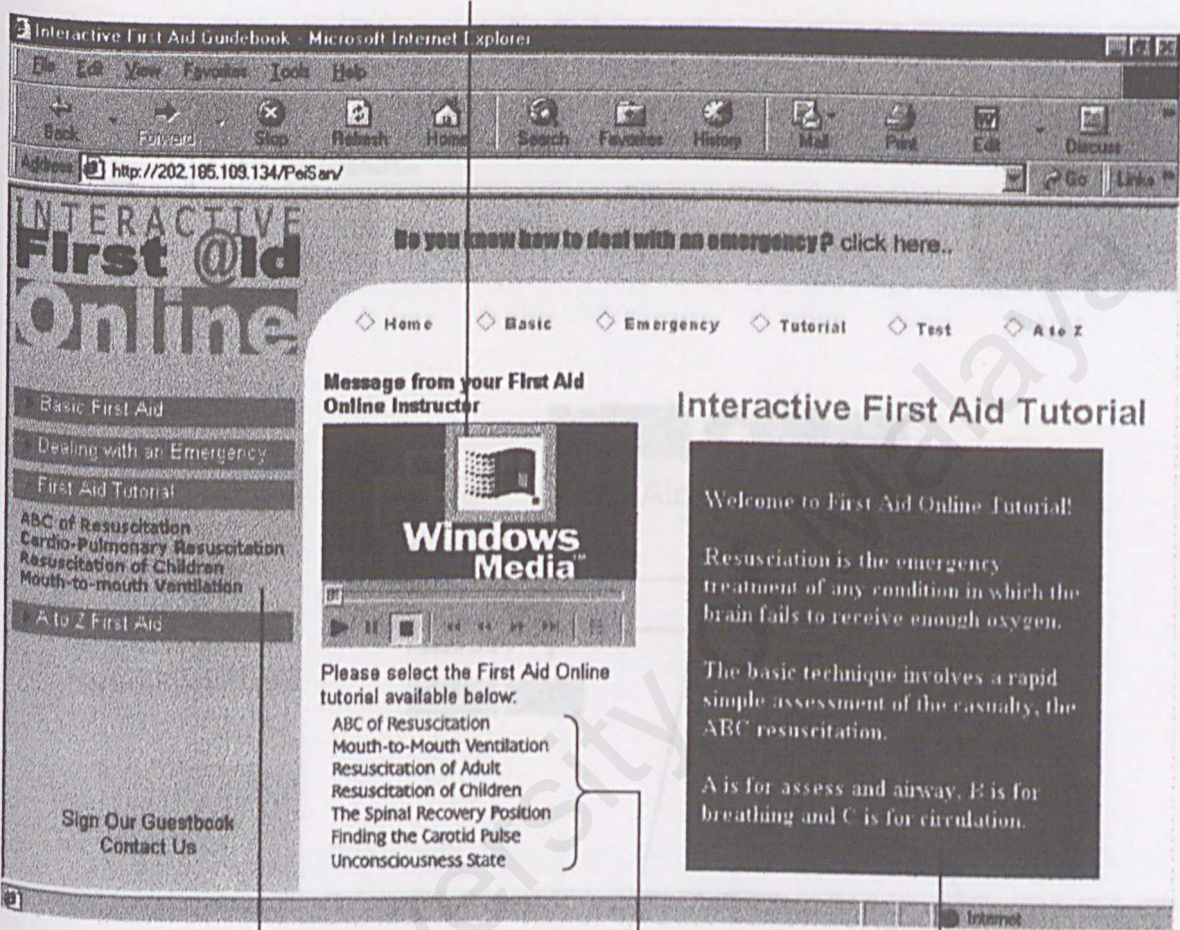


Figure 5.4: A – Z first Aid Search Engine Interface

5.3.4 Tutorial Interface

5.3.5 Test Interface

Video (Instructor's message)



Tutorial Menu

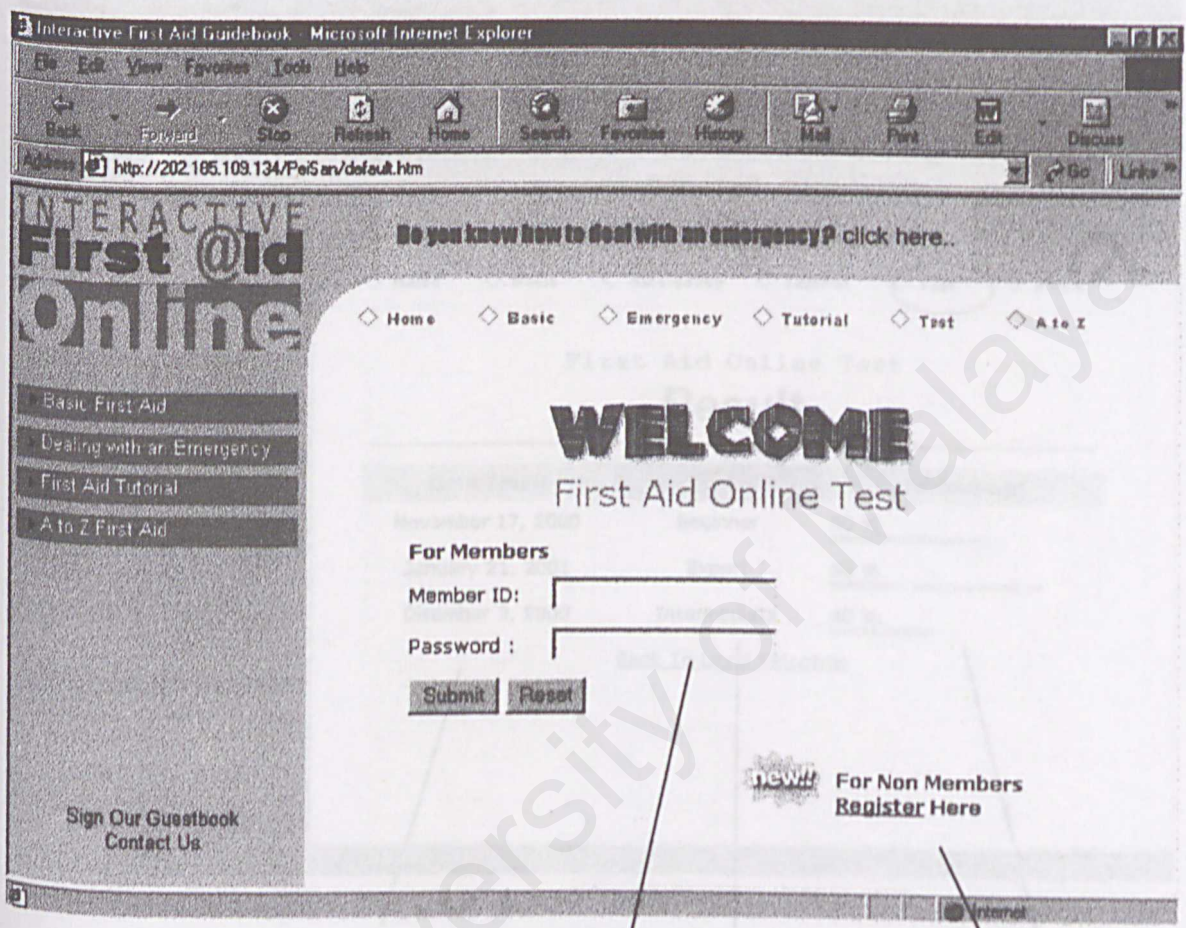
Tutorial

Tutorial Description

Figure 5.5: First Aid Online Tutorial Menu Interface.

Figure 5.6: First Aid Online Test Main Menu Interface

5.3.5 Test Interface



Member Login Form

New Member
Registration

Figure 5.6: First Aid Online Test Main Menu Interface.

