Faculty of Computer Science and Information Technology
University of Malaya

Malaysia Tourism Network Games

Christopher Yip Wai Hon

WET030015

Supervisor: Ms. Mas Idayu Md Sabri
Moderator: Mr. Mohamad Nizam Hj. Ayub
Mr. Amirrudin Hj Kamsin

2005/2006

Abstract

Web-based Public Information Systems of the kind common in tourism do not satisfy the needs of the customer because they do not offer a sufficiently flexible linking environment capable of emulating the mediation role of a tourist adviser.

Much literature has argued that interactive engagement in a computer medium is best demonstrated by games. With this in mind, this paper suggests certain techniques that virtual environments (especially cultural heritage ones) can learn from game design.

Thus, Malaysia Tourism Network games are introduced. Interesting animation show will be display when the player passes a stage. This can attract the player to explore Malaysia map and tourism spots and have fun.

Acknowledgement

During the preparation of this thesis project's proposal, many people have been lending helping hands, giving encouragements and invaluable advices to me, which enable this proposal to be completed on time.

First, I would like to express my heartfelt appreciation to my supervisor, Ms Mas Idayu, for her advice and supervision throughout this preparation of this project's proposal. Without her patience and proper guidance, I would not have been able to complete the proposal for this project successfully.

I would also like to take this opportunity to express my appreciation to En. Mohamad Nizam Hj.Ayub for sparing his precious time to be my moderator. En. Amirrudin Hj Kamsin has no doubt given me invaluable suggestion and. many good and useful advises to develop my system.

Special thanks also go to my fellow course mates, group member, friends and senior for sharing their time and knowledge with me. Their supports and motivations are deeply appreciated. I feel grateful to have their encouragements whenever I encounter difficulty.

Last but not least, I like to thank my family and friends for their support throughout my years of studies in University of Malaya. Their encouragement and words of wisdom have truly motivated me and strengthen my spirits in performing my best in every field I am involved in. Once again, thank you very much!

Table of content

List of figure

List of table

Chapter 1 – Introduction

1.1 Overview

Play has already been recognized as an activity that supports learning [1, 2] and identity building [6]. Especially intellectual development, play can foster cognitive and social development. In educational settings, games have been proved to be a unique medium to experience reality. People can interact with simulated symbolic representations of reality, and get involved in the cause of the events [1]. Nevertheless, games are social events that allow its participants to grasp the role of a 'player' and learn how to interact with metaphorical representations of reality as well as with other players and roles [8].

Network and online game has become a popular game and loved by many people because it can be played across the network and on the web without the need to buy traditional board game which is expensive. This system allows multiple players to play the game via a network. Players compete against each other. In this system, users can adapt the environment of Malaysia because the game incorporates the essences of Malaysia and its culture, heritage, etc.

This is a multiple player online game to promote Malaysia's tourism. It is a new way to promote Malaysia's Tourism. The basic idea of this game is base on The Amazing Race game concept. We choose Malaysia's most popular places to be the destination. For example KL tower, KLCC, Putra Jaya and Pulau Redang.

There are three main components in the game. Chat room, player's statistic and game interface. The chat room is to enable the user to communicate. The player's information will be display in the statistic section for example money remains, time started etc. The game interface shows the user action and movement and sees opponent location to compete for the fastest time.

In the end, this system will provide benefits to a country and the gamers. The system can promote Malaysia tourism more interactive and attractive. In the other hand, the player can play games and explore to Malaysia famous places and gain general knowledge.

1.2 Project Motivation

Tourism is based upon image, interpretation, and perception, however systems tend to structure their information into rather austere categories. The ethnographic studies found that customers do not always consider their needs with respect to "standard" classifications; tourism research shows that customers consider their needs from many perspectives [14], and attractions put considerable effort into creating the correct "image" [11]. A more flexible classification scheme, better able to capture such abstract notions thus seems appropriate.[8]

1.2.1 Problems with current web base tourism information system

The current generation of web-based systems falls short of their requirements. Typically, they are structured using rigid classification schemes and static (usually explicit manual) linking, and offer limited keyword search facilities. Such systems are poor information intermediaries: they are too rigid, and do not fully exploit the potential for interactivity to add value to their information content. Consequently they fail to address the information needs of their users and are ineffective as promotional devices. Tourist sets out to recover some of the flexibility of the skilled tourism adviser within a hypermedia framework.

1.2.2 Solution for the current situation

A proactive and attractive system should be implemented to the tourism to attract tourist keep on visiting the system. Play has already been recognized as an activity that supports learning [1, 2] and identity building [6].

Here is where the Malaysia tourism game plays these roles. Through navigate the game board tourist able to get familiar and better visualization of the actual tourism spots in Malaysia.

1.3 Project Objectives

Core objectives of the project are as below:

- The system use to introduce Malaysia to the global through network game.
- To promote Malaysia's most popular tourism spots through a multiplayer network games.
- To provide variety suggestion and special animation preview to the tourist those have imprecise need.
- To visualize Malaysia tourism spots instead of static map.

1.4 Project Scope

Generally, Malaysia Tourism games objective is to promote Malaysia tourism spots, for the time being our project scope is only focus on Selangor area only. Using the same concept the gaming area can expend to whole Malaysia. For the moment the available scopes are:

I) The tourism network game is available in English version only.

II) The system able support two players playing at this moment.

III) The system only support in windows platform.

IV) The system able to coverage tourism spots within Selangor area.

1.5 Project Schedule

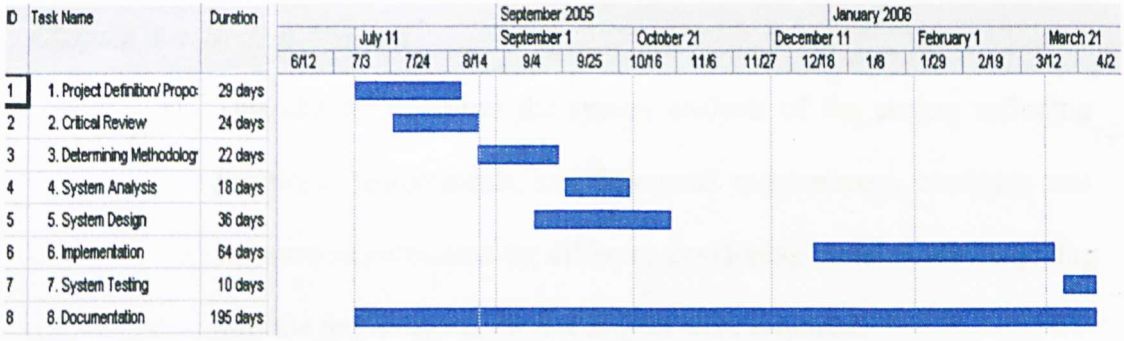


Figure 1-1: Project Schedule

1.6 Report Layout

This project proposal report consists of five chapters. The purpose of this layout is to give overview of the major phases involved during development of the project. Below is the report layouts :

Chapter 1 : Introduction

This chapter gives an overview of the major phases of the project that includes the objective, project scope, project limitations and project schedule.

Chapter 2 : Literature Review

This chapter gives brief explanation on topics researched and studies that are relevant to this project. It is the combination between literature search and literature review. Among the discuss topics are development tools and technology including operating system, web architecture, web server, programming languages and database.

Chapter 3 : Methodology

This chapter emphasizes on the justifications for the chosen project methodology. It also discusses the information gathering techniques

and the explanation about the development software and platform chosen to develop this system.

Chapter 4 : System Analysis

This chapter describes the system analysis of the project including functional requirements, non-functional requirements, hardware and software requirements on different developing tools. It also explains how the requirements for this project were acquired.

Chapter 5 : System Design

This chapter explains the conceptual and technical design of the system. It covers the structure chart, data flow diagram, process flowchart, users interface and database design.

Chapter 6 : System Implementation

This chapter explains the implementation of the system. It discusses on the system development that convert the modules and algorithm that have been designed into programming language that can be implemented

Chapter 7 : System Testing

This chapter presents various type of system testing to find system error and fault. This is also important to make sure that the system fulfills the requirements and specifications that have been planned.

Chapter 8 : System Evaluation

This chapter presents the system evaluation that reveals the problem encountered and solutions, system strength and limitation, future enhancements and others.

1.7 Chapter Summary

This chapter focuses mainly on the introduction of this project. A brief introduction and definition are stated in the first part of this chapter, which is the Project Overview. Apart from that, relevant information and topics are also being discussed consequentially. Topics included are Statement of Problems, Project Objectives, Project Scope, Expected Outcome, Project Schedule, and Report Layout. The research and development of this proposed system will take about 8 months.

Chapter 2 Review of Literature

2.1 Introduction

Literature review is an important process in system development. There are a lot of activities in this stage such as facts finding, summarizing, analysis and synthesis of the features and modules that the future system built will have. This is to ensure a better understanding of the system that will be developed and to choose the best way to plan and organize work to achieve the objectives of the system.

2.2 Current Available System

In the world, there are some web sites for Tourism game. Mostly, the web sites are not involving multiplayer. Web Page which concentrating on static graphics, static text description and easy-to read features. They only display the information that is embedded in their HTML file and they do not do much of things except to delivery the message. The pages that can be seen on the user side, already been processed by the server and only the layout are displayed. These pages do not have any interactive features.

A research has been conducted to find more information about the existing system. Existing system I found which three of them through the web site and other two kindergartens are located at Muar. The main sites to search for existing features are the kindergarten around the Malaysia. Five of existing systems are:

1. ParadiseStreem tourism games
2. Rousse Tourism games

2.2.1 ParadiseStreem

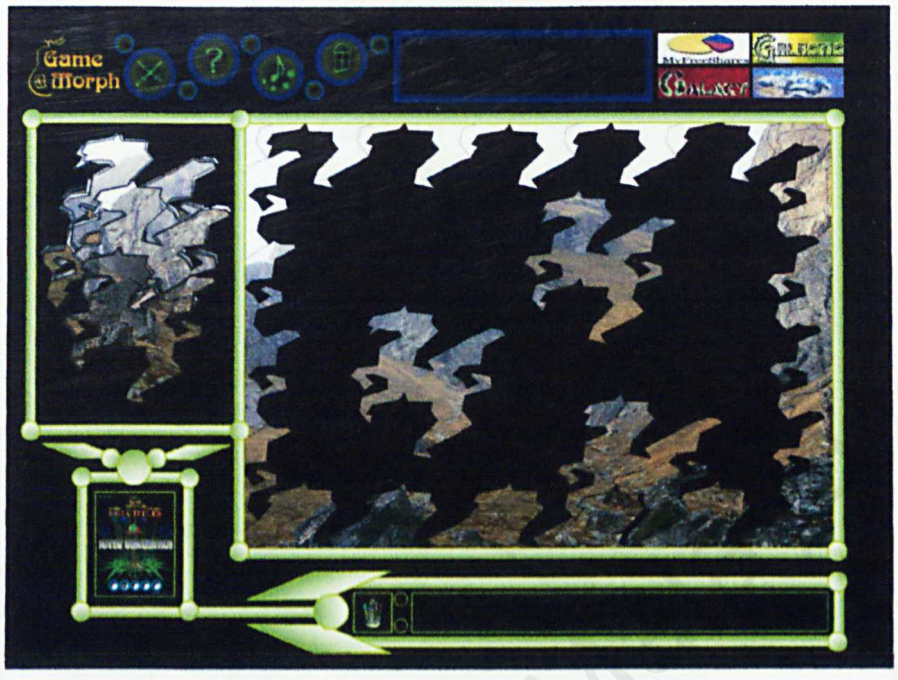


Figure 2-1ParadiseStream interface

The ParadiseStreem is a puzzle game, the player need to complete the puzzle to get the full image of the place. After complete the puzzle it will display the description and the full image of the place. This game has a help button to show the user manual, educate the player how to play.

ParadiseStreem is a offline and single player games. It is not contain any animation, and the interaction was low.

2.2.1 Rousse Tourism games

Figure 2-2 Rousse game interface

Rousse is a tourism game that educates the player about the local symbolic logo. The player needs to recognize the symbolic icon to complete the stage. It is a offline single player game that content moderate animation.

2.2.3 Summary of games reviewed

From the web sites reviewed, there are several area which the system that will be build are interested in, there are:

1. More animation on description
2. Interactive
3. Chat room

1. **More animation show on description**

   Most of the recent tourism games contain less attractive information display. Most of the description is using static text to distribute information. Thus, the Malaysia Tourism network game contains a lot of attractive animation show to display the tourism spot.

2. **Interactive**

   A games most important is interactive, we should add in more interactive to the system.

3. **Chat room**

   A network games with other user should have a chat room to communicate with each other.

2.2.9 Proposed System

From what have been reviewed and analyzed, the proposed system will have features below as existing system:

1. Interactive Network system
2. Chat room
3. More animation

2.3 Technology Review

2.3.1 Methodology

The body of methods, rules, postulates, procedures, and collectively refereed to as methodology. Good methodology will ensure a proper documentation on the work and task need to be carried out. This will help the developers to the choice of techniques at various stages in the project, to plan, manage and evaluate the system project.

There are several types of methodology in the software engineering such as Waterfall Model, V-Model, Prototyping, Incremental Model, Spiral Model, and Reused-based Development

2.3.1.1 Waterfall Model

Waterfall model is a well defined development process in which one phase has to be finished before the next phase. It takes the fundamental process activities of specification, development, validation, and evolution and represent them as separate process phases such as specification, software design, implementation, and testing.

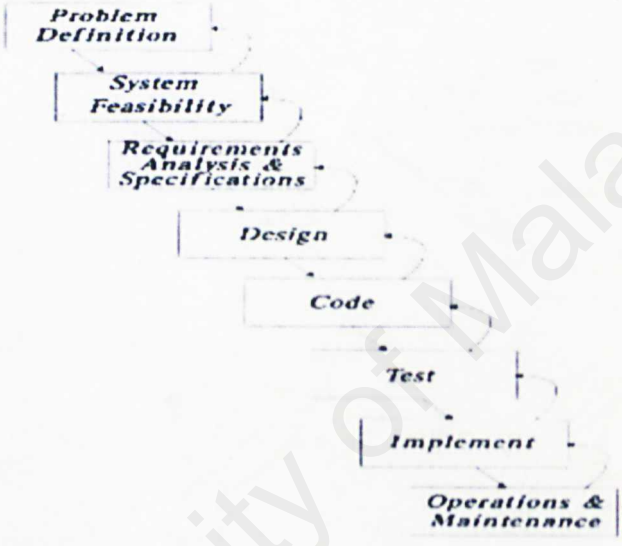


Figure 2-3: Waterfall Model

References [1]

Advantages:

i. simple and familiar to most developers, easy to understand

ii. Easy to associate measures, milestone and deliverables with the different stage.

iii. Suitable for a small scale project.

