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UNIVERSITY OF MALAYA**

**E-ADVERTISEMENT**

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## ABSTRACT

The E-advertisement is a web-based system that provides an easy and efficient way to access information for all the system users. This system is basically developed for those who do not have time to find the advertisements one by one on the traditional classified ads. E-advertisement's service is also available 24 hours per day throughout the year because it is available online.

The objectives of the E-advertisement are able to let user to post advertisement online. User can post advertisements with picture base on the category and sub category. Besides that, user can search items faster and easier by entering keyword, category, location and price range.

The Unified Software Development Process is used to develop the E-advertisement. The tools that I will use are the Microsoft Internet Information Server (IIS), Client/Server three-tier system architecture, Active Server Page (ASP), Microsoft SQL server 2000 as database, Macromedia Dream Weaver and Cascading Style Sheet (CSS) which I think that I can handle when developing the E-advertisement. Hence, to be a good and attractive online classified ads system, the E-advertisement will be produced to be a more efficient system which can satisfy user and administrator.

## ACKNOWLEDGEMENT

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

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## CHAPTER 1: INTRODUCTION

### 1.1 Introduction

Over the past five year, online advertising has shifted dramatically toward much greater levels of intrusiveness in an effort to increase advertising effectiveness (Rohrer and Boyd, 2004). Due to this trend, online classified ads system is being developed. By definition, an advertisement is a “paid form of non-personal presentation of ideas, goods or services, by an identified sponsor, with predominant use made of the media of mass communication” (Surendra and Nikunj, 1999).

Online classified ads system is a web application that allows sellers to post advertisement based on what he sells and a buyer can buy the products/services. Conversely, a buyer can also post advertisement according to what he intends to buy.

The main objective of this system is to create a web application as an alternative to traditional classified ads. When a buyer is interested in a particular product or service, he can contact the seller by phone and by sending an e-mail with the seller if the seller is online. Two convenient ways of communication are provided to make it easier to contact the seller. This website also allows users to search for information that they need in an easier way because the advertisements are classified according the categories. Hence, users can get the information faster and easier.

An online classified ad is developed to provide a convenient means for users so that they can access the web site anytime-24 hours and 7 days from anywhere.

## 1.2 Problem Statement

In the traditional classified ads, an advertisement is shown in small font and the column size is also small. Some advertisements are shown in a bigger column and some in small. Traditional advertisements are not properly arranged. According Roger (1995) stated, although traditional classified advertisement prints upside-down might get some attention, it will generally decrease readership (Roger, 1995). Time is valuable, customers do not want to do things manually, and they spend their time to accomplish their goals (Myer, 1994). However, in the traditional classified ads, readers have to search for the information that they desire for one by one, hence, it is very time-consuming.

A comprehensive picture of the interaction process includes not only what navigation and control actions users undertake but also how they distribute their visual attention among multiple visual entities like control panels, text, diagrams and animations present on various pages of the interface of an interactive application (Eric and Harayanan, 2000). They stated that an interactive and comprehensive interface is very vital to attract customer. However, the existing system like Want Ads web site shows incomprehensive and unattractive web page. It is using all the text where not any images or buttons are using which can attract customers' attention. Want Ads web site is also incomprehensive because only few categories are provided. Compare with existing system of eBay, the interface is in the left align and not centered. It also uses two over three part of the whole screen. This will affect the attention of users.

Furthermore, if the response time is unexpectedly long, interactions may not evolve as expected or use may run out of patience (Hsu and Wu, 2005). Users will also

not tolerate interfaces that perform too slowly (Myer, 1994). For example, the loading time or response time of existing system like Webportal Malaysian Classifieds to open a web page sometimes is quite slow, for example, 20 seconds. It makes the users become vexed while waiting for the page loading. The problem arises due usage of many of graphic and animation. Moreover, the resolution of an animation is very high; the size of the animation is also very big. It needs more loading time and might decrease the system performance.

### **1.3 Project Objectives**

The objectives of this system are:

- i. To create a web application as an alternative for traditional classified ads.
- ii. To provide a more detail search based on keywords, categories, locations and price ranges for users to narrow down the searching scope when they are looking for information.
- iii. To improve convenience, accessibility, quality of interactions between buyers and sellers by providing email as an alternative way.
- iv. To develop a user friendly, systematic, tidy and interactive interface for the system by designing a simple, tidy interface and easy-to-use menus.
- v. To provide a personalized management for members to create and modify their own profiles including basic personal information and evaluation criteria for selecting products and services.