5.3.6 Test Result Interface

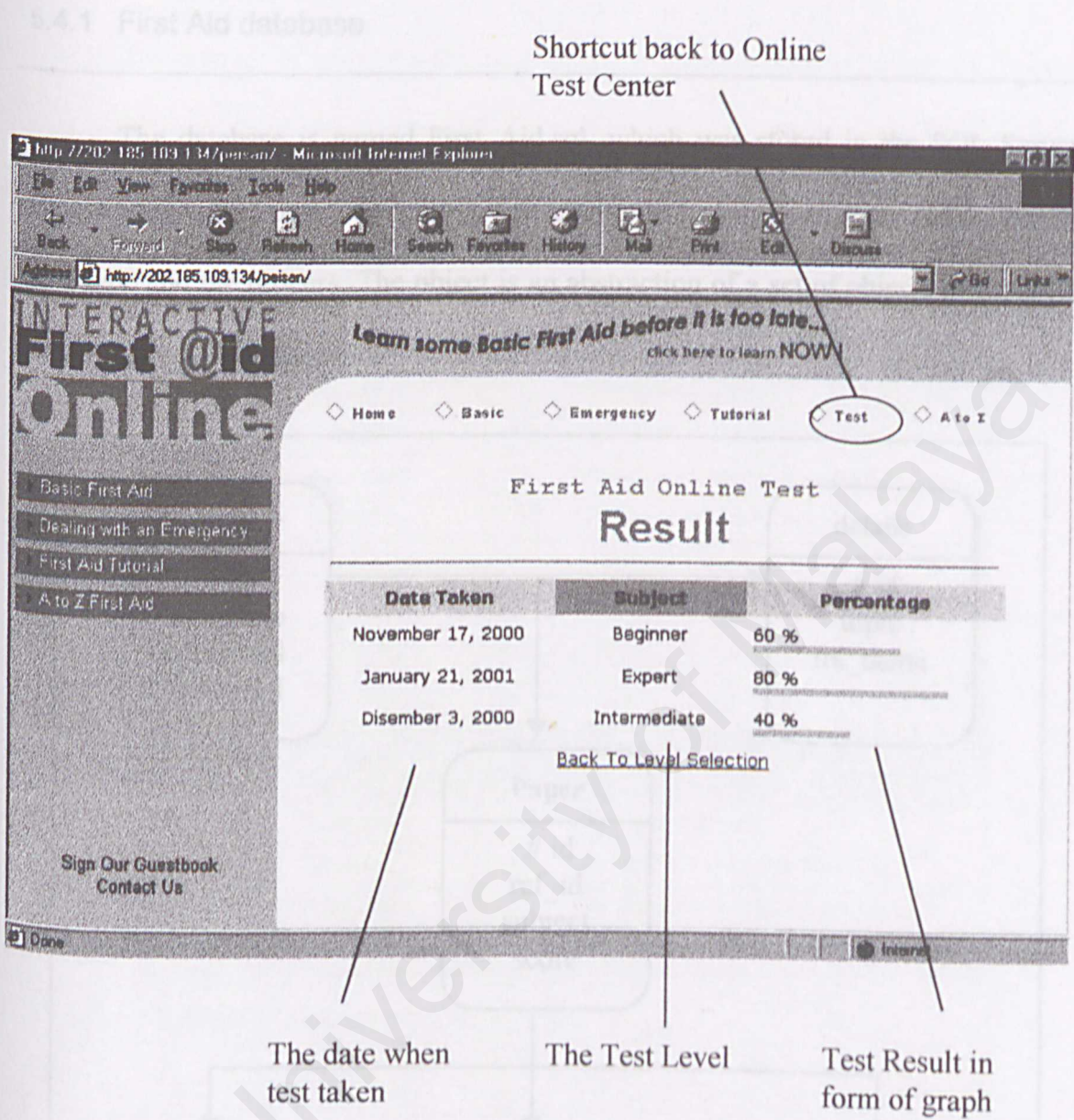


Figure 5.7: First Aid Online Test Result Interface.

5.4 Database Design

5.4.1 First Aid database

The database is named First_Aid.sql, which was stored in the SQL Server. Object Models was developed during the requirement analysis to represent the system data type and the process. The object is an abstraction of a set of objects that used to identifies common attributes. The Object Models is as below:

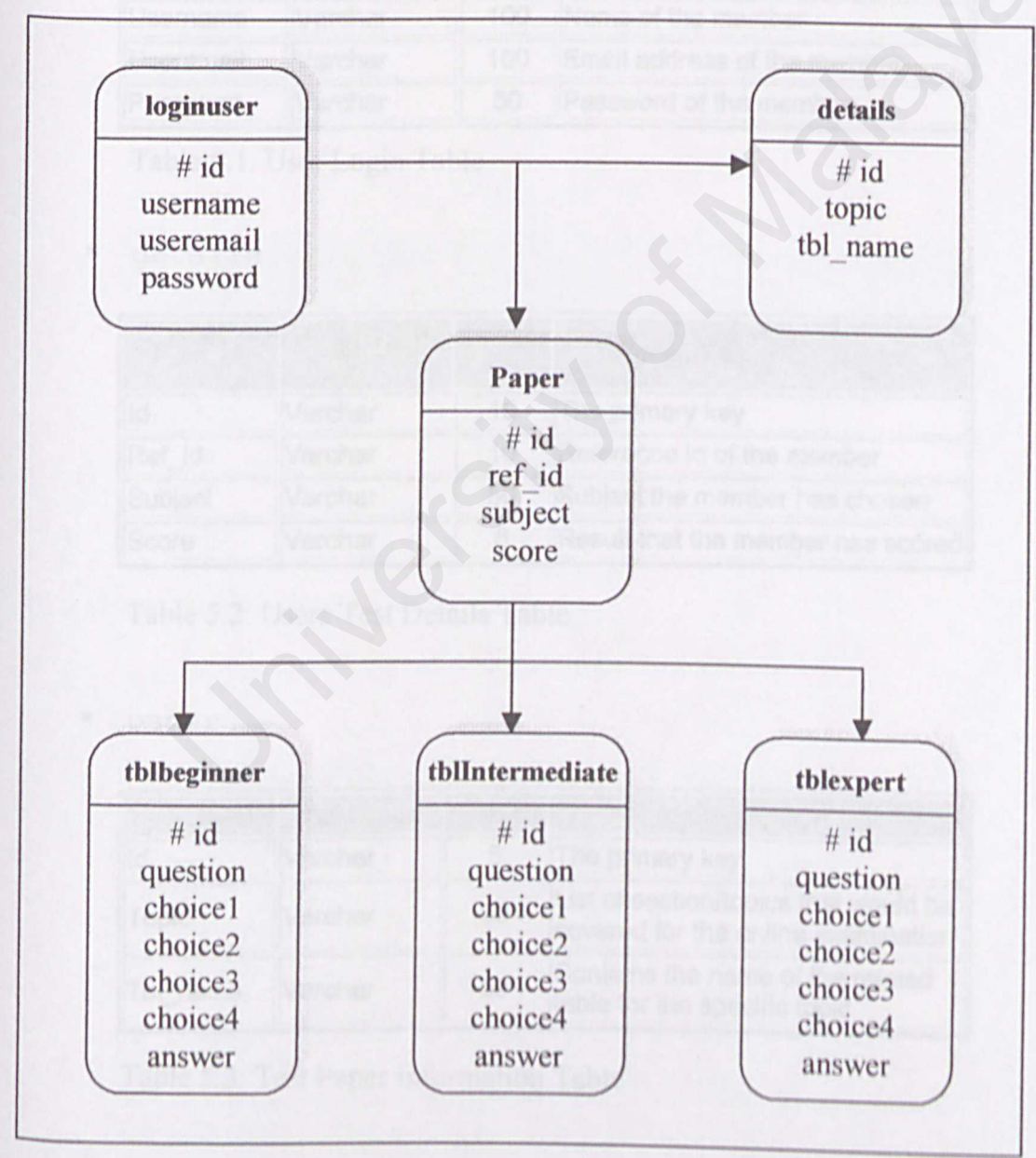


Figure 5.8: Partial Class hierarchy for First Aid Online Test Module

5.4.2.1 Test Module Table

The number of tables for test module in the database depends upon the number of level. There are 3 test levels

- loginuser

Field Name	Data Type	Length	Description
Id	Varchar	5	The primary key
Username	Varchar	100	Name of the member
Useremail	Varchar	100	Email address of the member
Password	Varchar	50	Password of the member

Table 5.1: User Login Table

- details

Field Name	Data Type	Length	Description
Id	Varchar	10	The primary key
Ref_id	Varchar	10	Reference id of the member
Subject	Varchar	50	Subject the member has chosen
Score	Varchar	5	Result that the member has scored

Table 5.2: Users Test Details Table

- paper

Field Name	Data Type	Length	Description
Id	Varchar	5	The primary key
Topic	Varchar	50	List of section/topics that would be covered for the online examination
Tbl_name	Varchar	50	Contains the name of the related table for the specific topic

Table 5.3: Test Paper Information Table

- tblbeginner, tblIntermediate, tblexpert

Field Name	Data Type	Length	Description
Id	Varchar	5	The primary key
Question	Text	150	Question that would be displayed
Choice1	Text	100	Choice for the answer
Choice2	Text	100	Choice for the answer
Choice3	Text	100	Choice for the answer
Choice4	Text	100	Choice for the answer
Answer	Text	100	Correct answer to the question

Table 5.4: First Aid Test Level Question Table

5.4.2.2 Search Module Table

- Search

Field Name	Data Type	Length	Description
Id	Varchar	4	The primary key
Title	Varchar	100	Page title
Description	Varchar	255	Page Description
URL	Varchar	100	URL/hyperlink address

Table 5.5: Search Data Information Table

5.4.2.3 Guestbook Module Table

- guestbook

Field Name	Data Type	Length	Description
Name	Varchar	100	Visitor or guest name
Email	Varchar	100	Guest Email address
Date_Entered	smalldatetime	4	Date entered the message
URL	Varchar	100	Guest web site URL
IP_Address	nvarchar	20	Guest IP Address
Message	ntext	100	Guest message

Table 5.6: Guest Book Table

6.1 System Development

Chapter 6

System Development & Testing

Development of graphic and animation involved the use of image processing and development tool such as Photostop 6.0 used for static graphics, while ImageReady 3.0 tool for development of animation graphics. The first stage of the graphic development was the image scanning process, where suitable and selected graphics were scanned into the electronic mode as JPEG file. Then, the graphic is converted into a smaller form, i.e. GIF file in order to save storage space.

6.1.2 Functional Structure Development

For each functional module, Microsoft Visual InterDev is a debugging tool for client-side or server-side scripting. Microsoft Visual InterDev 6.0 was used for creating and designing Web applications, accessing database information from web page, and editing and scripting web page.