Disadvantages:

i. The drawbacks of waterfall model is the difficultly of a accommodating changes after the process is underway

ii. Difficult to respond to changing customer requirements

iii. In brief, Waterfall model is used if designers have a well defined list of user requirements.

2.3.1.2 V-model

V-model is a variation of the waterfall model that demonstrates how the testing activities are related to analysis and design. Coding forms the point of the V, with analysis and design on the left, testing and maintenance on the right. The V-model proceeds from left to right, depicting the basic sequences of development and testing activities.

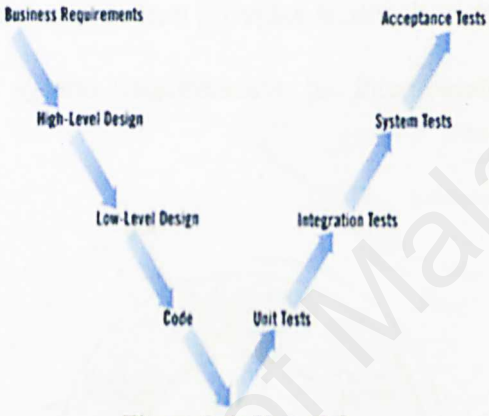


Figure 2-4: V-model

References [2]

Advantages:

i. improved version of Waterfall model

ii. better spells out the role of different type of testing.

iii. Involves the users in testing.

Disadvantages:

Extensive testing will not always be cost-effective.

2.3.1.3 Prototyping Model

The prototyping model was developed on the assumption that is often difficult to know all of user requirements at the beginning project. It offers a development approach that yields results with fast requiring all information up-front. When using prototyping model, developers build a simplified version of the proposed system presents it to the customer for considerations as part of development process. The customer in turn provides feedback to the developer, who goes back to define the system requirements to interoperate the additional information.

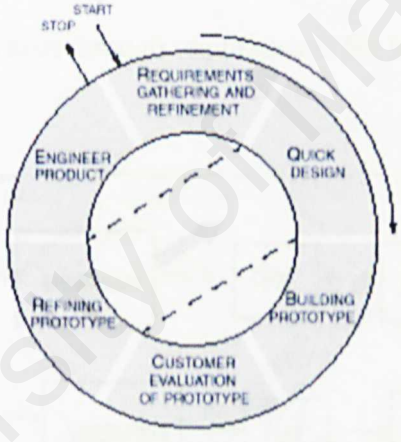


Figure 2-5: Prototyping Model References [3]

Advantages:

i. encourages and requires active end-user participation

ii. an active model that end-users can see, touch, feel and experience.

iii. Increase creativity because it allows for quicker user feedback, which can lead to better solution.

Disadvantages:

i. lead to false expectation and poorly design system

ii. use up a lot of resources especially if the prototype fail completely and must be scrapped.

iii. Extra time spend in prototyping if the problem is well understood.

2.3.1.4 Incremental model

The designers develop the software in a number of stages are able to deliver product early. In this model, user requirement are prioritized and the highest priority requirements are include in early increments. Once the development on an increment is started, the requirements are frozen through requirements for later increments can continue to evolve.

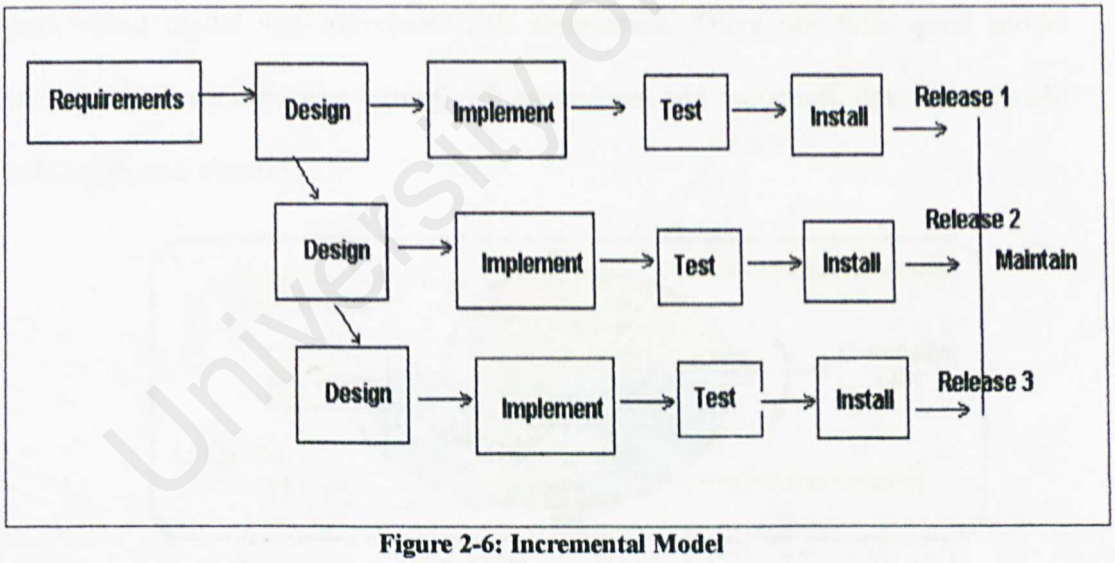


Figure 2-6: Incremental Model
References [4]

Advantages:

i. Customer value can be delivered with each increment so system functionality is available early

ii. Early increments act as prototype to help elicit requirements for later increments.

iii. Lower risk of overall project failure.

iv. Customer training can begin early

Disadvantages:

i. Customer may not satisfy with incomplete product or with frequent changes to system.

ii. Problem may not easily discussable.

iii. Changes may have to be made to completed parts in order to work with new parts.

2.3.1.5 Spiral Model

Spiral model was designed to include the best features from waterfall and prototyping model and introduces risk assessment. There are four spiral model sectors which are objective setting, risk assessment and reduction, development and validation, and planning.

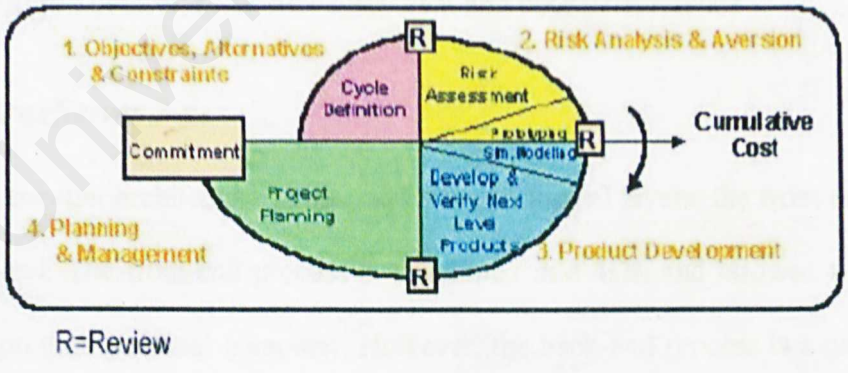


Figure 2-7: Spiral Model
References [5]

Advantages:

i. Risk are explicitly assessed and resolved throughout the process.

ii. No fixed phases such as specification or design – loops in the spiral are chosen depending on what is required.

2.3.2 System Architecture

System architecture exist to provide organizations flexible and robust infrastructure that, depending on how they are design, can cater the specify business needs. Below is description of different system architecture environments:

Client-Sever Architecture

Client-server architecture is a distributed system model which shows how data and processing are distributed across a range of processors. In this approach, the system may be thought of as a set of services that provided to clients are treated differently in these system. The 'client' is allowed to request service from the server and the 'server' gives the services to clients. This approach has the ability to present the information to the user via a graphical user interface (GUI).

Pros : shared data environment, ideal of small business.

Cons : software control, software deployment and poor performance

2.3.2.1 Client/Server 2-tier

The two-tier architecture partitioned into two logical layers: the front-end and the back-end. The front-end process is developed in a 4GL and allowed the user interacts on their personal computer. However, the back-end process is a database server and it is typically resides on a centralized server machine in a centralized environment.

2.3.2.2 Client/Server 3-tier

Client/Server three-tier drive a logical division of the application components, the database component, and the business rules that govern the processes the application supports. It provides an explicit layer for the business rules that sits between front-end and back-end. It also encapsulates the business model associated with the system and separates it form the presentation and database code.

2.3.2.3 Client/Server 2-tier and 3-tier Comparison

Table 2-1: Client/Server two-tier and three-tier comparison References [6]

	Two-tier	Three-tier
System Administration	Complex	Less Complex
Security	Low	High
Encapsulation of data	Low	High
Performance	Poor	Good
Scale	Poor	Excellent
Application reuse	Poor	Excellent
Server-to-server infrastructure	No	Yes
Internet Support	Poor	Excellent
Heterogeneous database support	No	Yes
Hardware architecture flexibility	Limited	Excellent
Availability	Poor	Excellent

2.3.3 Application Platform

Application platform is served as a platform that for developer to develop their system. Below is some operating system in the market:

Table 2-2: Statistic of Operating System
Resources from URL: http://counter.search.bg

Operating System	Unique	Reload	Total	Share	Graph
Windows 98	117,796	77,470	195,266	55.84%	
Windows 2000 / XP	47,576	35,597	83,173	22.55%	
Other/unknown	16,818	8,910	25,728	7.97%	
Windows 95	9,287	6,802	16,089	4.40%	
Windows ME	8,302	7,864	16,166	3.94%	
Windows NT	8,248	5,596	13,844	3.91%	
Linux 2	1,567	598	2,165	0.74%	
MacOS	1,014	278	1,292	0.48%	
Unix/unknown	32	3	35	0.02%	
OS/2	3	0	3	0.00%	

2.3.3.1 Unix

UNIX is an operating system that originated at Bell labs in 1969 as interactive time-sharing system. It is a freeware product with many extensions and new ideas provided in variety of UNIX by different companies, university and individuals. It is not a proprietary OS owned by any computer companies and it is the first open or standard OS that could improved by anyone. UNIX includes the traditional operation system components. It has functions that manage the hardware and the executing of application separately.

Pros:

a. powerful and motivate OS
b. it is a network-based platform.
c. Consistent way to manage files and users no need learn special command to every new task.

Cons:

a. It is too expensive to use because it need a very powerful workstation.

2.3.3.2 Linux

LINUX is UNIX-like as that was designed to provide personal computer users a free or very low cost OS compare to traditional and usually more expensive UNIX system. LINUX including graphical user interface, an X window system, TCP/IP, the Emacs editor, and other component usually found in a comprehensive UNIX system. LINUX is publicly open and extendable by contributors. Because it conforms to the portable operation system interface standard user and programming interface, developers can write program that can be ported to other OS.

Pros:

i. It is stable

ii. It is developed under General Public License (GNU) and its source code is freely available to everyone.

Cons:

i. inherently unsafe because very malicious cracker in the universe has the source code to the web site that developer under LINUX

ii. it is developed by people world-wide then lack proper organized support.

2.3.3.3 Windows NT

Microsoft Windows NT is one of the leading OS in the internet and intranet. It is comprises of two products: Microsoft NT Workstation and Microsoft NT Server. It is more safe that Windows 95 and Windows 98. It has faster performances therefore can fulfill business users.

Pros:

i. Minimal changes of system need to run a different hardware platform.

ii. Support SMP

iii. It could be easily expanded on by writing to a well defines Application Programming Interface (API)

iv. Could easily be ported to run in numerous different languages and writing system with minimal modification to the software.

v. Including of Microsoft Internet Information Server.

Cons:

i. required licensed fee.

2.3.3.4 Windows 2000

Windows 2000 is a very good representative of its kind, the changes, both fundamental and cosmetic have made Windows 2000 server faster, more reliable, heavier duty and easier to use. It has an operating system directory service which provides the means to record and organize the resources of a network (people, computer and peripherals, control their security, and monitor their operation.

Pros:

i. Active directory and the services is enables.

ii. Improved performance, reliability, and security.

iii. Better administrative facilities.

iv. Allows Object Linking and Embedding (OLE)

Cons:

i. Cost of planning and implementation, especially for mid-size organization that must use Active Directory.

2.3.3.5 Windows XP Profesional

Windows XP Professional is the latest version of the Windows desktop operating system. It is the next client and server-based OS. It is built on the Windows 20000 kernel but bring a new, more personalized look to the desktop. With the strengths of Windows 2000 Professional and the best business features of Windows 98, Windows XP Professional is the best desktop OS for all size of business.

Pros:

i. Most reliable version.
ii. Can restore a computer to a previous state without losing data.
iii. Increased application compatibility and latest hardware standards support
iv. It is easier to deploy and maintain the browser.
v. Improve handling of file associations
vi. More stable and improved troubleshooting tools.

Cons:

i. need large hard drive space (around 1 GB)
ii. Need high system specification to eliminate support for device driver which are not approved by Microsoft.
iii. High costly operating system.

2.3.4 Web Server

A web server is a software program .There are over 75 different web server on the market and all these programs are to service HTTP request. In addition, web servers also perform the following functions:

i. Provide access control, determining who can access particular directories or files on the web server.

ii. Run scripts and external programs to either add functionality to web documents or provide real-time access to database and other dynamic data. This is done through applications programming interfaces like CGI.

iii. Enable management and administration of both the server functions and the content of the web sites.

Web server allows user to secure content over the internet using Hyper Text Markup Language (HTML). The web server accepts request from web browsers like Internet Explorer and Netscape and then returns the appropriate HTML documents.

2.3.4.1 Apache

Apache is the high–end enterprise-level server for UNIX and Windows platforms. It available free on http://www.apache.org, reliably and quietly serves more than 60 percent of the current posted websites. Configuration Manager for apache (Comanche), as part of the Apache graphical user interface project, provides a quality cross-platform graphical tool for configuration and management of the Apache web server and related software. Comanche run on most flavors of UNIX, and Windows even on Apple's Macintoch. Apache autoconf-style ibterface (APACI)

streamlines the installation and configuration procedures. It is available in the form of modules and is supported in many commercial software.