1.4 Project Scope

Online classified ads system is divided into 3 modules: seller and buyer (front-end) and administrator (back-end). The seller and buyer modules have almost the same functions when surfing the web site. They need to register as member of the website in order to be able to use the facilities. However, the administrator is responsible for managing the system and has full access in maintaining database.

Below are the descriptions of the modules:

Seller and buyer	Administrator
<ul style="list-style-type: none"><li>- Member sign in</li><li>- Search for specific products or services</li><li>- Automatic sending email to administrator when uploading ads</li><li>- Sell products by uploading the ads</li><li>- View previous record of selling and edit personal account</li><li>- Forum</li></ul>	<ul style="list-style-type: none"><li>- Admin sign in</li><li>- Search for specific products or services</li><li>- Responsible in approving the new advertisement</li><li>- Stores products</li><li>- View member profile and terminate inactive member</li><li>- Forum</li><li>- Payment calculation</li><li>- Accounting report (monthly account profit report)</li><li>- Log file history</li></ul>

Table 1-1: Project Scope

## 1.5 Project Limitation

The limitations of the system are:

- i. It is an online classified ad in Malaysia. Foreign ads are not allowed.
- ii. It is only provided the English version of the website. For those who do not know English language will be difficult for them to access this system.
- iii. It will target to medium security only. The higher securities for transaction like SSL (Secure Socket Layer), Intruder Prevent and Firewall will be excluded in this system. However, the security in encrypting password will still be included.

## 1.6 Expected Outcome

E-advertisement is expected to produce a web-based system where users can post their advertisements online.

For ensuring there are no any sexual or illegal advertisements, whatever advertisements that seller and buyer intend to post, must be getting the approval from administrator. In other words, administrator will have fully control of the system.

Moreover, user can search advertisement through the system easier and systematically. It is because user can search products or services by four different types which are keywords, categories, locations and price range. The aim of this is enabling user to search faster and more convenient.

### 1.7 Project Schedule

A project schedule is very vital to make sure that the project is smoothly running on schedule. Hence, a well-planned project schedule must be planned before starting doing. To represent the project schedule, Gantt Chart can be used to show the involvement of each activity in the project with these systematic timeline for the entire project.

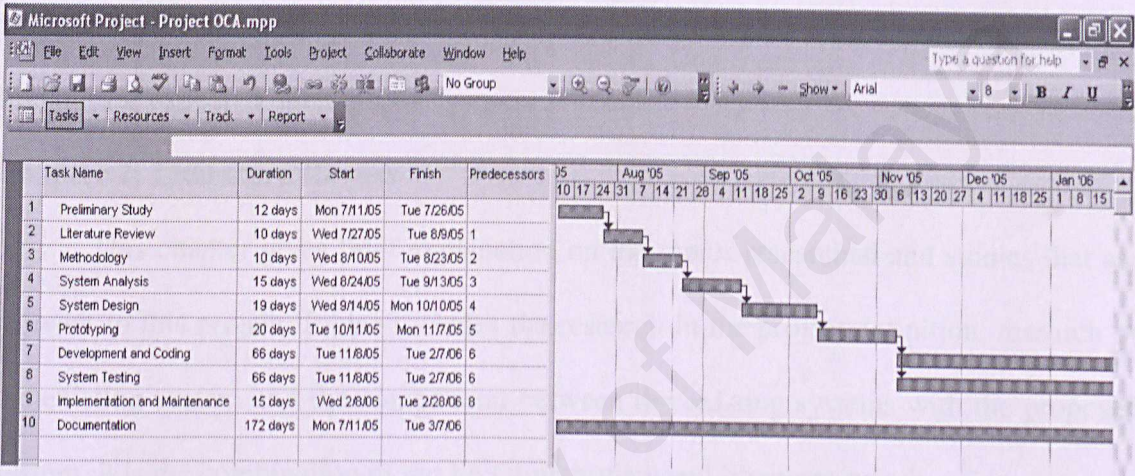


Figure 1-1: Project Schedule

## **1.8 Report Layout**

This online classified ads project report is the documentation of the project is being carried. The purpose of this project report is to give an overview of the major phases involved during the development of project. It consists of eight chapters which are:

### **Chapter 1: Introduction**

This chapter gives an overview of the major phases of project which consist the introduction of the project, project overview, project objectives, project scope, project limitations, expected outcome, and project schedule.

### **Chapter 2: Literature Review**

This chapter gives brief explanation on the topics researched and studies that are relevant to this project. It also includes the research in the project definition, research of the existing system and the comparison between the existing systems with the proposed system. It is the combination of the literature review and literature search.