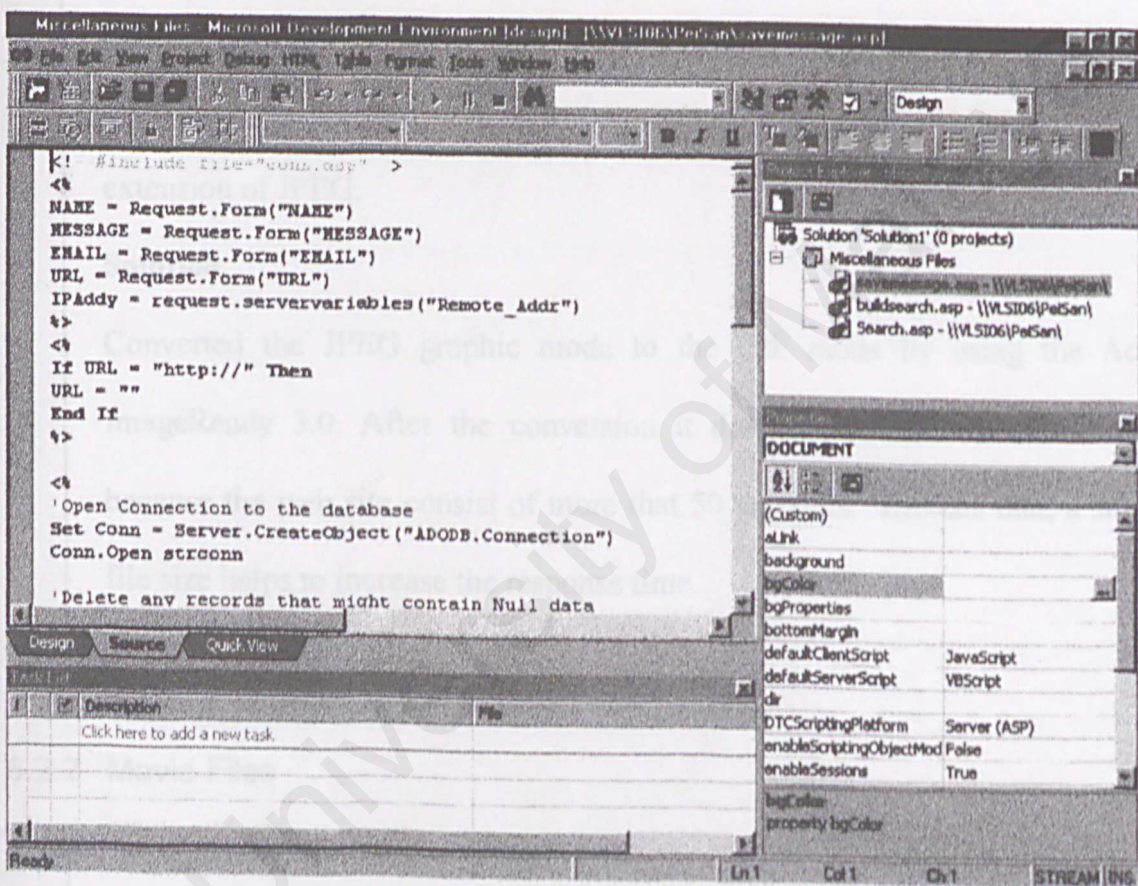


Figure 6.1: Functional Structure Construction

Microsoft® Visual InterDev helps in creating and modifying data-related objects by using the graphical data environment. In the data environment, objects are able to drag and drop onto Active Server Pages (ASP) to automatically create data-bound design-time controls. Data-bound controls function in Visual Inter make it simple to incorporate script in the ASP or HTML pages to interact with a database.

6.2 Problems and Solutions

6.2.1 Storage Capacity

Problem

One of the major problems faced during the development of the First Aid Online Web page is the low storage capacity because the multimedia elements that included in the First Aid web site required a large storage capacity. The main elements that consume a large amount of memory are the graphic with the extension of JPEG.

Solution

Converted the JPEG graphic mode to the GIF mode by using the Adobe ImageReady 3.0. After the conversion it dramatically reduces the file size because the web site consist of more that 50 graphics. Besides that, a smaller file size helps to increase the response time.

6.2.2 Movie Files

Problem

The original file mode for the Online video is in form of quicktime movie with the extension of .MOV, which are impossible to be included in the web sites because this will effect the response time of the web site when loading the movie from the server-side to the client-side of the user.

Solution.

To overcome the movie files problem, a stream program have been used to stream the original movie mode into .ASF mode where the original file size have been streamed to 150 percent smaller compare to the .MOV file.

6.2.3 Multimedia Elements.

Problem.

The other problems is the lack of multimedia elements available. The first aid multimedia elements are hard to obtain in the web site especially the first aid animation.

Solution.

To solve the problem, Static graphic is scanned from the first aid resources and used Adobe Photoshop 6.0 software application to produce the first aid animation graphic before included into the web site.

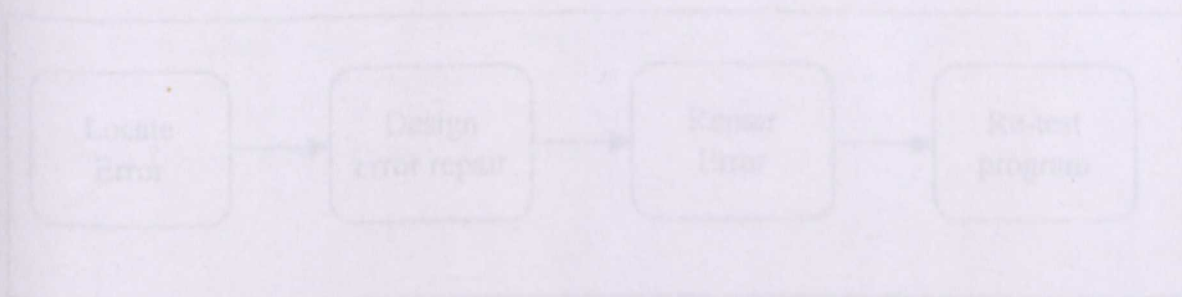


Figure 6.2. The debugging Process

6.3 System Testing

Testing involves verification and validation to ensure that the functionality available is able to meet the user needs. The existence of program defects or inadequacies is inferred from unexpected system output. Testing is carried out during the implementation phase to verify that the system behaviors, as intended by the design and after the implementation is complete. The later testing phase is to check conformance with requirements and assess the reliability of the system.

Verification involves checking the system to conforms the specification. While validation, involves checking the system to meet the expectation of the users. Prototyping, one of the requirements validation techniques was used in the verification and validation process, which including the static and dynamic techniques of system checking and analysis.

The static techniques or tests used for design including the review of requirements documentation and design diagrams. While the static test for the program including the review of source code, program inspections and analysis. Dynamic techniques or tests involve exercising an implementation and prototyping.

Testing the hypotheses involve tracing the program source code manually. The interactive debugging tool used to trace the error is the Visual InterDev.