Advantages:

i. Freeware

ii. performance and robustness, rock-solid reliability and extensibility

iii. security

iv. Streamlined interface.

Disadvantages:

i. More extensive technical support requires the purchase of a third party support contract.

2.3.4.2 Netscape Enterprise Server

Netscape Enterprise Server is a high-end enterprise-level server for UNIX, AIX, HP-VX, IRIS, Solaris and Windows. The Enterprise Server is on a par with Microsoft IIS on Intel hardware and surpasses the Apache Server under dynamic testing. The server can be configured through editing of the configuration text file. The newly reengineered Web User Interface (WUI) has made it even easier to configure than Microsoft IIS. The WUI can be used to set up the server, either from a Microsoft Internet Explorer or Netscape Navigator browser. Beside that, an inexperienced user will very pleased for the well-designed context-sensitive online help [EC]

Advantages:

i. Wide Spread Platform support.

ii. Centralized server management

iii. Integrated search engine

iv. SMTP support

v. End user publishing capabilities.

Disadvantages:

i. Price(especially relative to Microsoft IIS)

ii. Complexity.

2.3.4.3 Microsoft Internet Information Server (IIS)

Microsoft IIS is the second most popular web server. Microsoft released IIS with NT server as a free component turned for performance on the Intel platform. It is intended to run on a single platform. IIS is managed from the Microsoft Management Console therefore new mode of operation and its ease of use are the IIS primary advantages. The IIS comes with three default services: WWW, FTP and Gropher. Its Internet Service Manager (ISM) application controls these services on this or any other IIS server on the network.

Advantages:

i. Indexing, performance and security enhancement

ii. Well integrated server administration tools

iii. Easy to configure

iv. WebDav support makes for easier collaborative publishing.

Disadvantages:

i. No UNIX version

ii. Documentation lacking on newest version.

Table 2-3: Web Server Comparison
URL : http://www.serverwatch.com

	Apache	Microsoft IIS	Microsoft PWS	Netscape Enterprise Server
Server Type	WEB	WEB	WEB	WEB
Version	2.0	6.0	4.0	4.0
Description	The predominant open source Web server	Web server that works in conjunction with Windows Server operating systems	A great entry-level Web server for publishing home pages	High-end enterprise-level server for Unix and Windows NT
Pricing Details	Freeware	Included with all Windows Server 2003 versions	Freeware - packaged with Microsoft IIS as part of NT 4.0 Option Pack	Expensive
Rating(Over 5)	5	5	4	4.5
Vendor	Apache Software Foundation	Microsoft Corporation	Microsoft Corporation	Sun Netscape Alliance

2.3.4.4 ColdFusion MX Server

ColdFusion MX Server is Macromedia MX product for rapid building and deploying powerful web application and web services. It can leverage highly productive ColdFusion scripting language and extensive suite of built-in application services. It is easy to integrate with enterprise data, built-in connectivity for Macromedia Flash user interfaces, integrated search and charting, and complete support for XML and web services

Advantages:

i. Can integrate with Dreamweaver and Macromedia Flash.

ii. Easily perform administrative tasks remotely through a browser-base administrator.

iii. Secure shared hosting environments with directory-based access control for tags, functions, data sources and IP address.

iv. Power internet capability within on easy-to-learn and high productive server scripting environment

v. Highly approachable integration with all of the major Internet Standard and component models, including XML, SOAP/web services, Java, .NET, and COBRA.

2.3.5 Web Browser

In the era of internet, the web browser is an essential tool that will provide the necessary to bring out the information the user desires to capture. It is an application program on the user side that uses hypertext transfer protocol (http) to make requests through the internet.

Table 2-4: Example of Web Browser
Resources from URL: http://www.corefusion.com/core/coreweb.nsf/pages/certsupport

Browser	Platform	Support Level
Netscape Navigator 4.0 and higher	All platforms	Fully supported
Microsoft Internet Explorer 4.x and higher	Windows 95, NT 4.0, Windows 3.1, NT 3.51	Fully supported
Netscape Navigator 2.x and 3.x	All platforms	Supported with certificate update
AOL Browser 4.0	Windows 95, NT 4.0, Windows 3.1, NT 3.51	Fully supported
Netscape Navigator 1.x and lower	All platforms	Unsupported
Microsoft Internet Explorer 3.0	Macintosh, Windows 3.1	Unsupported

Table 2-5: Web Browser Statistics
Resources from URL: http://counter.search.bg

Browser	Unique	Reload	Total	Share	Graph
MSIE 5	111,431	75,167	186,598	52.74%	
MSIE 6	52,499	36,226	88,725	24.85%	
Other	17,148	9,472	26,620	8.12%	
Netscape 4	12,035	7,824	19,859	5.70%	
MSIE 4	12,025	12,967	24,992	5.69%	
AOL 4	14	6	20	0.01%	
Opera 4	2	1	3	0.00%	

The most common browsers used nowadays are Netscape and Internet Explorer.

2.3.5.1 Netscape Navigator / Communicator

i. Java based terminal emulator

ii. Security fixes that address JavaScript cookies exploitation and Secure Socket Layer (SSL) vulnerability

iii. Communicator pro includes a group-calendar application

iv. Uninstall feature is simple and thorough

v. Support for over 15 platforms

vi. Simplified the process for obtaining digital certificates

vii. Very stable

2.3.5.2 Internet Explorer 6.0

Microsoft Internet Explorer is the most widely used World Wide Web browser. Internet Explorer 6 (IE6) is the latest web browser for Internet Explorer. It is a set of core technologies in Microsoft Windows XP Home Edition and Windows XP Professional. IE6 consists of many features that simplify the daily task that users perform and help users to maintain the privacy of their personal information on the web.

Some features for Internet Explorer :

- Web privacy
- Flexibility
- Reliability
- Completely integrated into desktop
- Relatively stable
- Enhanced searching and history option; 56-bit encryption; and faster page loads

- Allow user to select the default e-mail, calendar, newsgroup, and HTML editors of users' choice
- An Auto Search feature lets users choose their search engine and display search results in different ways

2.3.5.3Netscape vs Internet Explorer

Table 2-6: Some Differences between Netscape and Internet Explorer
Resources from URL: http://vanessa.wcc.hawaii.edu/browsercomp.html

	Netscape Communicator	Internet Explorer
Bookmarks or Favorites	Bookmarks are saved in a single file and can be copied to other machines and can be easily imported as a whole	Favorites reside as shortcuts in a directory called Favorites. Each favorite link is a separate file. These can be copied to other machines by copying each file. Import by copying into the favorites directory.
Copying & Pasting	Copies information as plain text. Inserts spaces for any items that are indented such as lists, blockquotes. Massacres tables when copying. *Solution:* Save page, open in a word processing package then copy.	Easily copies information. Maintains formatting as much as possible. If pasted program can handle tables will be pasted into document, otherwise information will be pasted with tabs.
Location autofill-in	Fills in information in Location box, press enter to accept autofill in or keep typing to go on.	Fills in information in a drop down list, select from list by mouse or by arrow keys.
Saving Pages	Maintains HTML as is, does not change file names. Name prompted is actual filename on server. Saving pages does not also save the graphics. *Solution:* You can save graphics individually, by right clicking on the graphic and selecting Save Image As. To maintain links, accept filename prompted.	Modifies HTML source to change some of the links such aa graphics. Name prompted is page title (not filename on server). Saves all graphics on a page and saves them to a folder. Renames these files and changes the HTML code in saved page to reflect these changes. *Solution:* To save HTML source "as is" select View Source and save it from notepad then save graphics individually by right

		clicking and selecting Save Picture as.
Viewing Page Source	Lists page source in an uneditable window	Opens page source in Notepad
Handy Features	**File -Send Page** - sends page to an email address, includes URL in email message. *This is a handy feature for research since it give one a copy of the page with the complete URL.* **Integrated package** - email, newsgroups, browser, and page editor	**File-Import&Export** - imports and exports cookies & favorites to/from Netscape Naviagator **Integrates** with Outlook Express for email and newsgroups - If integrates with Outlook - can **File Send**
Setting Options	Edit-Preferences	Tools-Internet Options

2.3.6 Programming Language

2.3.6.1 Active Server Page (ASP)

ASP is a server side scripting environment that can use to create and run dynamic, interactive, high performance web server applications. Server-generate page can call other program to do things like database access, save different pages to the different browser. ASP is more efficient than CGI because ASP runs as a service and can take advantages of multithreaded architecture. ASP is an open, compile-free applications environment in which can combine HTML, scripts and reusable Active Server components to create dynamic and powerful web based business solution. It also enables server-side scripting for IIS with native support both VB Script and JavaScript. ASP also enables the transition of static web sites into dynamic and data-driven application. The proprietary source code in Asp application remains on the server side and therefore does not affect client side browser compatibility.

Pros :

i. support client/server programming

ii. enable secure exchange of information over public network, access control to server resources and confident identification of server and client

iii. dynamically edit, change or add any content of a web page

iv. suitable for building multi-tier internet and intranet applications

v. simplicity, speed and easy to learn

vi. response to user queries or data submitted from HTML forms

Cons:

i. requires to adopt Microsoft as the platform and web server

2.3.6.2 Java Server Page (JSP)

JSP is a web-scripting technology that nears for creating dynamic web-based consist using server-side (middle tier) processing. JSP simplifies the process of creativity those dynamic pages by separating the applications logic from the page design and encapsulating logic in portable, reusable Java components. JSP extends the Servlet technology in many ways, making it easier and faster to build, deploy, and maintain server-side application that communicate with web-based clients. JSP is build on the strength of the Java family and the multi vendor Java community, extending the core capabilities of the Java platform to create more powerful, flexible, and easy-to maintain dynamic web pages. JSP inherits all of the benefits of the Java language including platform and server independence, a modular and reusable component architecture, and access to the rich family of Java APIs (including JDBC, JavaMail, and Java Transaction Services.

2.3.6.3 PERL

PERL is a programming language especially designed for processing text. It becomes one of the most popular languages for writing CGI scripts because of its sharing text processing abilities. PERL is an interpretive language which makes its easy to build and test simple program. It is powerful tool used on the server side of many UNIX based e commerce. PERL has object-oriented features which have made adding new libraries very easy. PERL is the community of dedicated and technical developers who have contributed scripts to the public domain. This offers the opportunity to learn PERL by examples. PERL has a lot of shortcuts which make it easy to create but completely unreadable program.

2.3.6.4 PHP

Personal Home Page (PHP) is a programming language created by Rasmus Lerdorf. PHP is the most popular scripting language PHP is the most popular scripting language at shared-hosting facilities. The strong points of PHP is its stability, ease to use, and the fact that PHP can perform any task a more complex CGI program would do. PHP also has compatibility with many types of database. PHP tags are embedded with in the documents on the server side then the client is not bothered by the PHP code and security is enhanced as well. PHP was growing popularity is that it is a free and an open source project. It has been ported and is currently available for all major platforms.

2.3.6.5 Common Gateaway Interface (CGI)

CGI is the oldest means of adding server side functionality to a web site. It is not a language but an approach to adding interactivity use scripts in PERL, PHP or C. CGI is not very scaleable because each new request to a CGI script requires the server to start a new process in the kernel. This will use both CPU time and memory. CGI are rapidly reaching unacceptable speed with a high transaction rate. CGI process run a separate address, spaces, separated form the server.

2.3.6.6 JavaScript

JavaScript is a major scripting language developed by Netscape. It enables web authors to design interactive sites. JavaScript is purely an interpreted language, its code is embedded and can interact with HTML source code enabling web authors to animate their sites with dynamic contain. JavaScript is an open language that anyone can use without purchasing a license. It allows the application that run over the Internet by crated which the client application run in a browser and server application run on a server. JavaScript can create dynamic HTML pages hat process user input and maintain persistent data using special objects, files and relational database. Java Script can validate the data entered before it is sent to server. If the data is invalid, JavaScript can block transmission to the server because all the work is performed on the client side.

2.3.6.7 VB Script

VB Script is a scripting language developed by Microsoft and supported by Microsoft's Internet Explorer web browser, is based on Visual Basic programming language with same syntax. It is much simple that Visual Basic. VB Script mimics the functionality of JavaScript but it is not multiple platforms. VB Script enables web

authors to include interactive controls, such as buttons, and scrollbars at their web pages in a pure Microsoft environment. VB Scripts can let web author use the intrinsic HTML form controls and Microsoft's Active X controls to give web pages an attractive look and feel. VBScript is easy to use and to learn. It is a small, fast, secure, and lightweight interpreter language for usage in web application development. VBScript is said to be fast because it does not have strict types which involves extra work to interpreter such as type checking. On the other hand, it is safe, as it does not have any functionality that can directly access the client's operating system. VBScript's code can be embedded in HTML document.

2.3.6.8 ColdFusion

ColdFusion is a rapid application development tool that enables the rapid creation of interactive, dynamic and information-rich web site. It does not require coding in traditional programming language. ColdFusion is developed by Allaire and it consists of server component that support proprietary tags in web pages. Web pages include tags written in ColdFusion Markup Language (CFML) that simplify integration with database and avoid the use of more complex languages such as C++ to create translating program. ColdFusion provides tags, expressions and functions. CFML also provides a number of proprietary tags that can be used to interact with databases, send email, build HTML output and manage files. ColdFusion functions are pre-defined operations that can be used to manipulate data. ColdFusion support over 130 functions ion the following categories:

a. Mathematical and trigonometric functions
b. Bit manipulation functions
c. Decision functions
d. String functions

e. Data and time functions

f. Administrative functions

g. System-level functions

h. Date, time, and number formatting functions

i. List functions

Pros :

i. ColdFusion application can be developed rapidly as no coding, other than use of simple HTML style tags needed

ii. ColdFusion application are easy to maintain as there is no linking step

iii. ColdFusion application are easy to test and roll out

iv. ColdFusion language contains all the processing and formatting functions needed

v. Provide all the tools needed to troubleshoot and debug application

2.3.6.9 Actionscript

ActionScript has rules of grammar and punctuation that determine which characters and words are used to create meaning and in which order they can be written. For example, in English, a period ends a sentence. In ActionScript, a semicolon ends a statement.

ActionScript is similar to the core JavaScript programming language. You don't need to know JavaScript to use and learn ActionScript; however, if you know JavaScript, ActionScript will appear familiar.