### **Chapter 3: Methodology**

This chapter emphasizes on the justifications for the chosen project methodology. The information gathering techniques and explanations about the development software and platform chosen to develop this system will be discussed in details.

### **Chapter 4: System Analysis**

This chapter describes the analysis of literature review and survey conducted. The functional and non-functional requirements will be presented in details. In additional, the software and hardware requirements of the system will be included. It also explains how requirements for this project were selected.

## **Chapter 5: System Design**

This chapter shows the system design. System structure, activity diagrams will be shown in details. Moreover, the user interface design of the system will be presented.

## **Chapter 6: System Implementation**

This chapter consists of detail explanations about the implementation phase and coding process. It refers to the changing of the module and algorithm to the computer instructions.

## **Chapter 7: System Testing**

This chapter discusses about the vital stage in testing to ensure the quality of system. The purpose of system testing is to find error and fault in system.

## **Chapter 8: System Evaluation**

This chapter discusses about the system evaluation of system. The problem and solutions, system strength, system weaknesses and future enhancements will be discussed here.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Definition**

Literature review is the background study of information and knowledge that use to develop a project for research undertaken. A literature review surveys scholarly articles, books and other sources relevant to a particular issue, area of research, or theory, providing a description, summary, and critical evaluation of each work. The purpose is to offer an overview of significant literature published on a topic. The aim is to convey to the reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are.

### **2.2 Current Similar Systems Review**

There is lot of existing websites in the internet which provided online classified advertisements. A research has been done to find various existing system available on the Internet. Researching on those existing system can enhance to be more powerful features in the project later. From the research, the author will be able to analysis the strengths and limitations of several methodology and tools

### **2.2.1 PasarBorong.com (<http://www.pasarborong.com>)**

PasarBorong.com is not comprehensive because they only sell certain products for households use and only a small range of products are sold at this website. Moreover, this system offers fewer functions or modules. In addition, this web site takes a long time in approving members because all the new registration must be verified by author of this web site within 48 hours. No forum is provided to let users to have a discussion. Furthermore, images of certain products are not shown, making it difficult for the buyer to know how the product looks like. The usability of this system is lower compared to e-Bay.com because it only offers a few categories with fewer products for household use only.

2.2.2 E-bay.com (http://www.ebay.com)

[home](#) | [pay](#) | [register](#) | [site map](#)

[Buy](#)

[Sell](#)

[My eBay](#)

[Community](#)

[Help](#)

Start new search

[Advanced Search](#)

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Whatever it is, you can get it here

All Categories

[Advanced Search](#)

Specialty Sites

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Categories

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[Art](#)  
[Baby](#)  
[Boats](#)  
[Books](#)  
[Business & Industrial](#)  
[Cameras & Photo](#)  
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Figure 2-1: E-bay.com

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E-bay is an online classified ad where the functionalities of this website are quite complete and has an interactive interface but it is too complicated in listing down all the products and services because there are many products under one main category and this waste the users' time when searching an item. Thus, this system is less user-friendly because users face problems in searching for the products or services they want. As a result, 40 seconds loading time is needed to access the system that duration is consider long.