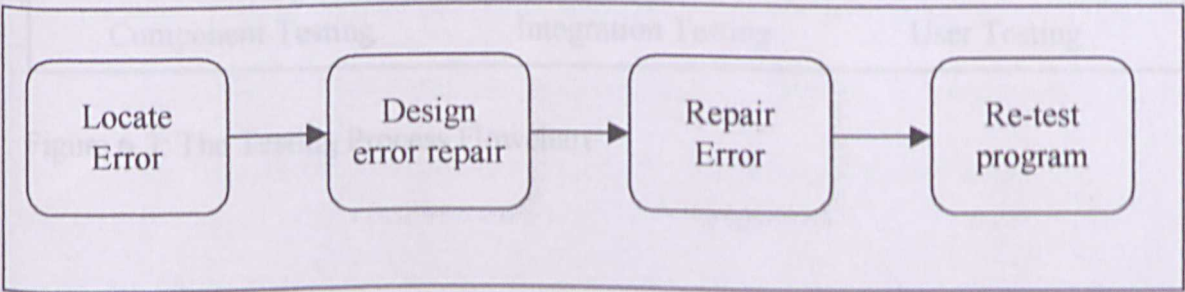


Figure 6.2: The debugging Process

6.3.1 The Testing Process

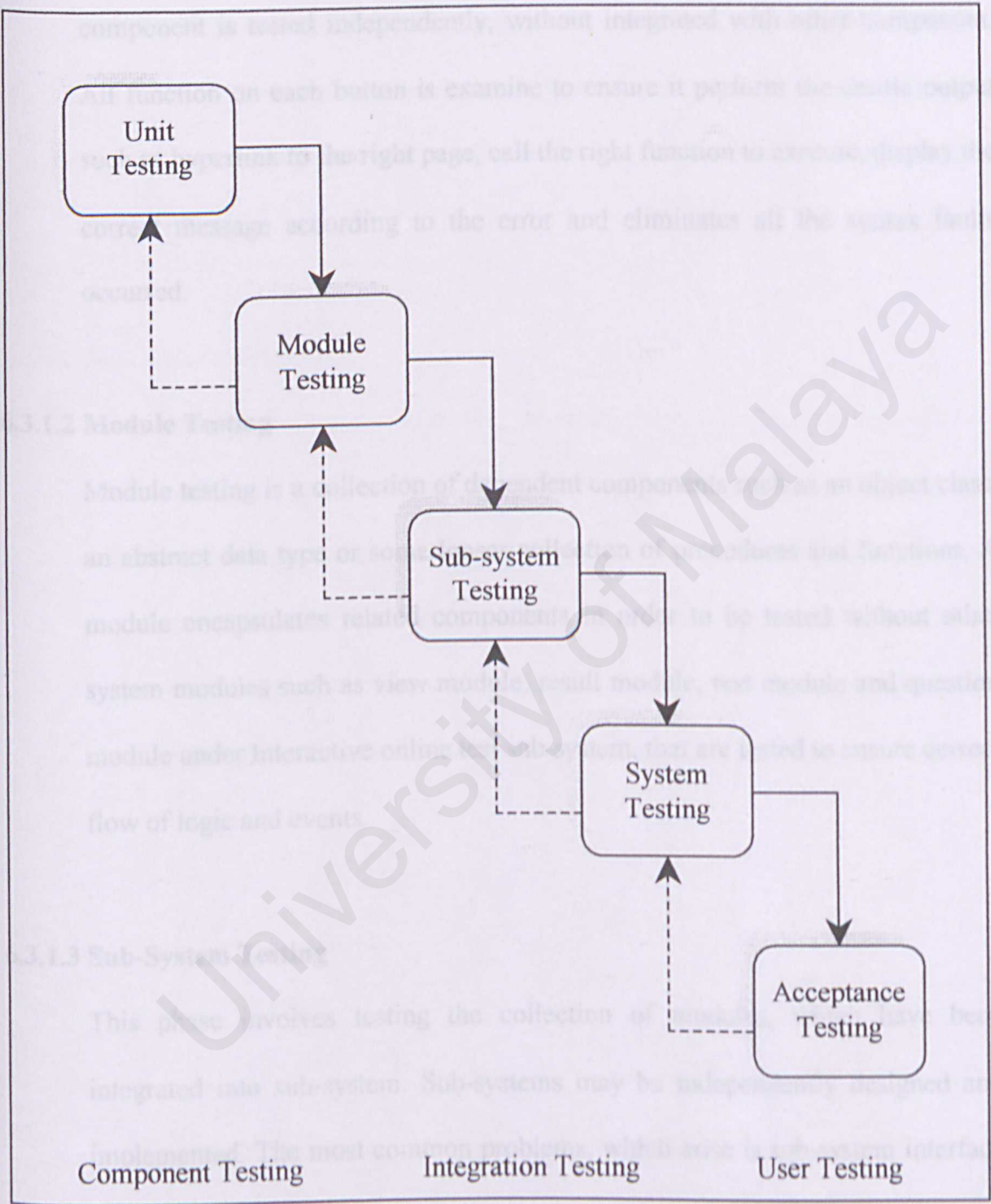


Figure 6.3: The Testing Process Flowchart

6.3.1.1 Unit Testing

Individual components are tested to ensure that they operate correctly. Each component is tested independently, without integrated with other component. All function on each button is examine to ensure it perform the entitle output such as hyperlink to the right page, call the right function to execute, display the correct message according to the error and eliminates all the syntax faults occurred.

6.3.1.2 Acceptance Testing

6.3.1.2 Module Testing

Module testing is a collection of dependent components such as an object class, an abstract data type or some looser collection of procedures and functions. A module encapsulates related components in order to be tested without other system modules such as view module, result module, test module and question module under Interactive online test sub-system, that are tested to ensure correct flow of logic and events.

6.3.1.3 Sub-System Testing

This phase involves testing the collection of modules, which have been integrated into sub-system. Sub-systems may be independently designed and implemented. The most common problems, which arise is sub-system interface mismatches. Therefore, the sub-system test process is concentrate on the detection of interface errors by rigorously exercising the interfaces.

6.3.1.4 System Testing

The sub-systems are integrated to make up the entire system. The testing process is concerned with finding errors, which result from unanticipated interactions between sub-system and system components. System testing is concerned in validation that the system meets its functional and non-functional requirements.

6.3.1.5 Acceptance Testing

This is the final stage in the testing process before the system is accepted for operational use. The system is tested with real data. Acceptance testing may reveal errors and omissions in the system requirements definition because the real data is different from the test data. Acceptance testing may also reveal requirements problems where the system's facilities do not meet the user's needs or the system performance is unacceptable.

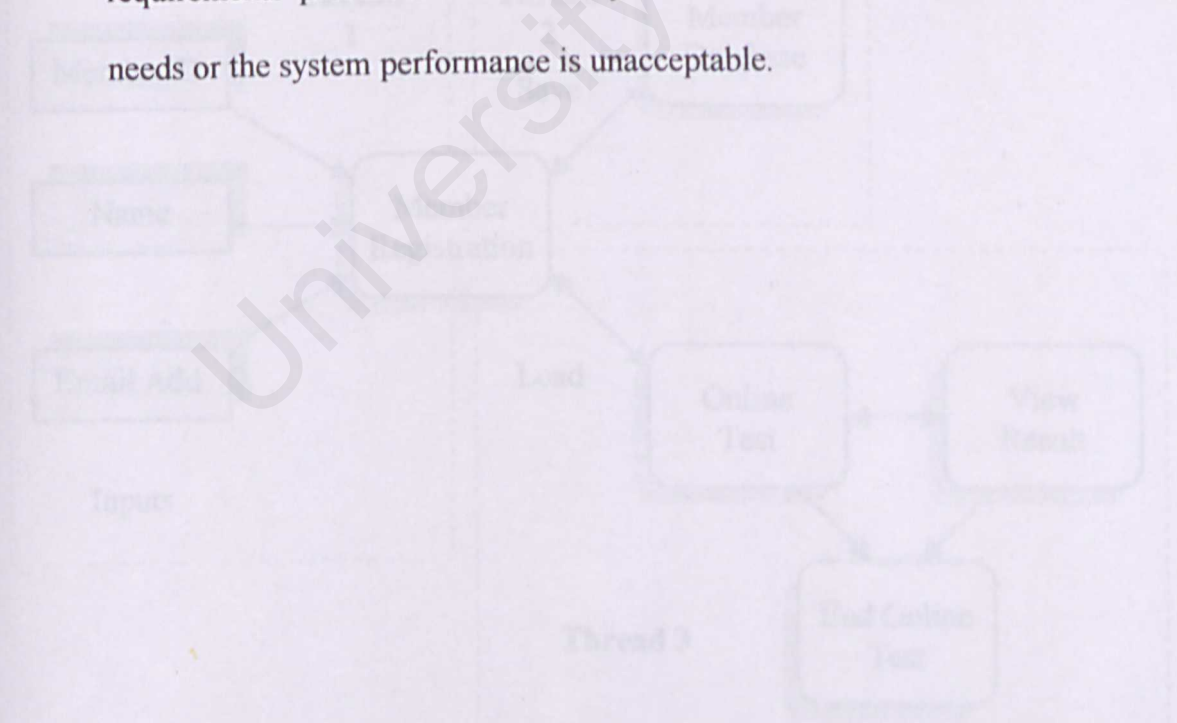


Figure 5.4: Thread Testing

6.3.2 Testing Strategy

The testing strategy is a general approach to the testing process rather than a method of devising particular system or components tests. The strategy testing that had used is the Thread Testing strategy. Thread testing is a testing strategy, which devised for testing real-time systems such as web-based system.

The advantages of using thread testing are that the testing can be conducted after the processes or objects have been individually tested and integrated into the sub-systems.

After each thread has been tested with a single event, the processing of multiple events of the same type is tested without any other type. Below is the partial of thread testing for the Interactive test sub-system.

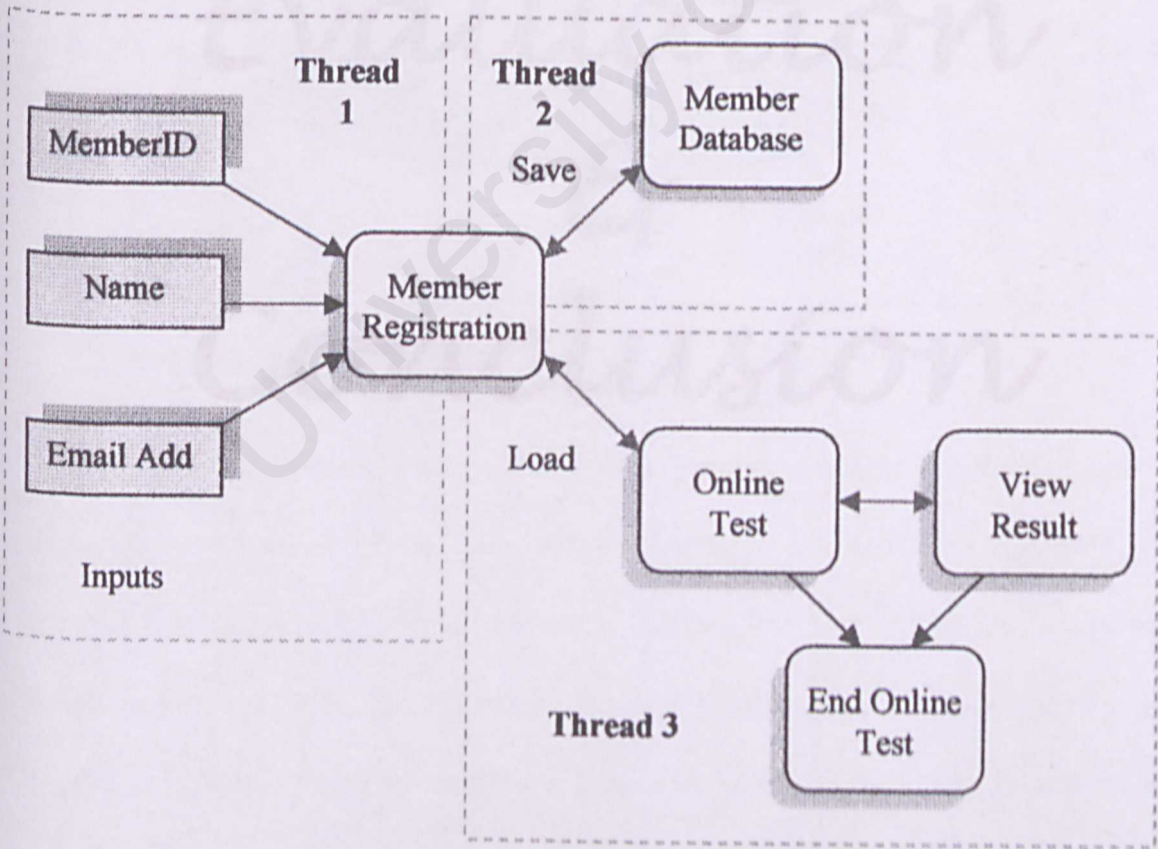


Figure 6.4: Thread Testing

7.1 Project Evaluation

A survey had conducted to collect and obtain feedback from user who accessed the Interactive First Aid Guidebook. The evaluation was conducted on 30 users, where each user provided some valuable suggestions of the web site.