This manual does not attempt to teach general programming. There are many resources that provide more information about general programming concepts and the JavaScript language.

- The European Computers Manufacturers Association (ECMA) document ECMA-262 is derived from JavaScript and serves as the international standard for the JavaScript language. ActionScript is based on the ECMA-262 specification.
- Netscape DevEdge Online has a JavaScript Developer Central site (http://developer.netscape.com/tech/javascript/index.html) that contains documentation and articles useful for understanding ActionScript. The most valuable resource is the *Core JavaScript Guide*.

Some of the differences between ActionScript and JavaScript are as follows:.

- ActionScript does not support browser-specific objects such as Document, Window, and Anchor.
- ActionScript does not completely support all the JavaScript built-in objects.
- ActionScript does not support some JavaScript syntax constructs, such as statement labels.
- In ActionScript, the eval() action can perform only variable reference

2.3.7 Authoring Tools

2.3.7.1 Macromedia Dreamweaver MX

Macromedia Dreamweaver MX is the professional choice for building websites and internet application where the designers, developers and programmers can work in a single integrated environment to create, build and manage web site and internet

applications. Macromedia Dreamweaver MX combines its renowned visual layout tools with the rapid web application development features of Dreamweaver UltraDev and the extensive code-editing support of Macromedia HomeSite.[2]

Pros :

i. Enhance productivity using the new integrated workspace, which is shared with Macromedia Flash MX and Fireworks® MX.

ii. Write code faster than ever before

iii. Use one integrated development environment to develop HTML, XHTML, XML, ASP, ASP.NET, JSP, PHP, and Macromedia ColdFusion® websites

iv. Multiple technology development environment

v. Standard and Accessibility support

vi. Integration with other technologies

vii. Secure FTP login integration with MASSH and Putty for Windows

viii. Animation capability is built in

Cons :

i. No back-end programming for form submission

2.3.7.2 Microsoft Frontpage

Microsoft FrontPage is Microsoft's tool for creating and designing web pages. It lets users do this without actually having to program HTML. It allows users to create web pages in the same way users would create document in Word or spreadsheet in Excel. With FrontPage, it is easy to create a Web site and fill it with colorful images, informative text, wacky sounds, and on-line forms. Moreover, the

program serves up simple methods for adding hyperlinks, creating tables, and even creating a simple database for gathering information from users.

Pros :

i. Simplicity, easy to use

ii. back-end programming

iii. offers more than 60 Web themes – with buttons, pictures, and other visual features that give user site a cool and consistent look

Cons :

i. larger file size

ii. the FrontPage graphic interface creates confusing code that is very hard to customize

2.3.7.3 ColdFusion Studio

ColdFusion Studio is the one of most dynamic and easies to use tools for web development from Allaire. It has visual programming and database tools, extensive wizards and intuitive editor work together to offer a high productive integrated development environment. ColdFusion Studio has interactive debugging technology that lets user step through the pages in an application to quickly find and fix bugs. It is the visual tool component of the ColdFusion web application server. ColdFudion comes with the single user version of the server for testing and development at an individual workstation.

Pros:

i. Move fast – use the wide array of visual programming, database and debugging tool to build advanced applications.

ii. Maintain quality – take advantages of syntax validation, browser awareness and interactive debugging to build high-quality system.

iii. Advanced HTML editor – editing technology for HTML, CFML, and XML including advanced color coding and automatic tag completion.

iv. Code reuse – save snippets of code or CFX's for quick reuses across pages or application.

v. Have server-side source and client-side source control.

2.3.7.3 Macromedia Flash MX

Flash is an authoring tool that allows you to create anything from a simple animation to a complex interactive web application, such as an online store. You can make your Flash applications media rich by adding pictures, sound, and video. Flash includes many features that make it powerful but easy to use, such as drag-and-drop user interface components, built-in behaviors that add ActionScript to your document, and special effects that you can add to objects.

2.3.7.4 Adobe Photoshop

Adobe Photoshop is the most popular image-editing available for Macintosh and Windows-based computers. It is used as drawing, painting and designing purposes. Users can retouch an image, apply special effects, swap details between photos, introduce text and logos, adjust color balance, and even add color to a grayscale scan. All these functions are included under a set of user-friendly editing

tools in Adobe Photoshop. It contains graphical icons to represent every functions of each button. Besides that, it also provides many shortcut keys that is easier and save time for users and for those who do not like to use mouse.

2.4 Chapter Summary

This chapter is mainly focus on the research of the problem encountered before project can be done. Through literature review on various aspects, many ideas have been gained to develop the proposed system: a Malaysia tourism network game is a stepping stone to have a more attractive, interactive and proactive way to promote Malaysia tourism. By reviewing the existing system that match the proposed system, the strong features gave some ideas to enhance the proposed system. Review on tools and methods were also carried out. Development tools and other useful technology need to be considered in order to develop a quality and useful system. Chapter Three is the research on the methodology and techniques that used to gain information.

Chapter 3 Methodology

3.1 Benefits of Good Methodology

Professional system developers and the customers they serve share a common goal of building information systems effectively. In order to ensure that cost-effective, quality systems are developed which address an organization's business needs, developers employ some kind of system development *Process Mode or Methodology* to direct the project's life cycle.

Some benefits offers by a good methodology:

- Provides a standard framework or guidelines that the developer can be easy to follow and apply.
- Easy for developers to choose a suitable CASE tools in development.
- Can increase the system quality which developer needs to produce flexible systems and adequate documentation.
- Provides best practices and better understanding of user requirement and needs.
- Provides the management with tools to review project progress, estimation and checklist to access tasks and deliverables.
- Facilitates /resources planning and controlling the project.

3.2 Selected Development Model

Managing software engineering projects is tough. The body of methods, rules, postulates, procedures, and processes that are used to manage a software engineering project are collectively referred to as methodology [19]. This will ensure a proper documentation on the work and tasks need to be carried out. Incremental Methodology will be used to develop this system.

3.2.1 Incremental Model

The designers develop the software in a number of stages are able to deliver product early. In this model, user requirement are prioritized and the highest priority requirements are include in early increments. Once the development on an increment is started, the requirements are frozen through requirements for later increments can continue to evolve

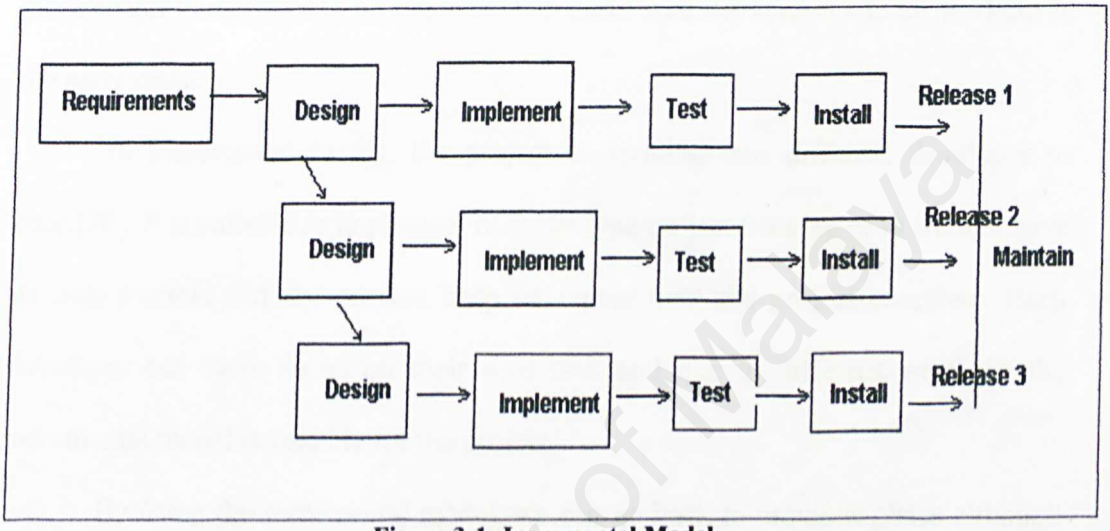


Figure 3-1: Incremental Model

There are four main phases in the Incremental Methodology [8].

1. Design phase
2. Implement phase
3. Test phase
4. Install phase

Incremental model will make customer value can be delivered with each increment so system functionality is available early. Beside that the early increments act as prototype to help elicit requirements for later increments. The most important is there is lower risk of overall project failure.

3.3 Justification of Methodology

The reasons for choosing Incremental model with Prototyping as the development methodology are:

The Incremental model main strength is on its simplicity which the development methodology is simple, less traumatic to organize and have low rate failure. Due to the unfamiliar of tools and system the failure rate is very high, so incremental model should be implement to make sure the system can be workout in the early stage.

In incremental model, the project is dividing into different developer to build[20]. It is suitable to implement in thesis type project because each student have its own module and the process keep on repeat until the project complete. Each developer can more focus on their own task and due to different expertise the incremental model is suitable for the project

By using the incremental model, we can go back to previous phase although we are carry the next phase right now. This feature is important because sometime user will change their requirements where some functions will be added or removed. Besides, we can also backward to previous phase if we discovered some errors or incomplete of certain criteria in the previous stage. This feature is important and other methodology cannot offer.

This methodology is more emphasize on rapid development. The project prototype can be done in the early stage to check the fulfillment of the project to prevent from failure[20]. It is the suitable CASE tools to use during development.

The incremental model should only be used when the requirements are not well understood. This is because commitment must be made continuously in the process and this means that is easy to respond to changing customer requirements.

The incremental model with prototyping is very flexible and smaller capital needed. If I used other complex methodology, it is difficult to me to explain to customer who is not familiar with the software development. So it is easier for me to use the incremental which is simplicity.

3.4 Fact-Finding Techniques

Fact-Finding techniques are an essential skill for all system analysts. Fact finding (information gathering) is classical set of techniques used to collect information about system problems, opportunities, system requirements, and priorities.

The methods used in collecting data required for developing Malaysia Tourism Network game are:

1. Internet surfing
2. Books and references
3. Observation and informal interview
4. Discussion with supervisor and friends

I. Internet Surfing

The Internet is a platform where a lot of information can be acquired. With development of search engines such as Googles, Excite, Copernic and Yahoo, I can collect some idea from the similar system and some interesting web design. Besides, I also get a lot of information on kindergarten management system, development tools and technologies, database,

programming languages,, project methodology, and also client-server computing knowledge. The result from this research has been elaborated in detail in Literature Review.

II. *Books and References*

Book and references are used to get the information that needed to develop the system. Besides that, I also used the library services such as online E-Book to get references. There are a lot of references I can get such as programming, database, development tools and web design. All references are very useful to help me in developing a system.

Furthermore, other source of reference is seniors' thesis. From seniors' thesis, I can get the clear idea about the report format and content for this thesis report. I can refer the thesis at FSKTM document room where got many thesis is collected in past few years.

III. *Observation and Informal Interview*

Observation is the fact–finding technique wherein the systems analyst either participate in or watches a person perform activities to learn more about the system [16]. The problems that always occur also can be discovered by observing the current kindergarten management system. We also can have informal interview to end user such as kindergarten administrator, staff and parents to get more end user requirements. Those end user requirements are very important to my building system later. Those requirements are the function or services that they need and want in building system.

IV. Discussion With Supervisor and Friends

A discussion with supervisor and friends has been practiced to get help and advices during the development of the project.

3.5 Conclusion on Tools and Technology

3.5.1 Selected Web Architecture

For this project, Malaysia tourism network game is designed to be **2-tier architecture**. This architecture is more suitable apply in the system I want to build because of the advantages below:

Advantages of Two-Tier Architecture are:

i. Same upgrades can be done entirely at the server side

ii. Performance balancing, rules sharing, organization.

iii. There is a little bandwidth to be used since the information is to be displayed id sent on the network.

iv. Provides for more flexible resource allocation.

3.5.2 Selected Platform

After review those platform in current market, I selected **Windows XP Professional** as platform to develop my system.

Advantages of Windows XP Professional are:

i. Have system restore feature enables users to restore a computer to a precious state without losing data.

ii. Built-in application such as Microsoft Internet Information Server 6.0 (IIS) and Internet Explorer 6.0 browser

iii. Increased application capabilities

iv. Provide secured access, as well as performance improvement for wireless network.

v. More stable and improved troubleshooting tools.

3.5.3 Selected Web Server

I have decided to use **Smart Fox Server Lite edition** as the system server, because it can be fully supported by Windows XP Professional and easy to implement without sophisticated installation procedure.

Advantages of Smart Fox are:

i. Work well with Actionscript in Macromedia Flash MX.

ii. Free license fee.

iii. Well integrated server administration tools

iv. Easy to install and uninstall

v. High simplicity to implement and high scalability ability.

3.5.4 Selected Web Browser

After all the consideration, **Internet Explorer** is selected to be the system web browser as it is free and is most widely used. It is also a set of core technologies in Windows XP Professional.

Advantages of Internet Explorer are:

i. simplify the daily task that users perform

ii. help users to maintain the privacy of their personal information on the web

iii. Flexibility

iv. Reliability

v. Support text, sounds, flash file and JavaScript

vi. Support for dynamic HTML, Java and Channel Definition Format (CDF)

vii. Open page source in Notepad to allow minor editing

3.5.5 Selected Programming Language

Actionscript is been selected to develop the proposed system. It allow dynamic game to be developed by inserting queries to a relational database in flash.

Advantages of **Actionscript** are:

i. Actionscript is easy to learn but powerful programming language in game base development.

ii. Actionscript application can be developed rapidly as no coding, other than use of simple HTML style tags needed

iii. Actionscript application are easy to maintain as there is object oriented programming.

iv. Actionscript application are easy to test and roll out.

v. Actionscript contains all the processing and formatting functions needed.

vi. Provide all the tools needed to troubleshoot and debug application.

3.5.6 Selected Authoring Tool

Macromedia Flash MX is selected for the system authoring tool as it is the professional visual editor. It supports Actionscript, scripting language that chosen for this project.

Advantages of the **Macromedia Flash MX** are:

i. Animation – able to produce quality animation and able to work ell with action script.

ii. Media library – take advantages of storing the media in to a .swf file such as image and audio file instead of moving the image folder.

iii. Have server-side source and client-side source control.