2.2.3 Want Ads (<http://www.wantadsonline.com>)

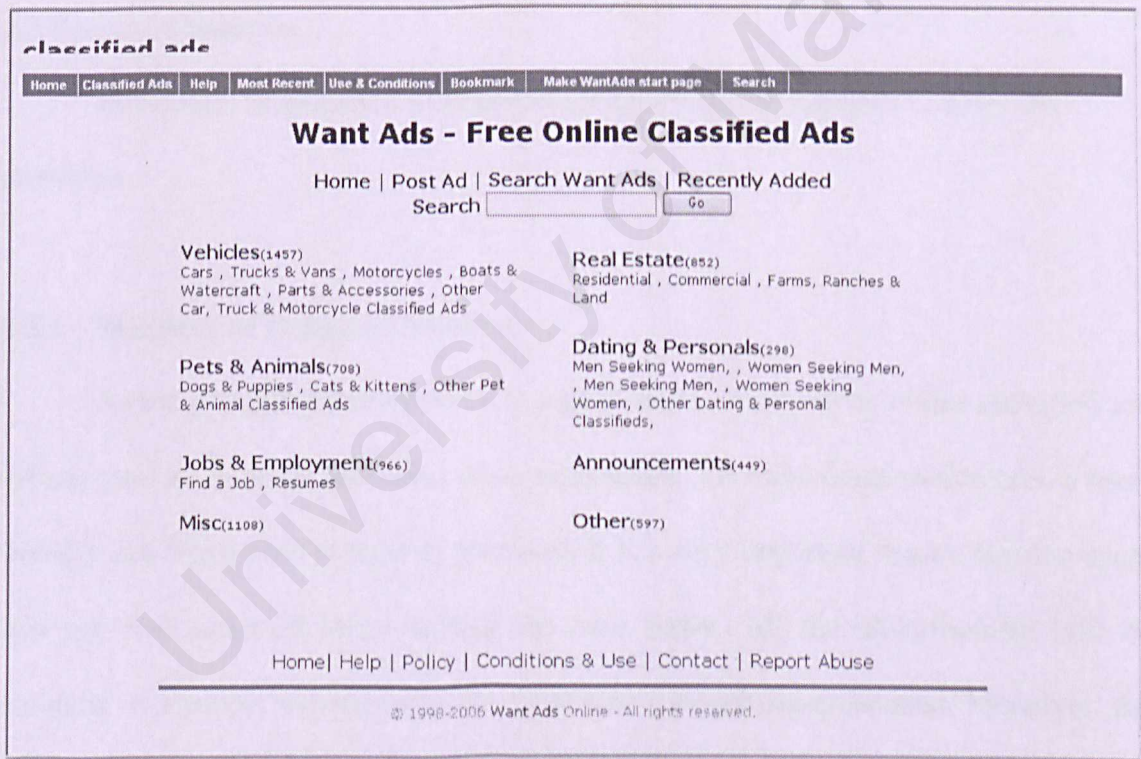


Figure 2-2: Want Ads

Want Ads is a free online classified ads website that shown too little information on its interfaces. Besides, few of categories available in this website, users will not be able to find the information that users need. Thus, this system is less usable because users get less information when searching for the products or services they want to look for. Furthermore, images of certain products are not shown, making it difficult for the buyer to know how the product looks like. Moreover, the web site is incomprehensive and unattractive web page. It is using all the text where not any images or buttons are using which can attract customers' attention.

## **2.3 Proposed Solution**

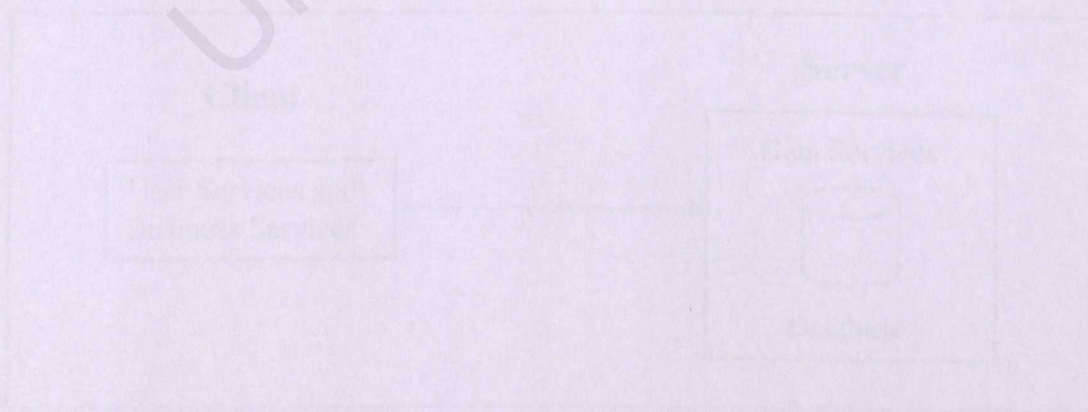
Below are the proposed solutions of the problems and the tools to solve the problems.

### **2.3.1 Synthesis of Proposed Solution**

As the problem stated above, it is a good step to re-invent an online classified ads system that can improve and solve those weaknesses. To solve those weaknesses, a user-friendly and interactive website is proposed. It is a very important feature because users will not feel awkward when surfing the web pages. All the advertisement will be arranged in a proper manner with the same size for each advertisement. Moreover, the font size will be bigger for reading. An advance search engine can be added to solve the problem of difficulty in searching information. Users can search the information more easily; faster and specific by using the keywords, price ranges, locations and categories which can narrow down the scope of information.

An interactive and user-friendly web site will be designed so users will not feel bored when surfing the web page and performing online request. Some images and pictures will be added for max attention and entertainment for users. Usage of attractive fonts and buttons will be widely applied in system. The interface of proposed system will be put in center or the whole screen will be used.