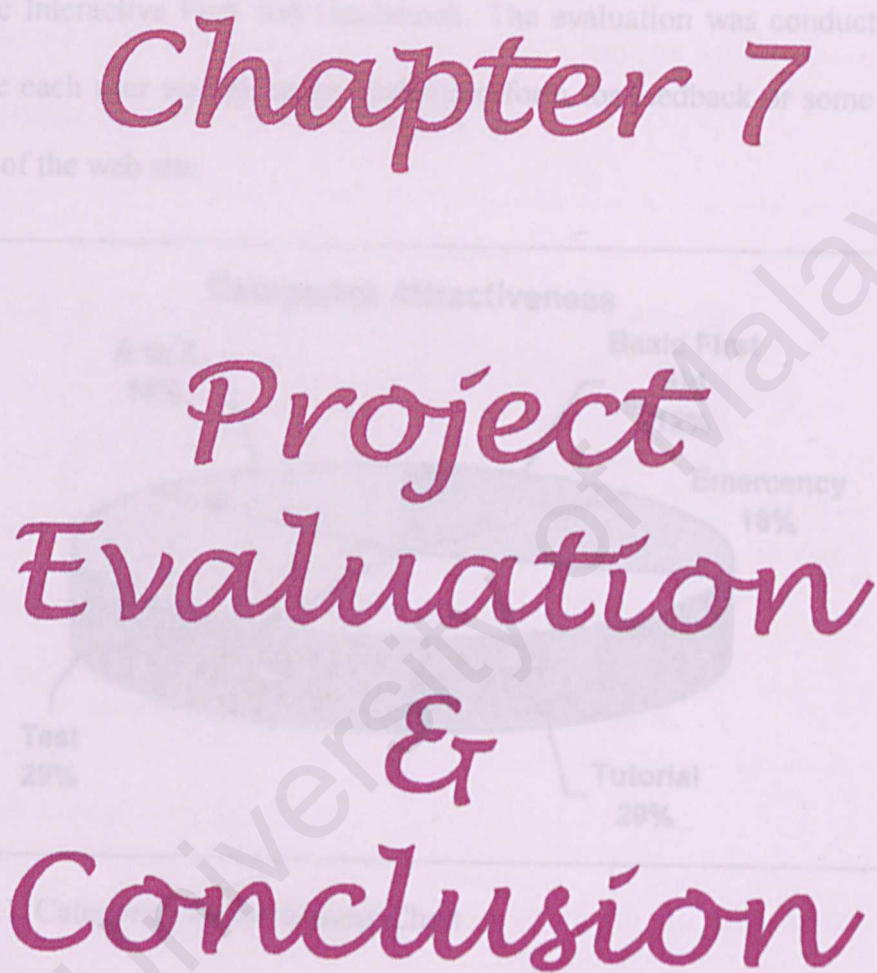


Figure 7.1

In the attractiveness categories, all the function available are divided into 5 categories, which are the Basic First Aid, Emergency First Aid, First Aid Tutorial, First Aid Test and A to Z First Aid Category. Tutorial and Test Categories receive the highest percentage, 29% for the most attractive categories. The major reasons for Tutorial is because it consist an Online First Aid Instructor that have draw a lot of user attention. Interactive First Aid Guidebook is the first web site that provides the online first aid demonstration.

PROJECT EVALUATION & CONCLUSION

7.1 Project Evaluation

A survey had conducted to evaluate and obtain feedback from user who accessed the Interactive First Aid Guidebook. The evaluation was conducted on 30 users, where each user was given an evaluation form for feedback or some valuable suggestions of the web site.

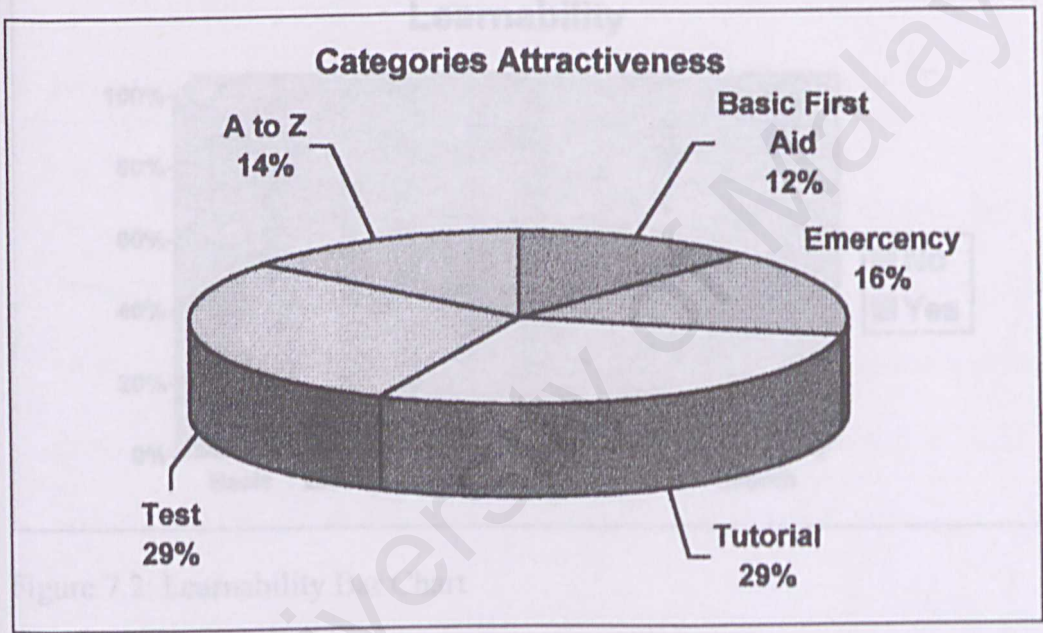


Figure 7.1: Categories Attractiveness Chart

In the attractiveness categories, all the function available are divided into 5 categories, which are the Basic First Aid, Emergency First Aid, First Aid Tutorial, First Aid Test and A to Z First Aid Category. Tutorial and Test Categories receive the highest percentage, 29% for the most attractive categories. The major reasons for Tutorial is because it content an Online First Aid Instructor that have draw a lot of user attention. Interactive First Aid Guidebook is the first web site that provides the online first aid demonstration.

7.1.1 Learnability

From the evaluation survey that had conducted to evaluate the web page and to be able to gain feedback from the users in order to improve, the interface design. The functions are easy to understand and learn by new user because of the Graphical User Interface (GUI) and multimedia elements. Within 1 hour of learning and exploring the web page, users will be able to become familiar with the navigation and function available on the online first aid web page.

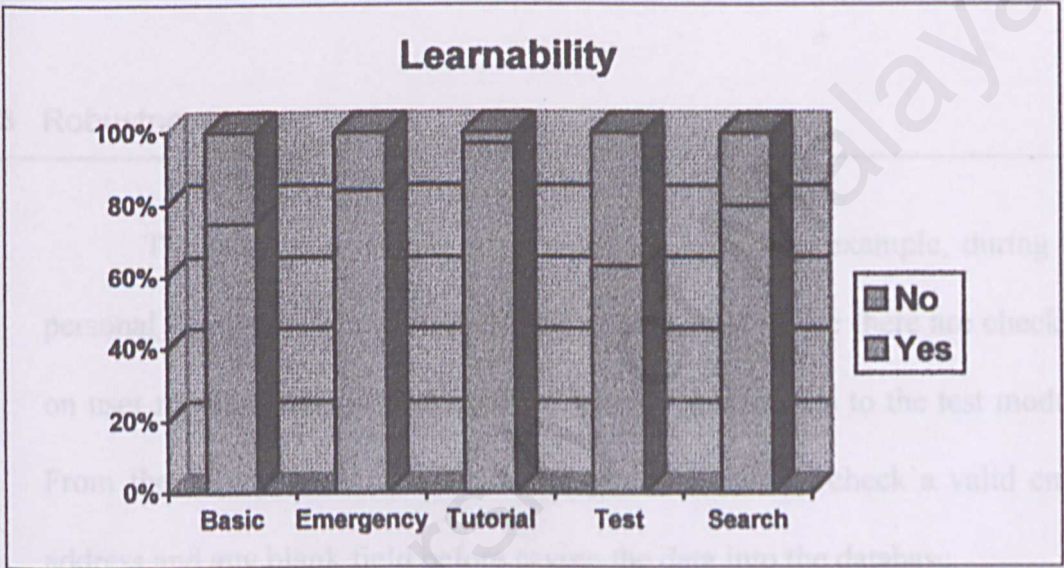


Figure 7.2: Learnability Bar Chart

From the evaluation, majority of the user found the tutorial is the most learnable category which is 97% because of the video that demonstrate the first aid to the user beside reading text. The texts available are the additional first aid information about the demonstrated tutorial and step-by-step guideline. While for the Online Test, 63% of the respondents feel that the test categories is unlearnable compare with the tutorial because it consists more function where user required to follow, such as registration before taking the online first aid test.

7.1.2 Speed of Operation

From the feedback of the evaluation survey, users found that the response time of the web page are within the tolerate time frame for loading the online video where online instructor will be showing the first aid instruction. While during the waiting, users are able to read through the explanation text besides the video for more information or listen to the music available, by clicking the play button.

7.1.3 Robustness

The web page is able to tolerate user error. For example, during the personal details entry and first aid online test login where there are checking on user member ID and password before user gain access to the test module. From the survey, user found that the system is able to check a valid email address and any blank field before saving the data into the database.