3.6 Chapter Summary

This chapter discuss about the methodology of the system development. Waterfall methodology with prototyping has been chosen as the framework to develop the system. Various techniques of information gathering such as internet surfing, books and references, observation and informal interview, and discussion with supervisor and friends have been practiced. This chapter also includes the conclusion on tools and technology

The next chapter will focus on the system requirement including functional requirement, non-functional requirement, and software and hardware requirement

Chapter 4 System Analysis

4.1 System Analysis

System analysis is the study of a business problem domain to recommend improvements and specify the business requirement for the solution [17]. During the analysis phase, information needs and performance criteria are defined by engaging in a variety of information-gathering activities, and developing alternative solutions.

4.1.1 Purpose

i. Acquire knowledge on how the current available Malaysia Tourism Network Game.

ii. Identifying major components to be included

iii. Gain an overall understanding of game data flow and system work.

iv. Identifying software and hardware requirements needed to develop and reside in the system.

v. Create a system specification definition that describes both the functional and non-functional requirements.

4.2 Requirement Analysis

System Requirements define the system's services, constraints and goals are established by consultation with system users. Requirements can be categorized to functional requirements and non-functional requirements.

4.2.1 Functional Requirement

A functional requirement is a function or feature that must be included in an information system to satisfy the business need and be acceptable to the users [16] Functional requirements usually are state what the services that the system should provide, how the system react to the input and how the system behave.

The Malaysia Tourism Network games will be used severe end users those are the player and the network administrator. The functional requirements are divided to three modules as below:

4.2.1.1 Games Module

Table 4-1: Functional requirement of games module

Functions	Users	Descriptions
Login	Player	i. Player can login in to the game. ii. Player can select the character they like to play the games.
Menu	Player	i. Player can control the game volume.
Panic	Player	ii. Player can skip the stage if cant get the answer

4.2.1.2 Network Module

Table 4-2: Functional requirement of network module

Functions	Users	Descriptions
Server	Administrator	Administrator can start, restart and stop the server.

4.2.2 Non Functional Requirements

Non-functional requirements are defined as constraints under which the system must operate and the standards, which must be meet by the delivered system. The non-functional requirements for the kindergarten management system are:

a) **Usability**

The system must be considered an ease-to-use application where the users no need to have any training to use the system. The system interface design should be consistent, attractive and easily understood by the users.

b) **Respond Time**

The system must be has fast respond time where users will no be kept waiting for a long time for the system to respond. The respond time to retrieve the information such loading menu can be considered within a reasonable interval time. It means that all desirable information should be available to user at any point of time. The requirement for up-to-date information is also a necessary. These could be implemented by defining a good database and the applying good programming codes.

c) **Reliability**

A system is said to have reliability if it runs undisrupted for a very long period of time without failure and crashing. All possible errors and failures are taken into consideration through extensive testing.

d) **Accuracy and consistency**

The system should return the correct and complete set of information when users are request the data. The same set of data should be display if the same query is using to search.

e) **Web page design**

Web page design should be kept simple as possible. A good combination of colors, fonts and size of fonts, pictures, links and layout is essential. Multimedia element should be incorporated when needed and the size should be kept as small as possible. This will affect the download time and respond time of the web page.

f) **Multi-users environment**

The system will be implemented as a web-based system and services so there are possibilities that there will be multi-user trying to access and used the system at the same time frame. So it is important that the system will be able to handle this kind of situation.

g) **Manageability**

The modules within the system should be easy to manage. This will make the maintenance and enhancement works easily and not times consuming.

h) **Maintainability**

The system can be corrected should an error occurred. Furthermore, it could adapt to new demand and requirements or enhanced in the future.

i) **Expandability**

The system should be able to be extended to accommodate more functionality in the future.

4.3 Run-Time Requirements

The run-time requirements are requirements that have to do with the hardware and software needs that must be fulfilled in order to maximize the performance of the system.

4.3.1 Server Computer Hardware Requirements

The hardware requirements for the server computer are:

a) PC with a Pentium III(Pentium IV is recommended)

b) At least 128 MB of RAM(256 MB is recommended)

c) At least 550 MB (1 GB is recommended)

d) VGA or higher-resolution monitor(Super VGA is recommended)

e) Others standard computer peripherals

f) Web Camera

4.3.2 Client Computer Hardware Requirements

The hardware requirements for the client computer are:

a) PC with a Pentium (Pentium 233MHz or higher)

b) At least 128 MB of RAM(256 MB is recommended)

c) At least 650 MB (2 GB is recommended)

d) VGA or other compatible monitor display

e) Others standard computer peripherals

4.3.3 Server Computer Software Requirements

The software requirements for the server computer are:

a) Windows XP

b) Internet Explorer 6.0

c) Smart Fox server

d) Macromedia Flash MX server

e) Macromedia Extension Manager

f) Java Runtime Edition (JRE) 1.4 or higher

4.3.4 Client Computer Software Requirements

The software requirements for the client computer are:

a) Windows 2000 server (Windows XP is recommended)

b) Internet Explorer 5.5(Internet Explorer 6.0 is recommended)

c) Flash Player(Flash Player 6.0 is recommended)

4.4 Chapter Summary

Chapter Four presents the system analysis which about the functional requirement, non-functional requirement and run time requirements. The functional requirements are divided to eight modules. There are game module, network module, and interface design module. Each module presents certain functions for the system. Whereas the non-functional requirement classified by ease-to-use, usability, respond time, reliability and consistency, multi-user environment, manageability, maintainability and expandability. The run-time requirement for the server side and client side are specified at this chapter.

Chapter Five presents the system design of the project. The designs are including the system architecture, system module, system functionalities and user interface design.

Chapter 5 System Design

5.1 Introduction

System design is a process to convert the conceptual ideas from requirement specification in system analysis into more technical specification.

In system design phases, the system requirements will be transmitted into a representation of system. Initially, the representation depicts a holistic view of system; subsequently refinement reads to a design representation that is close to source code. In this system design phase, input, output, file and database were produced which include the designed of input forms, screen in order to gather input data, data dictionary, file specification and report design. The objectives of system design are to specify logical design elements which consists detailed design specifications that describe the features of information system. Beside that, it also specifies components and functions with adequate details to construct application software for purpose meet the user requirements.

Under this chapter, the system design will be discussed into the following categories:

i. System Architecture Design

ii. System Functionality Design

iii. User Interface Design

5.2 System Architecture Design

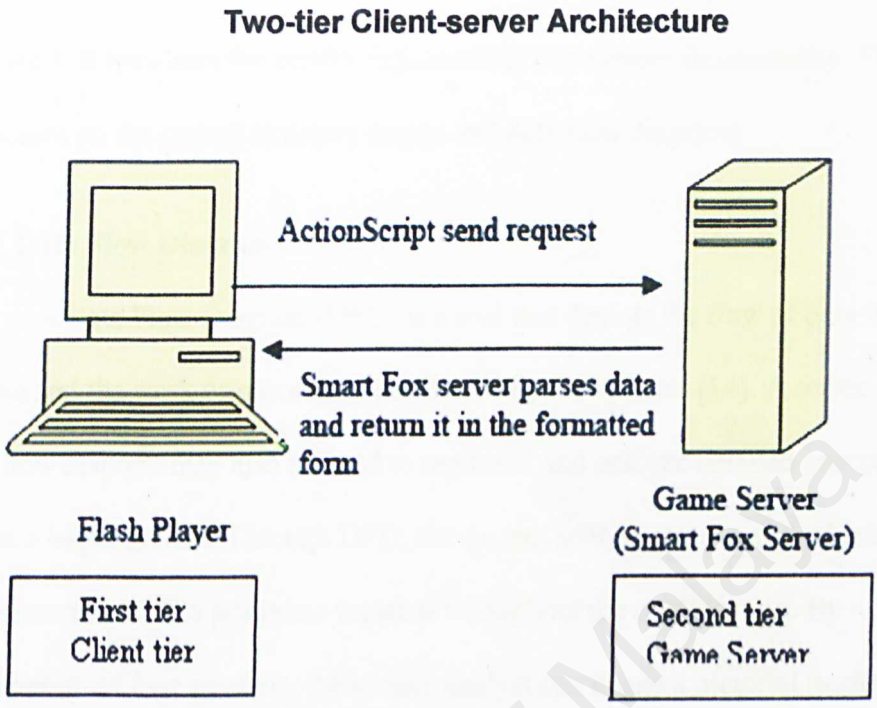


Figure 5-1 Two-tier Architecture design

The first tier is the client tier, the second tier is the Game server. When the client send request is formulated into an Actionscript sent over the network to the server and server will examine the message. If the request requires the help of the server's, the server parses the data and returned it in the formatted form.

The advantages of using two-tier architecture are:

i. It is easier to manage and deploy the network.

ii. It provides better security by not exposing the server schema to the client.

iii. It also minimize network interchanges by creating abstract levels of services

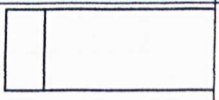
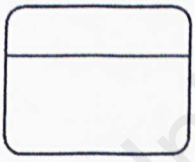
5.3 System Functionality Design

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

5.3.1 Data Flow Diagram

A Data Flow Diagram (DFD) is a tool that depicts the flow of data through a system and the work or processing performed by the system. [14]. A series of layered data flow diagram may also be used to represent and analyze detailed procedures within a larger system. Through DFD, the system analyst can put a graphical representation of data processes together throughout the organization. By using combination of four symbols, the system analyst can create a pictorial depiction of processes that will eventually provide system documentation.

Table 5-1: Four Basic Symbols Used in Data Flow Diagram

Symbol	Description
 Data Flow	i. Data flow represents an input of data to a process or the output of data (or information) from a process. ii. Data flow represents the creation, reading, deletion, or updating of a data in data store. [15]
 Data Store	i. Data store is a place to store data.
 External Agent	i. An external agent defines person, organization unit, other system, or other organization that lies outside the scope of the project but that interacts with the system. ii. It provides the net inputs into system and receives net output from a system. [16]
 Process	i. Transform the input data to output data ii. Comprise 2 sections: a) top section contain identifier information b) center section contain description of the process