By solving the longer loading time, the size and resolution of each picture and image can be constrained. It means that sellers are not allowed to upload the picture, and image that exceeds the maximum of the size limited which is 1 Megabyte. If picture is being uploaded exceeds one megabyte, an error message will be displayed. Hence, the performance of each page's loading can be improved within 13 seconds. Moreover, user is only allowed to upload images in JPEG or GIF format because other format of image will be in larger size.



2.4 Client/ Sever Architecture

Client-server architecture is a versatile, message-based and modular infrastructure that is intended to improve usability, flexibility, interoperability and scalability as compared to centralized mainframe, time sharing computing. Client-server is a computational architecture that involves client processes requesting service from server processes. Client-server maintains a distinction between processes and network devices. Client-server architecture reduces network traffic by providing a query response rather than total file transfer. It improves multi-user updating through a GUI front-end to shared databases.

2.4.1 Two-tier Client/ Server

A two-tier model consists of three components involved in two layers: a client (requester of services) and server (provider of services). The three components are: user system interface, processing management and database management.

It also refers to client/server architectures in which user system interfaces run on the client and database is stored on server. Actual application logic can run on either client or server. There are only architecturally tiered data server and client.

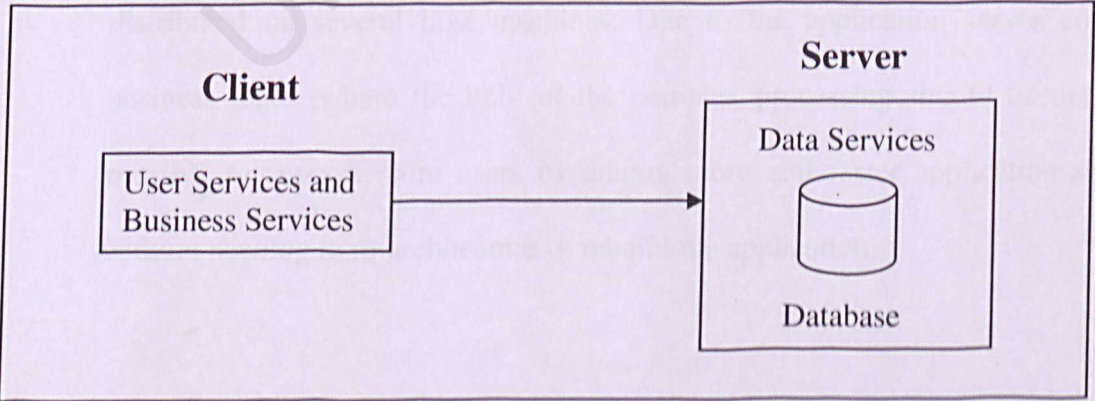


Figure 2-3: Two-tier client/server

### Advantages of Two-tier Client/ Server:

- i. Convenient.
- ii. Allows database server specialization.

### Disadvantages:

- i. Less scalable.
- ii. More expensive.
- iii. Difficult to secure.

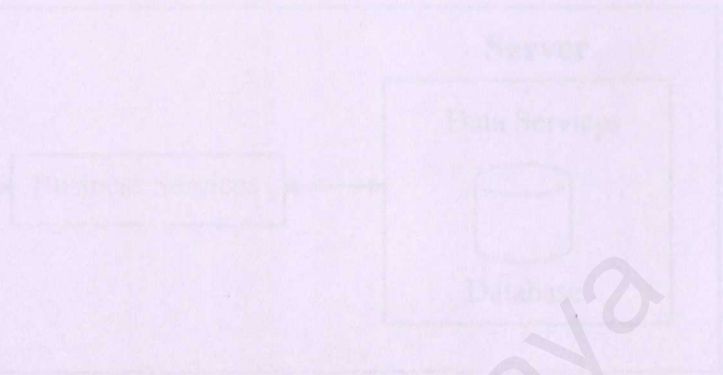


Figure 2.4: Two-tier Client/Server

### 2.4.2 Three-tier Client/Server

In three-tier client/server architecture, it implements the applications into three layers:

- i. the presentation layer (or Graphical User Interface Layer)

Client components enable the user to interact with application server in a secure and intuitive manner. Clients can not access the data layer directly.

- ii. the middle layer (or application server or logic layer)

It might be implemented as several layers. Application servers can also be distributed on several host machines. Due to the application server contains business logic (where the bulk of the complex processing should occur), it is possible to support more users by adding more and faster application servers without needing to re-architecture or rebuild the application.

- iii. the data layer

It contains database and includes data access procedures. The database can be put in a single location or distributed, if required.