The web site is able to handle user error by doing a client-side error checking before passing the data to the server-side. This also helps to increase the response time of the web site to the user error.

Figure 7.3: Recoverability Bar Chart

7.1.4 Recoverability Comparison

If the user committed an error, the web page is able to recover for the error by redirected back to the page and prompt a message to inform the user of the error therefore a proper adjustment could be made. According to the user feedback, 17 out of 30 respondents ranked the ‘Interactive First Aid Guidebook’ as excellent in User Error Recoverability while 70% of the respondents feel that the web site is good on user error recovery.

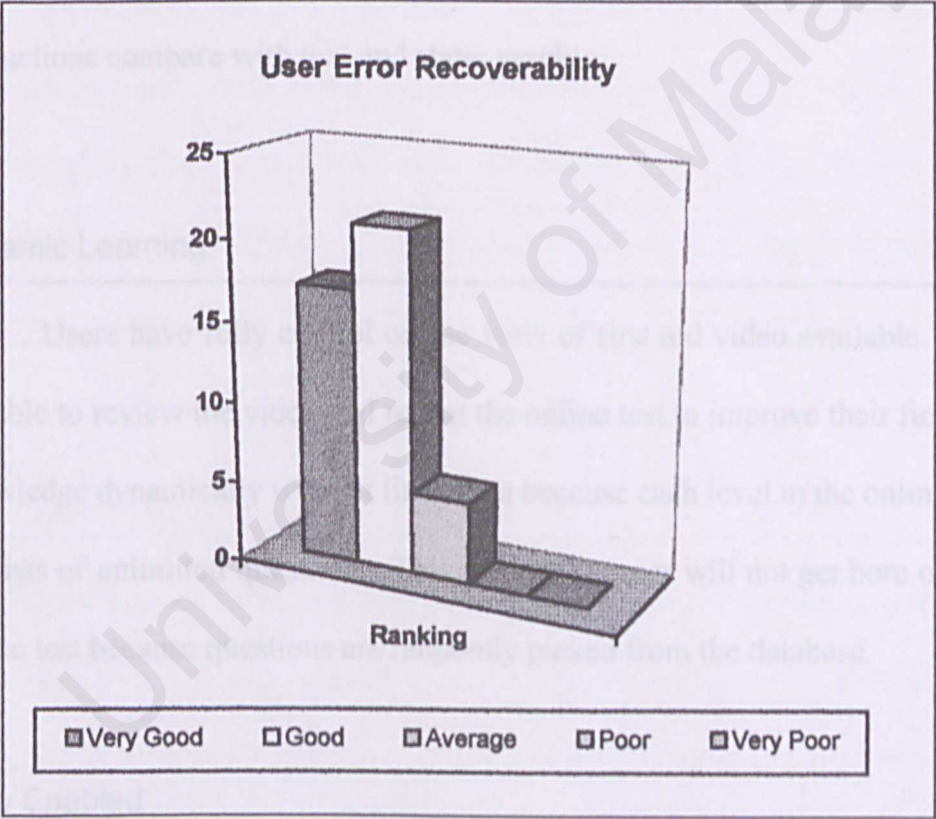


Figure 7.3: Recoverability Bar Chart

7.2 Strengths & Comparison

7.2.1 Online Instructor

One of the major Strengths of the *Interactive First Aid Guidebook* is that the web site consists of an Online Instructor to teach the Internet users on the step-by-step guide to perform first aid treatment on casualty. From the evaluation that have conducted, all the respondents have not come across any First Aid Instructor available online to perform the first aid guide to user. This had drawn an attention to user and help user in understanding the first aid instructions compare with text and static graphic.

7.2.2 Dynamic Learning

Users have fully control on the view of first aid video available. User are able to review the video and repeat the online test to improve their first aid knowledge dynamically without limitation because each level in the online test consists of unlimited questions. This means that user will not get bore on the online test because questions are randomly picked from the database.

7.2.3 Web Enabled

Users are able to access the web site whenever they needed to obtain first aid information or to take the online test because the first aid information is web enabled and the reach of information are very convenient. User required only online connection to access to the First Aid web site.

7.2.4 Graphical User Interface (GUI)

The web page consists of colourful and attractive graphical user interface and this is one of the major objectives, which is the user-friendly concept. Graphics that are included in the web site may consist of hyperlink to another related page. Majority of the First Aid Web site that available on the Internet included more static graphic compare with animation.

7.2.5 Online Test

Beside that, one of the strengths of the *Interactive First Aid Guidebook* web site compare with other similar current First Aid web site is that it consists of the first aid test, for user to evaluate their first aid knowledge. More functions can be included for future enhancement into the test function. Seldom users are able to come across with the First Aid Test online.

7.2.6 Multimedia Elements

Multimedia element is one of the main strength of the *Interactive First Aid Guidebook* web site. In order to increase the attractiveness of the web site, the first aid web page consists of many multimedia elements such as video, graphic, music and animation. The multimedia elements help to enhance the first aid learning process.

7.3 Limitation Enhancement Proposal

7.3.1 Administrative Functionality

One of the limitations of Interactive First Aid Guidebook is the unincorporated of administrative functionality, where administrative is able to manage the user profile online. Currently, administrator needs to manage the users profile of personal particular and test details manually. For future enhancement, administrative functionality could be incorporated into the web site.

7.3.2 Frequently Asked Question

Besides that, another limitation of First Aid Guidebook are the unable to post question and uploaded onto the web site for other user to respond to the posted question in order to create a more dynamic web site because no newsletter function is included into the web site.

Even though, currently users are unable to post questions onto the web page, but improvement had made to add an additional functions for users to send feedback to the Webmaster. For future enhancement a Frequently Asked Questions portion could be make will when users increases.

7.4 Future Enhancement Proposal

7.4.1 Registration Module

In the registration module, users only register 3 data, which were the Username or User ID, User email address and password. Additional functionality can be added to include more users information and allow user to update or modify user information.

7.4.2 User Update.

For future enhancement, update function can be added into the first aid web site, where user will be informed on the latest update on the web site by sending through email. This improvement will help to capture the attention of the user on the First Aid Online web site.

7.4.3 Test Answer Explanation

For the test module, an answer review on question which user answer wrongly will able to help user identify user mistakes and redirect user to the correct answer with explanation.

7.4.4 First Aid Experience Log Book.

Future enhancement could be added the newsletter functionality where users are able to post their experience onto the web site in order for other user to view the first aid experience of other user including their advice and guidance

7.5 Conclusion

The final year project is a partial fulfillment of the requirement to complete the course of Bachelor of Information Technology. Two semesters have allocated to complete the whole project from literature review, project analysis, system design, development and testing before the completed of a deliverable project.

I have beneficial greatly from the development process of the final year project including improved the communication skills and build up self-confident. Beside that, the development of the final year project have enriched the knowledge on the project development especially the computer terms and terminology.

Other then the improvement, my personal experience acquired during this project is to resolving technical problems with the best possible solution.

In conclusion, the project has successfully meets the chief requirement and objective of developing an Interactive First Aid Guidebook using the multimedia elements. The knowledge gained would indeed be beneficial and might pave the way to developing another system in the future.

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• Interactive First Aid Guidebook Questionnaire

• Evaluation Form

Sample Source Code

Appendices

University of Malaysia

APPENDICES

QUESTIONNAIRE

- Interactive First Aid Guidebook Questionnaire

- Evaluation Form

- Sample Source Code

- ☐ School or university
- ☐ Cybercafe
- ☐ At home
- ☐ Others _____ (please state)

3. Please select your age category:

- ☐ 18 and below
- ☐ 19 – 25 years old
- ☐ 26 – 40 years old
- ☐ 40 and above

4. Please 'tick' (✓) 5 most frequent visited web sites:

- ☐ Arts & Humanities
- ☐ Business & Economy (Finance, Marketing, Jobs...)
- ☐ Computers & Internet (Internet, E-WW, Software, Games...)
- ☐ Education (College, University...)
- ☐ Entertainment (Hollywood, Movies, Humor, Music)
- ☐ Government (Politics, Military, Law, Taxes)
- ☐ Health (Nutrition, Diseases, Drugs, Fitness...)
- ☐ News & Media (Full Coverage, Newspapers, TV)
- ☐ Recreation & Sports (Sports, Travel, Autos, Outdoors...)
- ☐ Reference (Libraries, Dictionaries, Quotations)
- ☐ Regional (Countries, Regions, US States)
- ☐ Science (Animals, Astronomy, Engineering)
- ☐ Social Science (Archaeology, Economics, Languages)
- ☐ Society & Culture (People, Environment, Religion)

QUESTIONNAIRE

Interactive First Aid GuideBook

1. Do you have any Internet Access Facility?
☐ Yes
☐ No
2. Where do you usually get Internet access?
☐ School or university
☐ Cybercafe
☐ At home
☐ Others _____ (please state)
3. Please select your age category
☐ 18 and below
☐ 19 – 25 years old
☐ 26 – 40 years old
☐ 40 and above
4. Please 'tick' (✓) 5 most frequent visited web sites
☐ Arts & Humanities
☐ Business & Economy (Finance, Shopping Jobs...)
☐ Computers & Internet (Internet, WWW, Software, Games...)
☐ Education (College and University...)
☐ Entertainment (Cool Links, Movies, Humor, Music)
☐ Government (Elections, Military, Law, Taxes)
☐ Health (Medicine, Diseases, Drugs, Fitness...)
☐ News & Media (Full Coverage, Newspapers, TV)
☐ Recreation & Sports (Sports, Travel, Autos, Outdoors...)
☐ Reference (Libraries, Dictionaries, Quotations)
☐ Regional (Countries, Regions, US States)
☐ Science (Animals, Astronomy, Engineering)
☐ Social Science (Archaeology, Economics, Languages)
☐ Society & Culture (People, Environment, Religion)