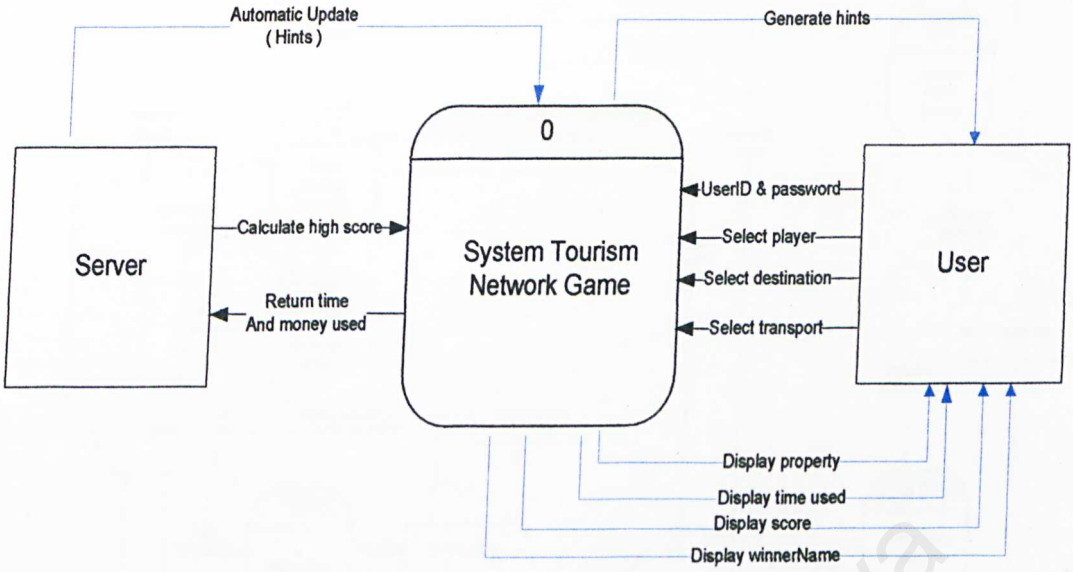


Figure 5-2: Context Data Flow Diagram of game

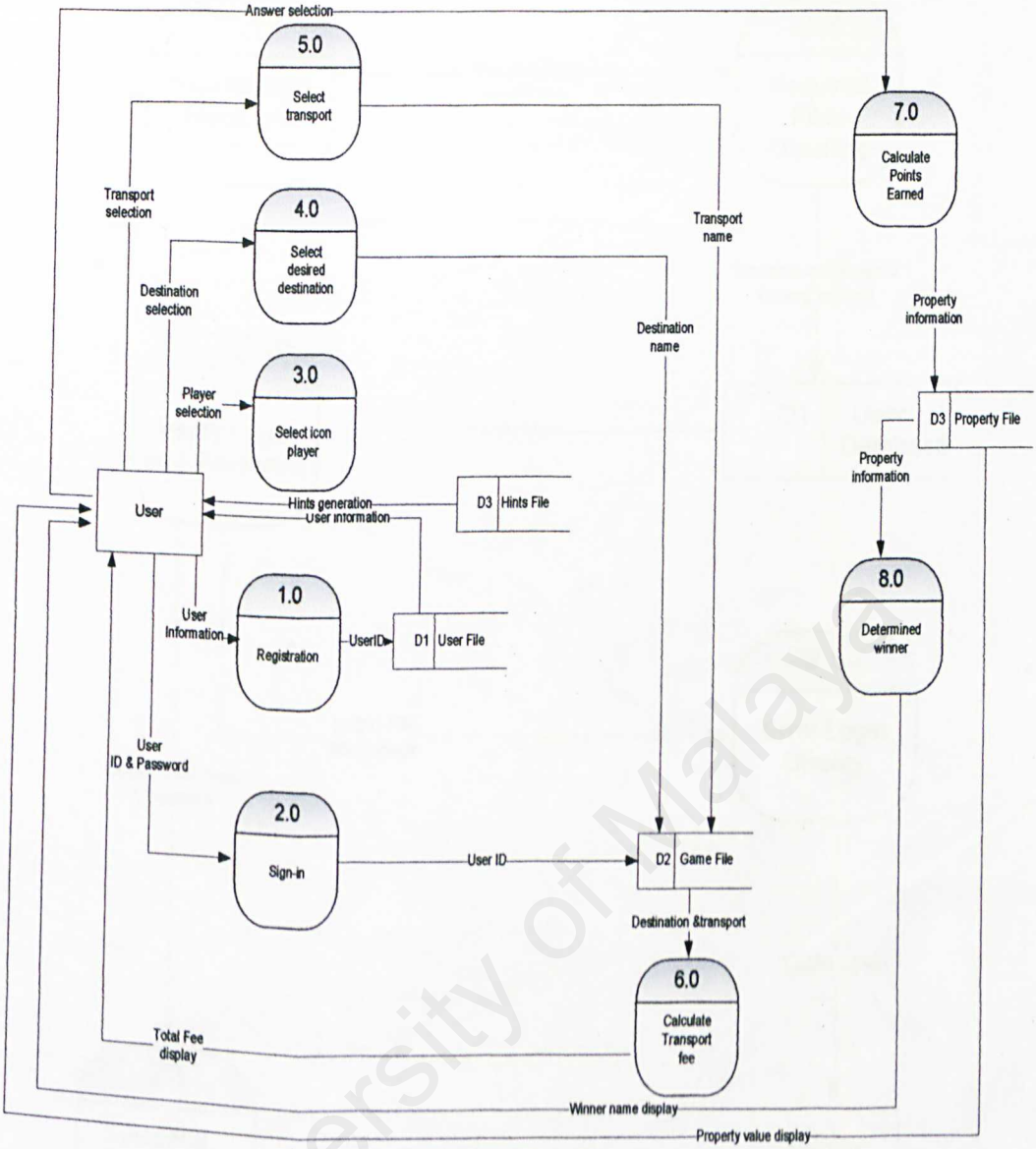


Figure 5-3: DFD Level 0 of Malaysia Tourism Network Games

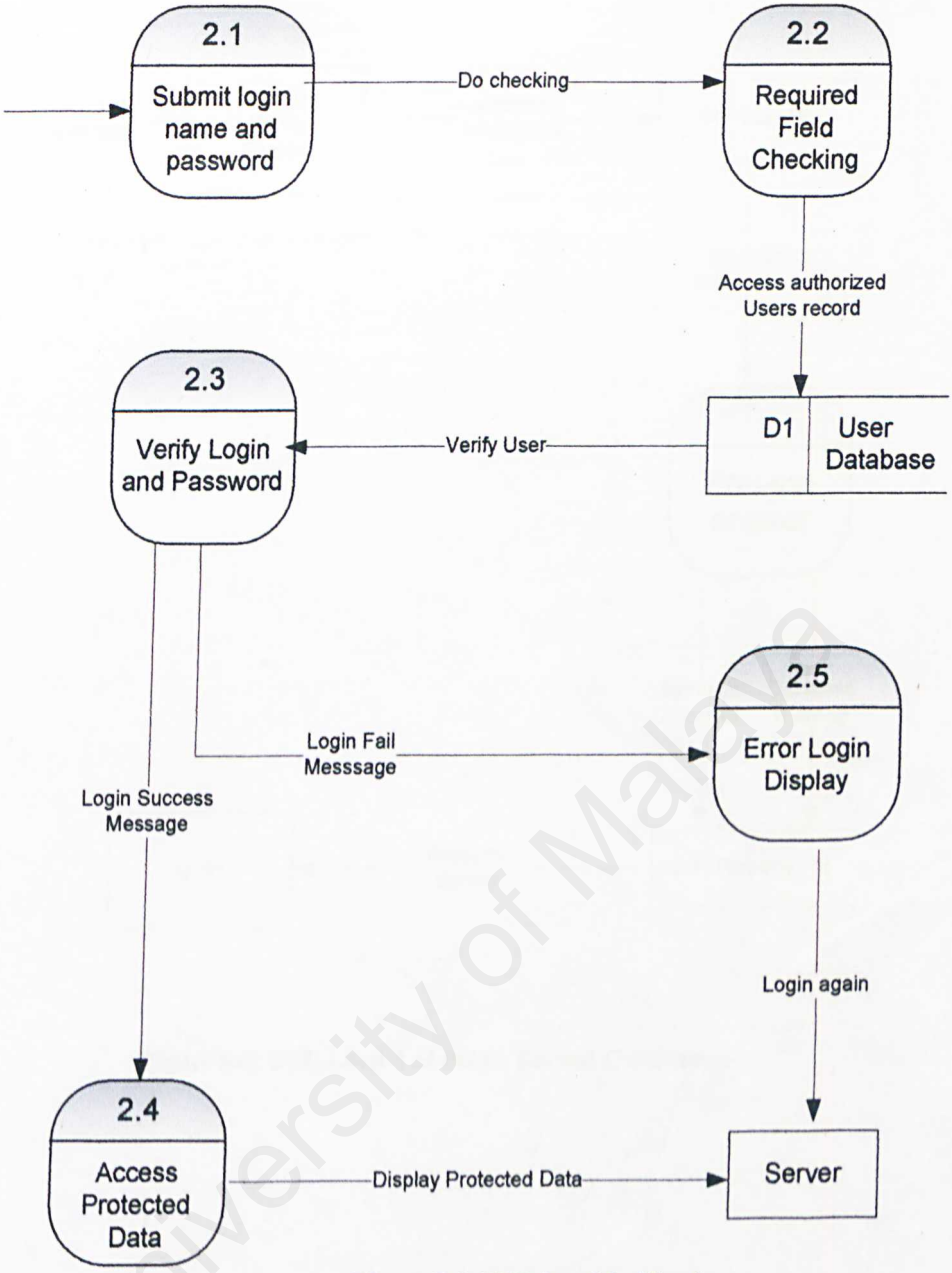


Figure 5-4: DFD Level 1 –Sign in

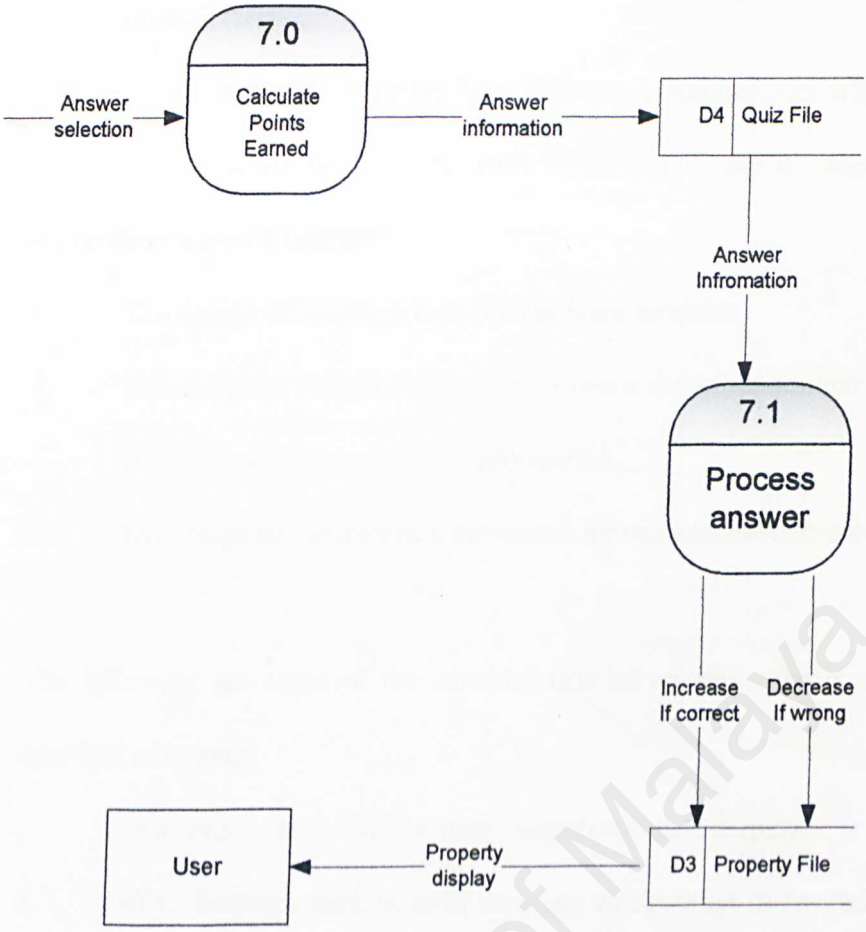


Figure 5-5: DFD Level 1 of Points Earned Calculation

5.4 User Interface Design

The interface design describes how software communicates within itself, to systems that interoperate with it, and with humans who use it. Interface design focuses on three areas of concern:

i. The design of interface between software modules.

ii. The design of interfaces between software and other nonhuman producers and consumers of information;

iii. The design of the interface between a human and the computer.

The following are some of the consideration taken while designing the user interface of system:

i. use a consistent format for menu search and data display

ii. Offers feedback such as error message will prompt to remind user when user input something wrongly.

iii. Reduced the command that must be memorized in order to carry out any operations.

iv. Use suitable widgets for search interface.

Below shows some user interface for Malaysia Tourism Network:

Figure 5-6: Main page Interface

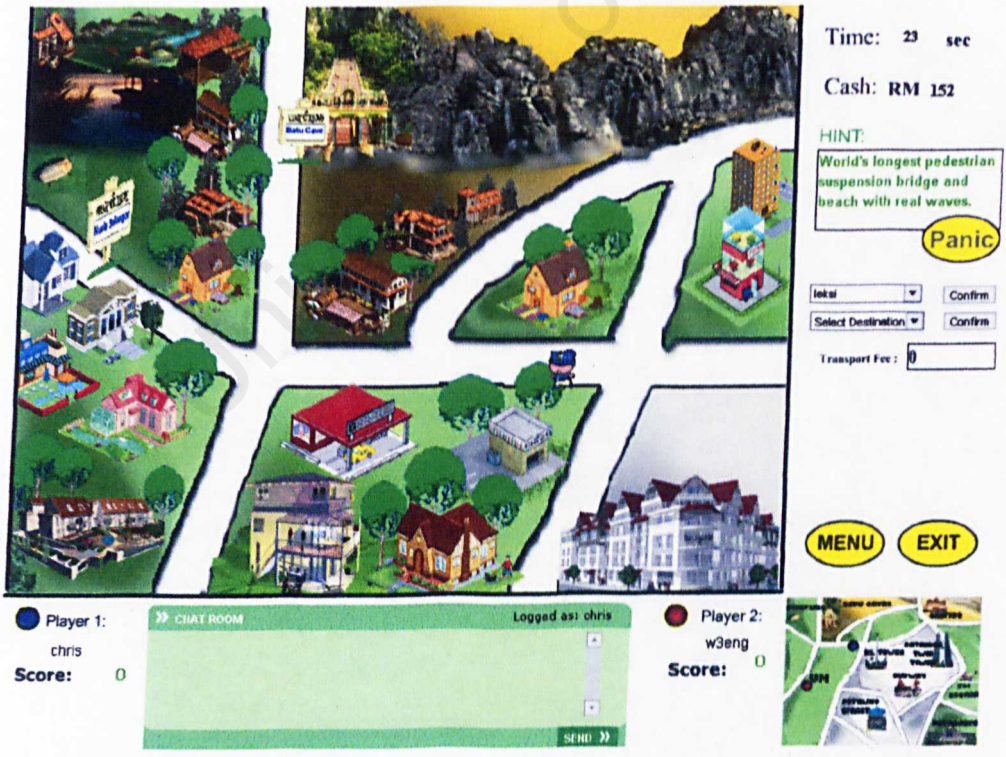


Figure 5-7: The Malaysia Tourism Network game interface

Figure 5-8: login Interface

5.5 Chapter Summary

The design phase is concerned with detailing the physical implementation of the proposed system. System design encompasses four distinct but interrelated activities: architecture design, functionality design, data design and user interface design. When each of those design activities has been completed, a comprehensive design models for the system.

Chapter 6 System Implementation

During this phase, the design model of Malaysia Tourism Game is transformed into workable product. Therefore, system implementation involved the translation of the software representation produces by the design into a computer understandable form. It involves coding of the program by using the appropriate language and coding approach, testing of the system to ensure every function work properly and debugging the code, which will identify and correct bug within program.

6.1 Development Environment

The initial stage of system implementation involves setting up the development environment. Development environment is very important to the development of a system as suitable hardware and software will determine the success of the project.

6.1.1 Hardware Configuration

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

- Intel Pentium IV 1.4 Ghz
- 256MB SD RAM
- 20 GB Hard Disk
- 15" color monitor capable of 1024 x 768 resolution
- Standard Input and Output

6.1.2 Software Configuration

There are a lot of software tools, which are used in designing program and writing report. Below is a listing of software used throughout the development process as pertaining to the specific usage:

Table 6-1: Software Used

Software	Usage	Description
Microsoft Windows XP	System Development	Operating System
Smart Fox Server	Server	Game Server
Internet Explorer 6.0	System Development	Web Browser
Macromedia Flash MX	System Development	Developing Platform
Microsoft Word	System Development	Documentation
Flash Player	System Development	Output Display
Adobe Photoshop CS2	System Development	Interface Design

6.2 Platform Development

Services and tools installations are the first step in order to start the development. Platform development includes setting up the operating system and web server.

6.2.1 Setting up Operating System

Microsoft Windows XP is used as the operating system for this project. Before the installation begins, the hard disk needs to be formatted. This is to ensure a more stable and secure environment. Moreover, it can also prevent the environment being affected by previous settings or configurations. Windows XP's installation is very easy as it provides many descriptive interface guides. User just needs to follow the steps by steps instruction appear on the installation's menu interface.

6.2.2 Setting up Server

Smart Fox server is chosen as the server for this project. It enables user to map local directory to virtual directory and create local web site. Firstly, user needs to install the Smart Fox server. During installation, there is a installation wizard to guide user in process of installation. User just need follow the step by step of the installation wizard.

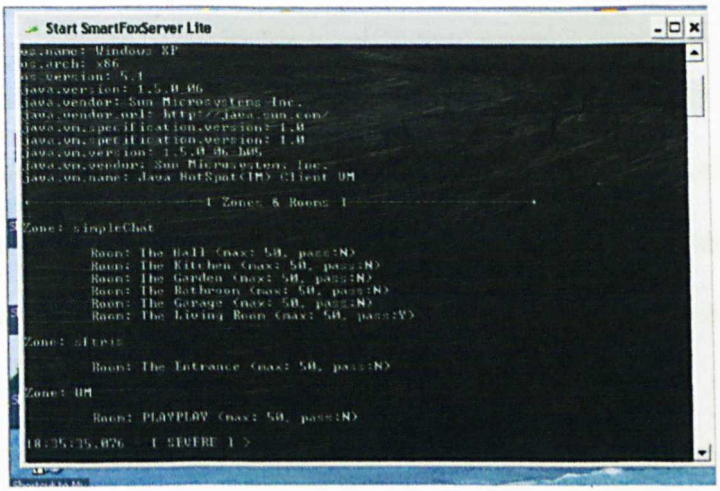


Figure 6-1: The status of the server.