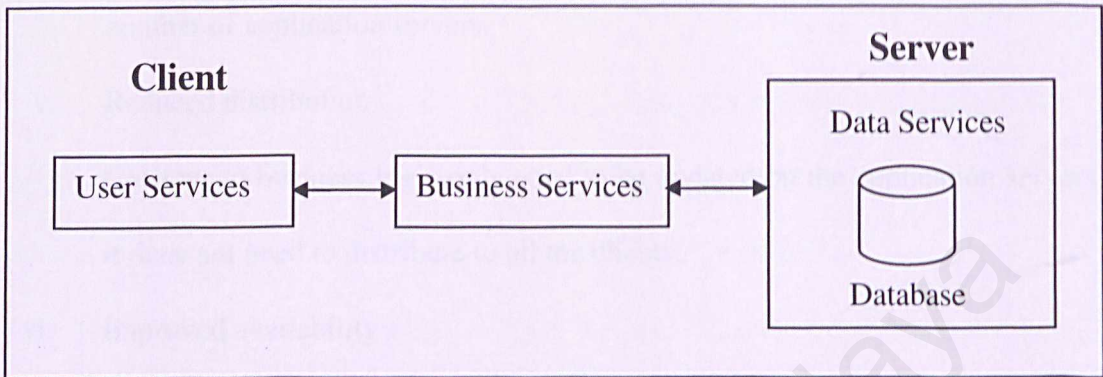


Figure 2-4: Three-tier client/server

Advantages of three-tier client/server:

- i. Improve security

Security is enhanced since it can be implemented at multiple levels. Clients can not access the database directly; hence, it is more difficult for a client to obtain unauthorized data. Business logic is generally more secure since it is planned on a more secure central server.

- ii. Improve data integrity

Since all the data are updated through the middle tier, middle tier can ensure that only valid data is allowed to be updated in database. Risk of a rogue client application corrupts data is eliminated.

- iii. Better reuse

Same logic can be initiated from many clients or application.

iv. Scalability

The application servers can be deployed on lot of machines so it can improve the scalability. Besides that, database only requires connections from a smaller number of application servers.

v. Reduced distribution

Changes to business logic only need to be updated on the application servers and it does not need to distribute to all the clients.

vi. Improved availability

The application can make use of redundant application server and redundant database servers. It is possible to architecture an application but using the redundant servers so that it can recover from network or server failures.

## 2.5 Web Development Technologies

In this section, all the web browsers, web servers, database management system, programming language and authoring tools will be discussed to get the understanding of each of it.

### 2.5.1 Web Browser

A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web. The word "browser" seems to have originated prior to the Web as a generic term for user interfaces that let you browse (navigate through and read) text files online. Technically, a Web browser is a client

program that uses the Hypertext Transfer Protocol (HTTP) to make requests of Web servers throughout the Internet on behalf of the browser user.

#### **2.5.1.1 Internet Explorer 6.0**

Internet Explorer 6.0 is a set of core technologies in Microsoft Windows XP Home Edition and Windows XP Professional operating systems that provides enhanced privacy features and a flexible and reliable browsing experience for users of Windows XP, Windows Millennium Edition (Windows Me), Windows 2000, Windows 98, and Windows NT® 4.0 with Service Pack 6a or later.

#### **2.5.2 Web Server**

Web server increasingly become feature sets bundled with an operating system. 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.

The choice web server will ultimately depend on which platform has been selected. The universality of TCP/IP networking means that we can mix other server but this may not be the best use of our resources. The platform on operating system chosen for the web server should be one that we are already familiar.

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.

### **2.5.2.1 Information Internet Services**

It is a group of Internet Servers (including web or Hypertext Transfer Protocol (HTTP) server and File Transfer Protocol (FTP) server) with additional capabilities for Microsoft's Windows NT and Windows 2000 server operating system. IIS is a Microsoft's entry to compete in the Internet server market. With IIS, Microsoft includes a set of programs for building and administering web sites a search engine and a support for writing web-based applications that access databases. Microsoft points out that IIS is tightly integrated with the Windows NT, 2000 servers and Window XP is a number of ways, resulting in faster web page serving.

## **2.5.3 Database Management System**

Databases considered managing the data for this E-advertisement system.

### **2.5.3.1 Microsoft SQL Server 2000**

Microsoft SQL server 2000 is a family of products that meet data storage requirements of largest data processing system and commercial web sites. It is chosen as my database because of its scalability, highly performance database management system designed specifically for distributed client and server computing. Besides that, it also provides tight integration with windows and window-based applications helping reduce the cost and complexity of deploying sophisticated application.