5. Where do you usually get first-aid information?
- ☐ Books
 - ☐ Magazines
 - ☐ Web site
 - ☐ Others _____ (please state)
6. How do you rank yourself on first-aid knowledge?
- ☐ Beginner
 - ☐ Intermediate
 - ☐ Expert
7. Have you ever come across a first-aid web site on the internet?
- ☐ Yes
 - ☐ No
8. In which occasion do you log on for first-aid web sites
- ☐ Information purposes
 - ☐ Co-incident come across my mind
 - ☐ Academic requirement (e.g: In school society)
 - ☐ Project study
 - ☐ To gain more knowledge on first-aid
 - Others _____ (please state)
9. Do you think first-aid web site is important? Why?
- ☐ Yes
 - ☐ No
- Reasons _____
10. Do you know the items/contents in a first-aid box?
- ☐ Yes
 - ☐ No
11. What type of information do you wish to have on a first-aid web site?
- * Please 'tick' (✓) more than one (if any)
- ☐ Emergencies first aid
 - ☐ Basic first-aid
 - ☐ First-aid tutorial
 - ☐ Quick access on first-aid available
 - ☐ Games on First-aid
 - ☐ First Aid Test (beginner, Intermediate, Expert)
 - ☐ First Aid Company Information
 - ☐ First Aid Chatroom

Others _____ (please state)

*Prepared by
Lai Pei San.*

EVALUATION FORM

Interactive First Aid Guidebook

Please 'tick' in the appropriate box. Thank you .

1. How do you rank the Interactive first Aid Guidebook web site?

- ☐ Very Good ☐ Good ☐ Average ☐ Poor ☐ Very Poor

2. Have you come across with such an Interactive Online Instructor in other web sites before?

☐ Yes

☐ No

3. According to your opinion, do you think the information available is sufficient to you?

☐ Yes

☐ No

4. Do the web site helpful to you?

☐ Yes

☐ No. Please state reasons _____

5. Which category is more attractive to you?

☐ Basic First Aid

☐ Emergency First Aid

☐ First Aid Online Tutorial

☐ First Aid Test (Beginner, Intermediate, Expert)

☐ A to Z First Aid

☐ Others _____ (Please state)

6. Please rank the categories below from 1 to 5.

1=Very Good 2=Good 3=Average 4=Poor 5=Very Poor

	1	2	3	4	5
Basic First Aid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency First Aid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
First Aid Tutorial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
First Aid Test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A to Z First Aid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Do the interactive/multimedia elements are sufficient within the web site?

☐ Yes

☐ No

8. How well does the web site response to users request?

☐ Very fast ☐ Fast ☐ Average ☐ Slow ☐ Very Slow

9. What is your opinion about the multimedia elements display in this site?

☐ Very Good ☐ Good ☐ Average ☐ Poor ☐ Very Poor

10. Any additional information/elements that you think might be useful to improve this site?

☐ Video

☐ First Aid Information

☐ Sound

☐ Graphic

☐ Others _____ (Please state)

Prepared by
Lai Pei San.

Sample Source Code

The source code below acted as a validation function on user login in member ID / Username with password.

Checkuser.asp

```
<%@ Language=VBScript %>
```

```
<%
```

```
'Option Explicit ' Defining all the variables used in the page
```

```
Dim username
```

```
Dim Useremail
```

```
Dim sql_check
```

```
Dim RS_check
```

```
On Error Resume Next
```

```
' storing the user name and the user email into variables
```

```
username = Request.form("username")
```

```
useremail = Request.Form("password")
```

```
dim conn, SQL, R
```

```
dim aConnectionString
```

```
aConnectionString="Provider=SQLOLEDB;Data  
source=vlsi06;Database=First_Aid;UID=sa;PWD=wet98059"
```

```
set conn= server.CreateObject ("ADODB.Connection")
```

```
conn.mode = adModeReadWrite
```

```
conn.connectionString =aConnectionString
```

```
conn.Open
```

```
'Query to validate the user name and the password
```

```
sql_check = "select * from loginuser where username =" & username & " and  
password = " & useremail & ""
```

```
'Response.Write sql_check
```

```
Set RS_check = conn.Execute(sql_check,,adCmdText)
```

```
If not RS_check.eof Then
```

If the count is not equal to 0 .. it would mean that the username and the email is correct

```
Session("username") = request.form("username")
```

```
response.redirect "default.asp"
```

```
End If
```

```
If RS_check.EOF Then
```

If the count is equal to 0 .. it would mean that the username and the email is not correct

```
Session("error") = "WRONG USER NAME OR PASSWORD"
```

```
response.redirect "index.asp"
```

```
End If
```

```
'set RS_check.activeConnection = Nothing
```

```
%>
```

The source code below acted as a checking function before the user's particular saved into the database to avoid error.

Register.asp

```
<%@ Language=VBScript %>
<% Response.Expires = -1000 %>
<script language="javascript">
// validation for the form
function userreg_valid(theForm)
{
// Member ID Field should not be empty
if (theForm.txt_name.value == "")
{
alert("Please enter a value for the \"Name\" field.");
theForm.txt_name.focus();
return (false);
}
// Name Field should not be more than 50 characters
if (theForm.txt_name.value.length > 50)
{
alert("Please enter at most 50 characters in the \"Name\" field.");
theForm.txt_name.focus();
return (false);
}
// Email Field should not be empty
if (theForm.txt_email.value == "")
{
alert("Please enter a value for the \"Email\" field.");
theForm.txt_email.focus();
return (false);
}
// Email Field should not be more than 50 characters
if (theForm.txt_email.value.length > 50)
{
```

```
alert("Please enter at most 50 characters in the \"Email\" field.");
```

```
theForm.txt_email.focus();
```

```
return (false);
```

```
}
```

```
/ Email Field Validation
```

```
if(theForm.txt_email.value!="")
```

```
{
```

```
if((theForm.txt_email.value.indexOf(" ")!=-1)) {
```

```
    alert("Sorry, but email address cannot contain spaces!");
```

```
    theForm.txt_email.select();
```

```
    theForm.txt_email.focus();
```

```
    return false;
```

```
}
```

```
if((theForm.txt_email.value.indexOf("@")==-1)) {
```

```
    alert("Sorry, but email address should contain '@' character!");
```

```
    theForm.txt_email.select();
```

```
    theForm.txt_email.focus();
```

```
    return false;
```

```
}
```

```
if (theForm.txt_email.value.indexOf("@")<2) {
```

```
    alert("Sorry, but this email address is incorrect!" + "\n" + "Please  
verify the text before '@' character");
```

```
    theForm.txt_email.select();
```

```
    theForm.txt_email.focus();
```

```
    return false ;
```

```
}
```

```
if
```

```
((theForm.txt_email.value.indexOf(".",theForm.txt_email.value.indexOf("@")) -  
theForm.txt_email.value.indexOf("@")) < 2 ) {
```

```
    alert("Sorry! but this email address is incorrect!" + "\n" + "no domain specified")
```

```
    theForm.txt_email.select();
```

```
    theForm.txt_email.focus();
```

```
    return false;
```

```
}
```

```

if ((theForm.txt_email.value.length -
theForm.txt_email.value.indexOf(".",theForm.txt_email.value.indexOf("@")) < 2 ) {
    alert("Sorry! but this email address is incorrect!")
    theForm.txt_email.select();
    theForm.txt_email.focus();
    return false;
}

if (theForm.txt_email.value.charAt(theForm.txt_email.value.length-1) == "." ) {
    alert("Sorry! but this email address is incorrect! dot cannot be the last
character")
    theForm.txt_email.select();
    theForm.txt_email.focus();
    return false;
}
}

// Password Field should not empty
if (theForm.txt_pwd.value == "")
{
    alert("Please enter a value for the \"Password\" field.");
    theForm.txt_pwd.focus();
    return (false);
}

// Password Field should not be more than 50 characters
if (theForm.txt_pwd.value.length > 50)
{
    alert("Please enter at most 50 characters in the \"Password\" field.");
    theForm.txt_pwd.focus();
    return (false);
}

return (true);
}

//-->
</script>
<head>
<title>The Online Examination - Registration Page</title>

```

```

</head>
<BODY bgColor=#FFFFFF>
<form name="fr_userreg" method="post" action="sendregister.asp" onsubmit = "return
userreg_valid(this)">
  <table align="center" cellpadding="5" cellspacing="5" border="0" width="517"
height="357">
    <tr>
      <td colspan="5" align="center" valign="middle" height="4"><font face=verdana
size=1 color=red><%=Session("message")%></font></td>
    </tr>
    <tr>
      <td colspan="2" align="center" valign="middle" rowspan="5">
        <p align="center"><font face="Verdana" size="2" color="#800000"><b>
</b></font><font face="Verdana" size="2" color="#800000"><br><br>
        <br><br>
         </font></p>
        <div align="center"><font face="Verdana" size="2"></font> </div>
        <font face="Verdana" size="2"></font> </td>
      <td align="center" valign="middle" height="111" colspan="2"><font
face="Verdana" size="2" color="#800000"><b><br>
         Member Registration
Form</b></font></td>
      <td rowspan="5" align="center" valign="middle" height="97" width="101"><br>
        <br>
        
        <div align="center"></div>
      </td>
    </tr>
  </tr>

```

```

<td align="left" valign="top" width="107" height="19"><font face="Verdana"
size="2"><b>Member ID : </b></font> </td>

<td align="left" valign="top" width="135" height="19">
<input type="text" name="txt_name" size="20" maxlength="50">
</td>
</tr>

<tr>
<td align="left" valign="top" width="107" height="11"><font face="Verdana"
size="2"><b>Email : </b></font> </td>

<td align="left" valign="top" width="135" height="11">
<input type="text" name="txt_email" size="20" maxlength="50">
</td>
</tr>

<tr>
<td align="left" valign="top" width="107" height="17"><font face="Verdana"
size="2"><b>Password : </b></font> </td>

<td align="left" valign="top" width="135" height="17">
<input type="password" name="txt_pwd" size="20" maxlength="50">
</td>
</tr>

<tr>
<td align="center" colspan="2" height="17">
<input type="submit" value="Submit" name="submit">
&nbsp;
<input type="reset" value="Reset" name="reset">
</td>
</tr>
</table>
</form>
<%

```

'Clearing the Session Variables

```
Session("message")=""
```

```
%>
```

The source codes below will build a search result after matching user keyword with the search table from the database.