6.3 Program Development

During program development, program is written, user interface is being developed and database is initialized with data.

6.4.1 Program Development Process

Basically, the Malaysia Tourism Network game is following a program development process that consists of 5 steps:

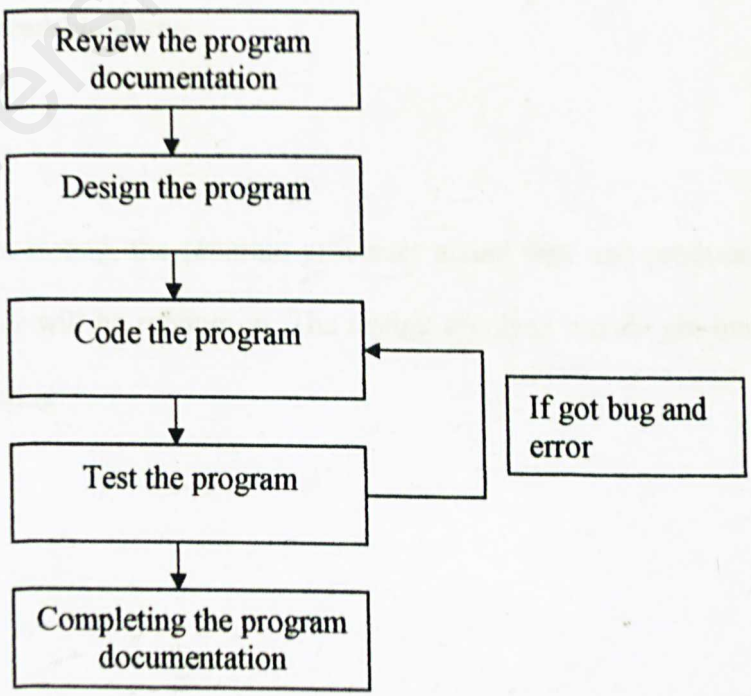


Figure 6-2: Program Development Process

i. The Program Documentation

The program documentation that was prepared during the early phases needs to be reviewed. This documentation can give the designer better understanding what the user requirement and specification of the system which is need to develop.

ii. Design the Program

After review the program documentation, the second level of program design needs to be completed during the system development where the designer decides exactly what the program can accomplish. This is the process of what it must do by developing a logical solution to the programming problem.

iii. Code the Program

Coding is a process of writing the program instruction where this instruction implements the program design. The coding step actually translates the design specification to machine-readable format.

iv. Test the Program

During the level program testing, the program processes actual data and produces information on which user will be relying on. The testing involved mostly are unit testing and integration testing.

v. Completing the Program Documentation

Completing the program is essential for the successful operation and maintenance of the system. This documentation includes the system's user manual that may be needed by most of the customer as well as the system administrator.

6.4.2 Coding Approach

This system is developed modularly using top-down approach. This top-down approach allows the higher-level modules to be coded first before the lower-level modules. The codes in the lower modules contain only an entry and an exit. In shorts, this approach look at the large picture of the system first, and then exploding into smaller part.

6.4.3 Coding Principle Applied

There are a few principles need to apply when coding the program.

Readability

Readability is essential for future enhancement. Coding style and convention applied may strongly affect the readability. Codes need to be formatted to enhance understanding.

Reusability

Reusability is an important principle. It can be considered as a method for improving product quality throughout the system development process. In addition, it also reduces the coding time as well as the testing and documentation time.

Modularity

Software with effective modularity is easier to develop because function may be compartmentalized and interfaces are simplified. Independent modules are easier to maintain because secondary effects caused by design or code modification are limited, error propagation is reduced, and reusable module are possible.

6.4.4 Style Adopted

The coding paradigm adopted by the system is oriented at giving reliability and performance a balance.

Naming Convention

Naming convention provides easy identification for the programmer. The naming convention is created with coding consistency and standardization in mind. Mostly the naming of the input are same as column in the database, it is easy to understand the relationship between the input and the database.

Indentation and Spacing

The main purpose of indentation and spacing is to ease reading and tracing of code. They make the coding looks neat and tidy.

Sample Code

a. Smart Fox server coding

    i. Create a new network place

config.xml

```
        LogMaxSize          = Log max file size. Once the log size is passed a new log f
        LogMaxFiles         = Max number of files used for logging

    -->

    <ServerSetup>
        <ServerIP>10.100.1.207</ServerIP>
        <!--ServerIP>192.168.1.2</ServerIP-->
        <ServerPort>9339</ServerPort>

        <MaxUserIdleTime>600</MaxUserIdleTime> <!-- expressed in seconds -->

        <MaxMsgLen>2000</MaxMsgLen>

        <LogMaxSize>1000000</LogMaxSize>
        <LogMaxFiles>5</LogMaxFiles>

    </ServerSetup>

    <!--
        Zones Configuration.

        Each zone represents an isolated part of the server where an application
        runs without interfering with the others.

        A zone contains Rooms that can be created at boot time or at run time.
    -->
```

Figure 6-3: Insert function coding sample

ii. Select connect to the server code

```
// Server configuration
//
// ip   = IP address of the server, if the server is running
//        locally use 127.0.0.1
// port = default value is 9339
// zone = the Server "zone" name for this application
//--------------------------------------------------

ip = "10.100.1.207"
//ip = "127.0.0.1"
port = 9339
zone = "UM"

smartfox = new SmartFoxClient()
smartfox.onConnection = handleConnection

// Connect to the server
smartfox.connect(ip, port)
```

Figure 6-4: Connection coding

iii. Joining chat room code

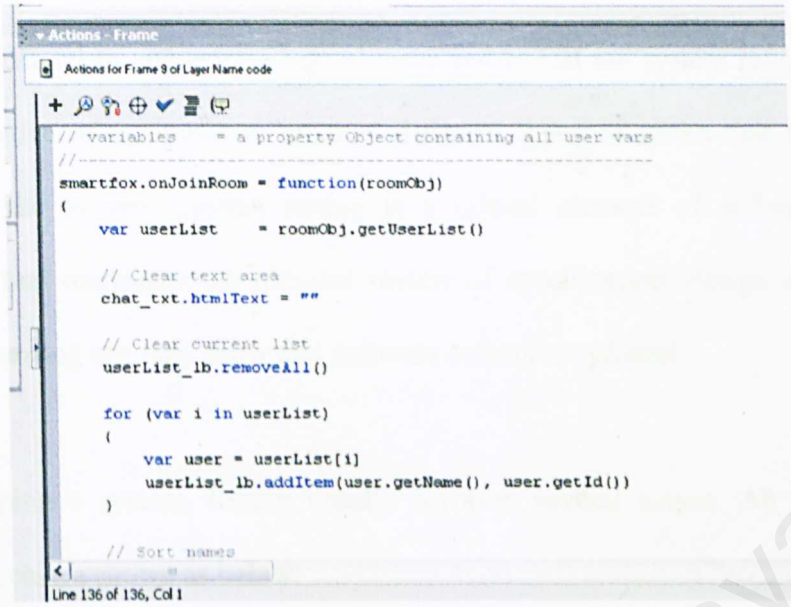


Figure 6-5: Connect chat room code

6.5 Chapter Summary

In this system implementation phase, nearly all the design phases that have been presented and directed toward a final objective that needs to translate representation of system into a form that can be understood by computer.

Chapter Seven presents the various type of system testing that includes the unit testing, integration testing and the system testing.

Chapter 7 System Evaluation

Testing is critical in uncovering logical error and to test the system reliability. The main objective of testing is to uncover different types of errors that exist while executing the system. System testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. However, testing can only show that software defects are present.

In developing a system, testing usually involves several stages. An example of testing process is shown as below:

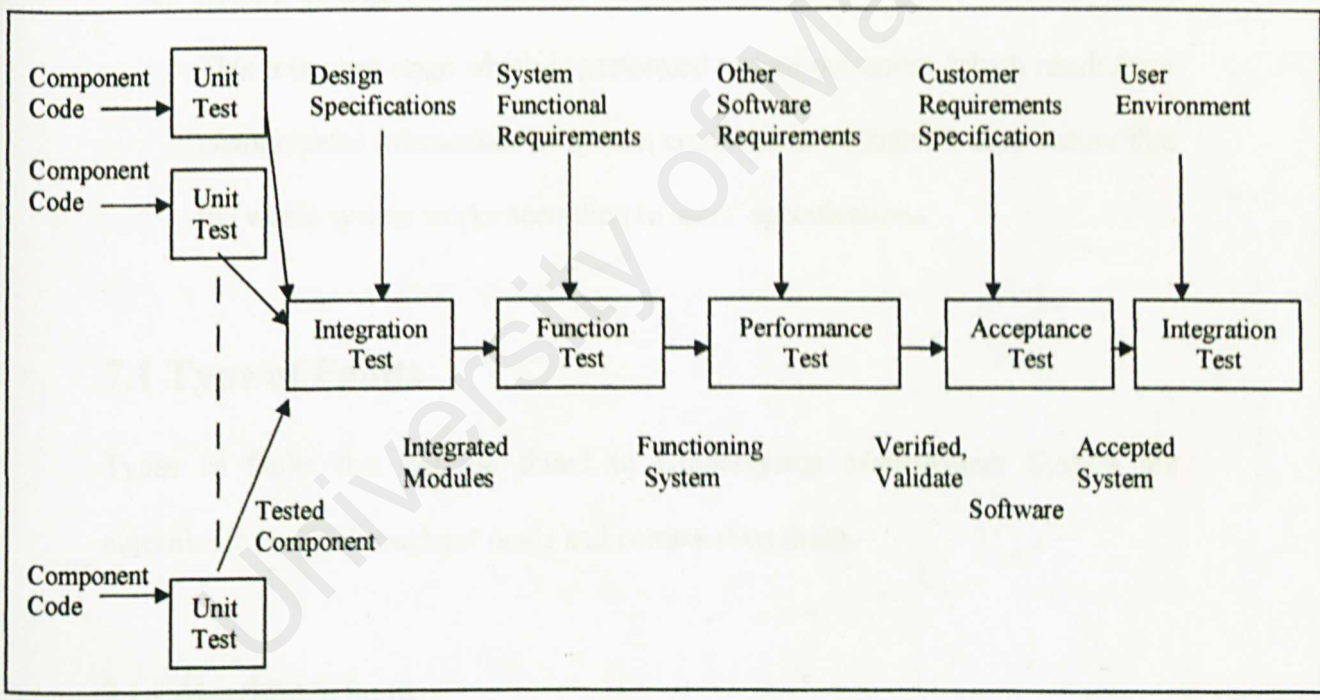


Figure 7-1: Testing process

Generally, there were 3 stages involve altogether and were listed down as below:

a. Unit Testing

This is the first stage of testing where each program component is tested on its own and is isolated from the other components in the system. It verifies

that the component functions work properly with the types of input and output expected from studying the component's design. After each component has been tested, the interaction between these components must be tested again to ensure that the components can be integrated.

b. Integration Testing

This stage ensures that the interfaces among the components are defined and handled properly. It is the process of verifying that the system modules work together as described in the system and program design specifications

c. System Testing

This is the last stage which is performed to find out errors, which result from unanticipated interactions of system components or units. It is to ensure that the whole system works according to users' specifications

7.1 Type of Faults

Types of faults that can be found in Kindergarten Management System are algorithmic faults, throughput faults and computation faults.

7.1.1 Algorithmic faults

Algorithmic faults use to happen when a component's algorithm or logic fails to produce the expected output for a given input. It always occurs while wrong proceeding steps. Examples of algorithmic faults in Kindergarten Management System are:

- Comparison of wrong data type variable

- Forgetting to test for a particular condition.

7.1.2 Throughput/Performance faults

Throughput faults or performance faults use to happen when the component does not produce an expected speed. When discover this fault in Kindergarten Management system, the fault is being carefully observed and monitor continuously to ensure performance meet requirement. In most cases, the fault occurs during massive usage of graphic on a particular application.

7.1.3 Computation/Precision faults

Computation or precision faults use to occur when a particular formula is being implemented wrongly or the component does not complete a result to a required accuracy. This fault is being tested in component such as appointment booking. In Kindergarten Management system, all components are being checked and tested with dummy data to ensure the computation works accordingly with its situation.

7.2 Testing Techniques Used

7.2.1 Ad Hoc Testing

Ad hoc testing is an attempt to break the program or make it fail with trying whatever comes to mind. Normally, many errors will be found during the testing.

7.2.2 White Box Testing

White Box testing is the type of testing that deals directly with the stricture of the code within a module or a code segment. There are basically six types of code coverage in white box testing. Most of the testing is discussed in the unit testing

Segment Coverage

Each and every segment of the node between control structures is supposed to execute at least once.

Branch Node Coverage

Each and every branch of every possible direction is taken at least once.

Compound Condition Coverage

When multiple conditional appear in the code, every possible combination is tested based on a truth table.

Basis Path Testing

Each independent path through the code is usually taken as predetermined order. When dependencies appears in the code, each path where dependency appears exists must be tested.

Data Flow Testing

In Kindergarten Management System testing, this approach is to uncover anomalies such as variables, which are used but not initialized and declared.

Loop Testing

This type of testing is related to testing single loop (CFLOOP, CFELSE, CFELSEIF), concatenated loops (sequence of loop) and nested loops (one or more loops within loops).

7.2.3 Black Box Testing

This type of testing involves testing functions of a module without knowing the logic structure of the code. It focuses on the most important aspects of a module in the term of how well the module meets its specification.

Error Guessing

This approach is similar to 'ad hoc testing' where tester will try any type of test cases which come across his/her mind or pre-planned test cases.

Boundary Testing

This type of testing involves the boundaries of equivalent classes where the coverage of test cases will involve inside the boundary, on the boundary and outside the boundary.

Module Interface Testing

In this type of testing, each value within the interface is assured as correct as they related to the modules that call them. This means that specific calls in the calling module are tested to see whether they are in the right sequence and at the right type.