### **2.5.3.2 MySQL**

MySQL is open source SQL database management system provided. Open source means that it is possible for anyone to use the software by downloading from the Internet and tailoring it to their needs in accordance with generally public license. MySQL is noted mainly for its speed, reliability and flexibility. It works best when managing content and not executing transactions. MySQL runs on Linux, UNIX and windows platform. Many net startups have been especially interested in MySQL as an alternative to proprietary database system.

### **2.5.3.3 Microsoft Access 2003**

Microsoft Access 2003 is a powerful relational database application that a desktop user can use to efficiently create and manipulate database systems. Microsoft access targets the desktop category and works best for individuals and workshops managing megabytes of data.

As a leader in the desktop database category, Microsoft Access makes it easy for users to find and manage their data. It provides ease-of-use wizards throughout, such as the Database Wizard for getting up and running quickly, and the Simple Query Wizard for easily finding information from the data. The combination of ease-of-use and power in Microsoft Access makes it the top choice among developers who frequently use Microsoft Access as a front-end to SQL Server in a client/server scenario.

#### 2.5.4 Programming Language

Programming languages is a language used to write instructions for the computer.

The programming tool is the main tool in developing the system.

The tools should:

- i. Support to create a high impact graphical user interfaces.
- ii. Be able to create professional looking installation packages for the application.
- iii. Enable the run on any platform.

##### 2.5.4.1 Active Server Page (ASP)

Active Server Pages (ASP) is a Microsoft's web server software that allows user to embed server-side script code in web pages. It provides the capability for web server to process application logic and then delivers standard HTML to client browser. Client browser can create websites that are dynamic and database-driven by using client side script, Java applets, dynamic HTML or ActiveX Control. 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. It also enables server-side scripting for IIS with native support both VB Script and JavaScript.

Advantages:

- 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. Suitable for building multi-tier internet and intranet applications.

- iv. Simplicity, speed and easy to learn.
- v. Response to user queries or data submitted from HTML forms.

Disadvantages:

- i. Requires adopting Microsoft as the platform and webbing server.
- ii. Performance of interpreted scripting.
- iii. Limited transactional participation.

#### 2.5.4.2 JavaScript

JavaScript is an interpreted programming or script language from Netscape. JavaScript is an easy to use object scripting language designed for creating live online applications that link together objects and resources on both clients and servers. JavaScript is designed for use by HTML page authors and enterprise application developers to dynamically script the behavior of objects running on either a client or a server.

Advantages:

- i. Being client-side, JavaScript is very fast because any code functions can be run immediately instead of having to contact the server and wait for an answer.
- ii. It is relatively simple to learn and implement.
- iii. Versatility because it can be used in a huge variety of applications. Unlike PHP, JavaScript can be inserted into any web page in spite of the file extension.

Disadvantages:

- i. Security because the code executes on the users' computer, in some cases it can be exploited for wicked purposes.
- ii. Reliance on End User because it is sometimes interpreted differently by different browsers. Whereas server-side scripts will always produce the same output, client-side scripts can be a little unpredictable.

#### **2.5.4.3 Personal Home Page (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.

Advantages:

- i. Free and an open source project.
- ii. 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.
- iii. Stability, ease to use, and the fact that PHP can perform any task a more complex CGI program would do.

#### 2.5.4.4 Hypertext Markup Language (HTML)

HTML allows individual elements on the web to be brought together and presented as a collection. It is not only way to present information on the web, but it is the glue that holds everything together. In addition to being a markup language for displaying text, image and multimedia, HTML provides instructions to web browser in order to control how documents are viewed and how they relate to each other. For all its simplicity, HTML is a very powerful language. The users can add many functions inside HTML. They can add their VB Script and also Java Script inside HTML to make it become a dynamic HTML.

Advantages:

- i. HTML is the first easy method for non-programmers to display text and images on-screen without limiting the audience to those who own or have access to the same program (or a viewer) that the author used to create the content.
- ii. Browsers are universal content viewers and HTML is the universal file format, which helps universalizing the display of any output of information.

Disadvantages:

- i. HTML is a fixed or static language. Therefore, the limited command set forces developers to build proprietary extensions to perform more advanced functions.
- ii. Plain HTML has no way to specify the exact position of content on a page, either horizontally, vertically, or along the z-axis, which controls the layers in which objects appear.

### 2.5.5 Authoring Tools

Authoring tool is a software application used to create multimedia content typically for delivery on the World Wide Web.