Buildsearch.asp

```
<!--#include file="adovbs.inc"-->
<%
Function Free(ByRef Object)
    Object.Close
    Set Object=Nothing
End Function

Function OpenAccess(ByRef Conn, DbName)
    dim SQL
    dim R
    dim aConnectionString
    aConnectionString="Provider=SQLOLEDB;Data
    source=vlsi06;Database=First_Aid;UID=sa;PWD=wet98059"
    set conn= server.CreateObject ("ADODB.Connection")
    conn.mode = adModeReadWrite
    conn.connectionString =aConnectionString
    conn.Open
End Function

Function w(string)
    Response.Write(String)
End Function

Function StripHTMLTag(ByVal sText)
    StripHTMLTag = ""
    fFound = False
    Do While InStr(sText, "<")
        fFound = True
        StripHTMLTag = StripHTMLTag & " " & Left(sText, InStr(sText, "<")-1)
        sText = MID(sText, InStr(sText, ">") + 1)
    Loop
    StripHTMLTag = StripHTMLTag & sText
```

If Not fFound Then StripHTMLTag = sText

End Function

%>

<%

""This function returns a string value that is the an SQL statement to be used in
""a search script.

Function

BuildSearchSQL(SearchString,AndOr,SearchField,SearchTable,PrimaryKey,LinkTitle,
Description)

Dim MyWords

Dim Count

Dim sql

SearchString=Replace(SearchString,"","")

" parse SearchString delimited by spaces and place into MyWords array

MyWords=Split(SearchString," ")

Count=Ubound(MyWords)

" initialize SQL to select Primary Key and Search Field fields from Search
Table

sql= "SELECT " & PrimaryKey

" if Search Field is not the same as Link Title, add Link Title Field to the
query

" (identical fields in same SELECT causes ambiguity)

if SearchField <> LinkTitle then

sql= sql & ", " & LinkTitle

end if

if Description <> "" And Not Instr(sql,Description) then

sql=sql & ", " & Description

end if

sql= sql & " FROM " & SearchTable

sql= sql & " WHERE "

" loop to include all words from query in SQL conditions

For i = 0 to Count

```
sql= sql & SearchField & " LIKE '%" & MyWords(i) & "%' "
```

```
If i = Count Then
```

```
    sql= sql & ";
```

```
Else
```

```
    sql= sql & AndOr & " "
```

```
End If
```

```
Next
```

```
BuildSearchSQL = sql
```

```
End Function
```

```
Function SearchDB (sql, URL, PrimaryKey, LinkTitle, Description, URLink,  
LinksPerPage, dbConn)
```

```
" execute SQL query
```

```
    Dim CMD
```

```
    Dim x
```

```
    Dim RS
```

```
    Dim iPageCount
```

```
    Dim iPageCurrent
```

```
    Dim iPageSize
```

```
If Request.QueryString("page") = "" Then
```

```
    iPageCurrent = 1
```

```
Else
```

```
    iPageCurrent = CInt(Request.QueryString("page"))
```

```
End If
```

```
Set CMD = Server.CreateObject("ADODB.Command")
```

```
Set RS = Server.CreateObject("ADODB.Recordset")
```

```
CMD.CommandText = sql
```

```
CMD.CommandType = 1
```

```
Set CMD.ActiveConnection = dbConn
```

```
RS.CacheSize = LinksPerPage
```

```
RS.PageSize = LinksPerPage
```

```
iPageSize=LinksPerPage
```

```
RS.Open CMD, , adOpenStatic, adLockReadOnly
```

```

if RS.EOF AND RS.BOF then
    w "<br><b>No Results found</b><br>"
end if
iPageCount = RS.PageCount

If Not RS.EOF then
    If iPageCurrent > iPageCount Then iPageCurrent = iPageCount
    If iPageCurrent < 1 Then iPageCurrent = 1
    RS.AbsolutePage = iPageCurrent

    w "<FONT SIZE=" + 1 + ">"
    w "Page <B>" & iPageCurrent & "</B> of <B>" & iPageCount &
    "</B>"
    w "</FONT>"
    w " <table>"

    W vbCRLF
    Do While iRecordsShown < iPageSize And Not RS.EOF
        w "<tr><td>"
        w "<a href=" & Request.ServerVariables("SCRIPT_NAME") & "?"
        w PrimaryKey & "=" & RS(PrimaryKey) & "&" & URL & ">" &
        RS(LinkTitle) & "</a>"
        If Description <> "" then
            w "<br>"
            if Len(RS(Description)) <= 150 then
                w StripHTMLTag(RS(Description))
            else
                w StripHTMLTag(Left(RS(Description), 150)) & " ..."
            end if
        end if
        w "</td></tr>"
        iRecordsShown = iRecordsShown + 1
        RS.MoveNext
    Loop

    Free RS

W "</table><p>" & vbCRLF

```

If iPageCurrent <> 1 Then

%>

<A HREF="<%=Request.ServerVariables("SCRIPT_NAME")%>?page=<%

<%> Language w iPageCurrent - 1

<% w "&Query=" & Server.URLEncode(Request("Query"))

%>">Previous

<%

End If

Dim subject, item, percent, result, count

Dim s For I=1 to iPageCount %>

<A HREF="<%=Request.ServerVariables("SCRIPT_NAME")%>?page=<%

Dim aConnec w I

aConnec w "&Query=" & Server.URLEncode(Request("Query"))

source="<%=I%>

set conn = new ADODB.Connection

conn.Open "Provider=Microsoft.ACE.12.0;Data Source=" & Request.Form("file") & ".accdb;"

conn.Open "Provider=Microsoft.ACE.12.0;Data Source=" & Request.Form("file") & ".accdb;"

Query If iPageCurrent < iPageCount Then %>

<A HREF="<%=Request.ServerVariables("SCRIPT_NAME")%>?page=<%

sql_table = w iPageCurrent + 1

Set RS = rs w "&Query=" & Server.URLEncode(Request("Query"))

if not %>&">Next

<%

End If

end if

result=0

End Function

sql_check = "select * from "&subject&" where answer = " & Request.Form("item") & ""

%> RS_check = conn.Execute(sql_check adCmdText)

if not RS_check.EOF then

result = result + 1

end if

next

percent = round((100 * result) / count)

%>

The source codes below will print the test result after user completed the test.

Result.asp

```
<%@ Language=VBScript %>
<%
Dim sql_table,,RS_table
Dim MyString, MyArray
Dim sql_check, RS_check
Dim subject, item, percent, result, count
Dim sql_id, RS_id, id, sql_insert, RS_insert
Dim conn, SQL, R
Dim aConnectionString
aConnectionString="Provider=SQLOLEDB;Data
source=vlsi06;Database=First_Aid;UID=sa;PWD=wet98059"
set conn= server.CreateObject ("ADODB.Connection")
conn.mode = adModeReadWrite
conn.connectionString =aConnectionString
conn.Open
'Query to get the table name
sql_table = "select tbl_name from paper where id=" &session("id")
Set RS_table = conn.Execute(sql_table,,adCmdText)
if not RS_table.EOF then
    subject = RS_table.Fields("tbl_name").value
end if
count = Request.Form ("count")-1
result=0
for each item in Request.Form
sql_check = "select * from "&subject&" where answer =" & Request.Form(item) & ""
Set RS_check = conn.Execute(sql_check,,adCmdText)
if not RS_check.EOF then
    result = result + 1
end if
next
percent = round(( 100 * result )/count)
%>
```

GLOSSARY

ADO	Active Data Object
ASCII	American standard code for information interchange: a standard character-encoding scheme.
ASP	Microsoft Active Server Pages
CAI	Computer-Aided Instruction.
CAL	Computer Assisted Learning: one of several term used to describe the use of computers in training and education
CBT	Computer-based training <i>see</i> CAL
CGI	Common Gateway Interface
CPR	Cardio-Pulmonary Resuscitation
DBMS	Database Management System
DOM	Document Object Model
GUI	Graphical User Interface; a style of interaction between the user and the computer involving a graphics screen, icons and some point of device such as a mouse.
HTML	Hypertext Markup Language
IIS	Internet Information Server
Interactive	describing a system or a mode of working in which there is a direct response to the user's instructions as they are input.
ISAPI	Internet Server Application Program Interface
ISO	the International Standards Organization
OLAP	online analytical processing
RAM	Random-access memory; which can be read or write.
RDBMS	Relational Database Management System
ROM	Read-only memory; used for storage of data that cannot be modified.
SQL	Structured query language.
UH	University Hospital
UNIX	An operating system originally developed by Bell laboratories in 1971.
Wintel	Windows/Intel system
WSH	Windows Script Host