7.3 Testing Strategies

There are a few testing strategies such as unit, integration and system testing is done in order to test the reliability of Malaysia Tourism Network games.

7.3.1 Unit Testing

Unit testing is done to uncover errors in each module. The primary goal of unit testing is to confirm that the unit is correctly coded and that is carries out the function as it is supposing to perform. Each unit is tested independently in order to assure their accuracy.

Malaysia Tourism Network game Unit Testing

Some of the unit testing being done on Malaysia Tourism Network game as below:

- Test whether the user can successfully logged into game.
- Test whether the data being passed to next program for processing contain the right value.
- Test whether the recorded username being displayed is correct and able to see opponent username as well.
- After login to the games check the chat room is functioning or not.
- During navigate the game map check the small map whether is at the correct position or not.
- Finally test the validation of the winner. The winner is the one who get the most score in the shortest time.

7.3.2 Integration Testing

The purpose of the integration testing is to know whether the entire software is able to work as one program. It will also verify that each module will be able to function together. Integration testing concentrates on module interaction and the detection of interface errors. The design specification is referred for the purpose of verification and helps to test the software according to the dependencies present in particular module that being tested. For Malaysia Tourism Network game testing, the system is

viewed as a hierarchy of components, where each component belongs to a layer of design. The approach applied in testing the Malaysia Tourism Network game is referred as Top-Down Integration where integration will start at the highest level of main program or module or sub modules are gradually added until the bottom is reached.

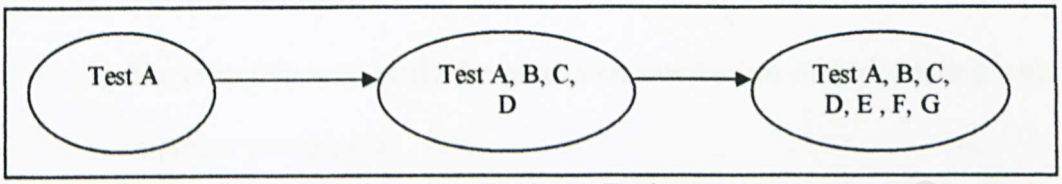


Figure 7-2: Top-Down Testing

7.3.3 System Testing

A system testing is a series of different test designed to fully exercise the system to uncover its limitation and to measure its capabilities. The objective is to test an integrated system and verify that it meets the specified requirements. Several steps were taken in testing Malaysia Tourism Network game such as function testing and performance testing. There are several steps in testing a system such as function testing, performance testing, acceptance testing and installation testing.

Function Testing

System testing begins with function testing that focus completely on functionality. The system structure is being ignored. The testing is based on the system's functional requirements which are stated in the early chapter.

Performance Testing

Performance testing aims at testing the run-time performance. Response time of the event triggered was checked to verify the performance of the system.

a. Stress Testing

The main purpose is to determine whether the system can handle, as it should, large and varies workload at one time. It subject system to high loads over a short period of time.

b. Security Testing

The objective is to verify the protection mechanism such as dealing with improper penetration.

c. Human Factor Testing

In this testing, interface and message are being evaluated by many user to get the best interaction effects. It concentrates at the appearance and the interaction of the system. All aspect that may be related to ease of use, such as display screen, will be examined.

Conclusion for End User Testing

Through the statistic above, overall system non-functional requirement achieve the goals where the system interface is attractive, fast respond time and easy to use it. Most of the players do not have computer knowledge at all but they still conclude that the game is easy to play. This is a high achievement because the game does not need to give briefing to the player during system delivery. Some of the end user suggests that the cash and time should be increase so that the user can spent more time in the game.

7.4 Chapter Summary

Testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. Unit, integration and system testing has been carried out for Malaysia Tourism Network games. At the end of the testing phase, the system should be able to run fluently and free of errors.

Chapter eight present the system evaluation which reveals the problem encountered and solution, system strength and system constraints, future enhancements, knowledge and experience gained.

Chapter 8 System Evaluation

Evaluation is the ultimate phase of developing a system and an important phase before delivery the system to the end user. System evaluation was related to user environment, attitudes, information priorities and several other concerns that are to be considered carefully before effectiveness can be concluded. At all the phases of the system approaches, evaluation is a process that occurs continuously, drawing on a variety of sources and information.

8.1 Problem Encountered and Solution

The following are the major problems encountered from the beginning of the project through the end of the system development process.

8.1.1 Scope Is Not Properly Defined

In the initial stage of development, several problems were encountered in specifying the scope of the system. The scope must be clearly defined before the coding can start. The solutions to solve the problems are through interviewing the potential users, checking the current available similar site and also having discussion with supervisor.

8.1.2 Problems in Tools and Language Selection

Choosing the right tools and language are important because the appropriate tools and language would help to develop the system in a more efficient way. To solve this problem, I have discussed with course mate who develop similar system and also having some research and review on various tools and language.

8.1.3 Inexperienced In the Chosen Programming Language

Due to time constraint, the learning and developing process was done in parallel. Since there was no prior knowledge of programming in Flash MX Actionscript, there was an uncertainty on how to develop a game based system using Flash MX. However Flash MX proves that it is a very powerful technology to build a simple game based application. Problems were solved through research on related material online and referring to some reference books. Discussion with friends using similar technology also helps to solve some difficulties.

8.1.4 Limited knowledge in synchronization

The most difficulty part in the network games is the synchronization part. Due to limited knowledge I had tried several servers like Macromedia Flash Communication Server. It spent a very long time to research for the suitable server. Lastly we choose the Smart Fox Server. By referring to the website tutorial and sample application and it help to setup the server and synchronization.

8.2 System Strengths

The system strengths are described as follow:

8.2.1 Interactive and proactive system

This system provide fully interactive within the user and system as well as with another user.

8.2.2 Chat room for interaction

Some of the networks games not provide or limited the communication between the players, this system have a chat room to enable communication and sharing while playing.

8.2.3 Random treasure box

The have a treasure box that will help or may be deduct the money from the player depend on the player luck.

8.2.4 Attractive animation

The system provides information such as the place description with interesting animation show to attract the player interest on the tourism spot. Beside that it can let the user gain general knowledge such as the history of the place while watching the animation show.

8.2.5 Interesting Map

The game board is the actual map of Malaysia decorated with rich graphic and highlighted tourism spot. The user will be recognize the map if keep on repeat the game, while visiting the tourist will able to have rough idea where to go first and able to plan their journey wisely.

8.3 System Constraints

The system constraints are described as below:

8.3.1 The gaming area is available around Selangor area only

Due to the research purpose the games is develop only around Selangor area only. It can be expend to whole Malaysia by implement the same concept.

8.3.2 No Other Language Support

The system will only use English as single communication language as English is the international language. Other languages are not included in the system.

8.3.3 Only supported Windows platform

For the moment this games is only available on windows platform.

8.4 Future Enhancement

Due to the limitation of this system, there are a few suggestions that may be useful to future enhancement of the Kindergarten Management System. The suggestions are as below:

8.4.1 Provide Changeable Version

As the system is aim at Malaysian Citizens, therefore besides English, providing another version of the national language – bahasa Malaysia version. The user can choose either in Malay version or English version.

8.4.2 Support Multi platform such as Linux and Macintosh.

The current setting for the server is only support Windows platform only, in the future it can be improve to support multiplatform to encourage more people play this game so that it able to promote Malaysia Tourism.

8.4.3 Implement Security Encryption

In the future security encryption such as RSA (Rivest-Shamir-Adelman) can be implement to the Malaysia Tourism Games. It protect the game access by unauthorized person.

8.4.4 Upgrade to better server

Use our own server instead of Smart Fox server to have more flexibility and manageable control center.

8.5 Knowledge and Experience Gained

By developing the Malaysia Tourism Network games, some of the knowledge and experience gained are listed below:

8.5.1 Flash Actionscript

Flash Actionscript is a simple but powerful scripting language, Actionscript is similar to JavaScript. It provide interactive between the player and the application ad it able to communicate with almost all the database e.g. Oracle, MySQL and Microsoft Access.

8.5.2 Flash MX

Flash MX able create basic to advance animation it depends the requirement It can combine all the media in different timeline and layer.

8.5.3 Smart Fox Server

Smart Fox server is a brand new stuff for me and it take sometimes for me to apply to the game. It has the ability to synchronize multiplayer movement by using Actionscript. For the Smart Fox Pro server Its offer powerful features in managing the network..

8.5.4 Others

Besides knowledge on technical aspects such as Windows XP Server, Actionscript, Macromedia Flash MX and Smart Fox Server, there are also other valuable experiences gained from working on this project such as:

i. Being exposed to the real system development environment especially dealing with users
ii. Learn how to manage a project as in time and resource
iii. Experience on how to set up and configure various technologies to be able to serve as a live system.
iv. Learn to work independently
v. Cultivated skills in writing documentations and reports
vi. Boost self-confidence, self-esteem and good communication skill

8.6 Reviews on Goals

There should be certain expectation and objective achieved at the final stage of the project.

8.6.1 Expectation Achieved

The system had fulfilled the expectation stated at the early stage of the project. All the basic foundation of the system was being designed and implemented. Moreover, the end product met the criteria such as ease to use, reliability, expandability and usability.

8.6.2 Objective Achieved

The system created had fulfilled all the requirements stated in the early chapter, therefore, the objectives to establish the application had been achieved.

8.7 Chapter Summary

As a conclusion, this project was succeeded in achieving the objectives of developing a web based Kindergarten Management System. It also projected the main idea of general office environment as to promote a paperless environment with the routing of information through the workflow application.

Appendix A – User Manual

1. Introduction

Tourism Malaysia network games is a network games that can promote the tourism spots. This user manual shows the instruction and the controller key to let the player navigate the game board more efficiently.

1.1 User Manual

1.1.1 How to control

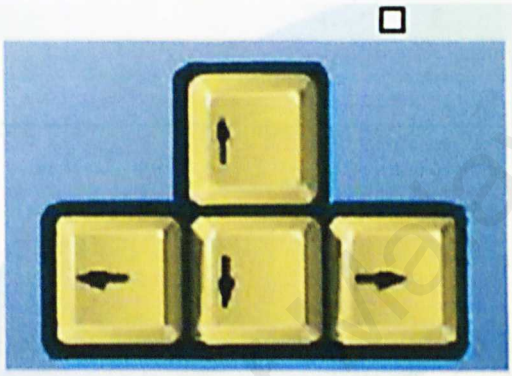


Figure 0-1: The movement control keys

Use arrow key to navigate the player

- press up to go up
- press down to go down
- press left to go left
- press right to go right

Figure 0-2: The select key

User press the space button to select the answer when reach the destination.

1.2 Game Rules

- Players should select the favorites speed to reach the destination. There have 2 choices of speed: walking or taxi.
- Players have to understand the hints to find the destination.
- Transport fee, taxi= RM4.00/second, walking = RM2.00/second.
- Each player will be given cash, RM200 to start the game.
- "Treasure Box" can be chosen to select or discard once meet.
- "Panic Button" can be press to get the correct answer, but used only one time per game.
- Player1 has to wait player2 enter to start the game.

1.4 How to win

- Each player has to complete the game by reach all the destinations according to the hints be given within the cash money of RM200.
- Each player will be given RM20 each time when they reach the destination correctly, and deduct RM10 for wrong destination.
- Each player can try to get "treasure box" (blue boxes) by press 'space' button; bonus or punishment will be displayed.
- Winner of the game will be determined through the cash money used and number of score.

Reference

[1.] Abt, C.C. Games for learning. In Simulation games in learning, by Boocock, S., and Schild, E., (Eds.), SAGE publication, 1968.

[2.] Gros, B. The impact of digital games in education. First Monday, 8, 7, (July 2003) (available at: http://www.firstmonday.dk/issues/issue8_7/xyzgros/, visited at 28/11/2005)

[3.] Wan, S., & Lenker, J. (2001). Flash™ ActionScript. London : Gotop.

[4.] Ming Rui.Chong. (2003). Flash MX ActionScript. Kuala Lumpur : People.

[5.] http://webster.commnet.edu/mla/index.shtml

[6.] Rieber, L.P. Seriously considering play: Designing interactive learning environments based on the blending of microworlds, simulations, and games. Educational Technology Research & Development, 44, 2, (1996), 43-58.

[7.] Http://www.cuti.com.my

[8.] J C Bullock, CA Goble. (1993). Journal of Travel and Tourism Marketing: Conceptual hypermedia tourist information, 1-2.

[9.] Moscardo, G. et.al. Understanding Vacation Destination Choice through Travel Motivation and Activities. Journal of Vacation Marketing 2, 2 (1996), 109-122.

[10.] Fodness, D. Measuring Tourist Motivation. Annals of Tourism Research. 21,3 (1994), 555-581.

[11.] Getz, D. et. al. Design of Destination and Attractionspecific Brochures. Journal of Travel and Tourism Marketing. 2,2-3 (1993), 111-131.

[12.] Goble.c,July 1998 "Interface design" http://www.tutorialselect.com/learnhowtofree/graphics/macromediasoftware/flash/flashgamesinterfacetutorials.phpHttp://www.umlib.um.edu.my(Accessed on 30 July 2005)

[13.] Prensky, M., Digital Game-Based Learning. McGraw-Hill, 2001.

[14.] Moscardo, G. et.al. Understanding Vacation Destination Choice through Travel Motivation and Activities. Journal of Vacation Marketing 2,2 (1996), 109-122.

[15.] Virtual Manchester.http://www.manchester.com/home.html.

[16.] Whitten, J.L, Bentley, L.D, & Dittman, K.C (2000), System Analysis and Design Methods: Observation of the Work Environment, pg 215, 5th ed. New York: Mc Graw-Hill.

[17.] Lenker , March 1998 "Smart Fox Server" http://www.gotoandplay.it/_articles/multiplayerCentral (Accessed on 30 July 2005)

[18.] Ronald LeRoi Burback, July 1997 "Methodology" online at : http://www.db.stanford.edu/~burback/water_sluice/sluice6.2.25.97/ws/node300.html (Accessed on 30 July 2005)

[19.] Mc Graw-Hill., July 1997 "Methodology" online at http://bmrc.berkeley.edu/courseware/cs169/spring01/lectures/lifecycle/sld05.htm (Accessed on 4 April 7 2006)