#### 2.5.5.1 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.

Advantages:

- i. Enhance productivity using the new integrated workspace, which is shared with Macromedia Flash MX and Fireworks® MX.
- ii. Use one integrated development environment to develop HTML, XHTML, XML, ASP, ASP.NET, JSP, PHP, and Macromedia ColdFusion® websites.
- iii. Multiple technology development environments.
- iv. Animation capability is built in.
- v. Integration with other technologies.
- vi. Standard and Accessibility support.

Disadvantages:

- i. No back-end programming for form submission.

### 2.5.5.2 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.

#### Advantages:

- i. offers more than 60 Web themes – with buttons, pictures, and other visual features that give user site a cool and consistent look
- ii. Simplicity, easy to use
- iii. back-end programming

#### Disadvantages:

- i. larger file size
- ii. the FrontPage graphic interface creates confusing code that is very hard to customize

## **Chapter 3: Methodology**

### **3.1 Introduction**

Methodologies are a preset disciplined process upon software development. It makes the software development more predictable and more efficient. System methodology serve as guidance for the development of the project as it give us an ideal of essential step in analysis, design, construction and transition phase.

Consequently, choosing the right methodology is very vital. Some of the methodology is suitable for each particular system. Some of the methodology is suitable to developing the website system but some of them not. There are many types of software life cycle model. Those uses to develop small and medium project are Waterfall Model, V-Shaped Model, and Prototyping Model. For developing large project, usually developer will choose Iterative and Incremental Life Cycle Model or Spiral Model.

The following section will briefly describe some types of methodologies and the evaluation on each methodology.

#### **Waterfall Model**

Waterfall model can be amended to improve understanding. This model is simple to use. It is suited to develop large and complex system. This development is to proceed linearly through the phases of requirement analysis, system design, program design, coding, unit and integration testing, system testing, acceptance testing, operation and maintenance.

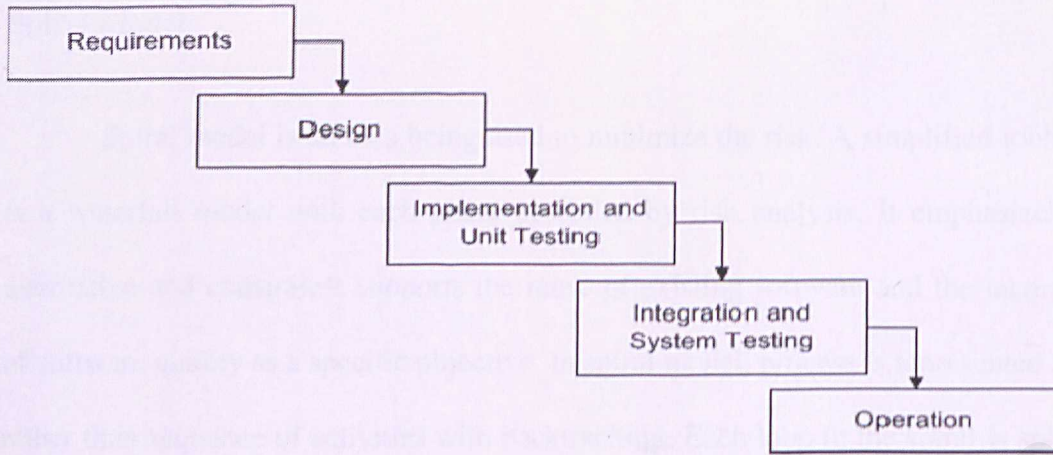


Figure 3-1: Waterfall model

Advantages:

- i. Easy to understand
- ii. Simple to use as it only include several phase to develop a project.
- iii. Delivery of each stage can be easy to identify.
- iv. Phases are processed and completed one the same time.

Disadvantages:

- i. Only suitable for several type of application development.
- ii. Iteration was ignored and the flow is sequential. This can reduce the quality of the system as each iteration can discovers some weak point as it progress.
- iii. High amounts of risk and uncertainty.
- iv. Poor model for complex and object-oriented projects.
- v. Poor model for long and ongoing projects.

## Spiral Model

Spiral model is an idea being used to minimize the risk. A simplified looking at it is a waterfall model with each phase preceded by risk analysis. It emphasizes on the alternative and constraints supports the reuse of existing software and the incorporation of software quality as a specific objective. In spiral model, process is represented as spiral rather than sequence of activities with backtracking. Each loop in the spiral is split into 4 sections which are objective setting, risk assessment reduction, development and validation and planning.

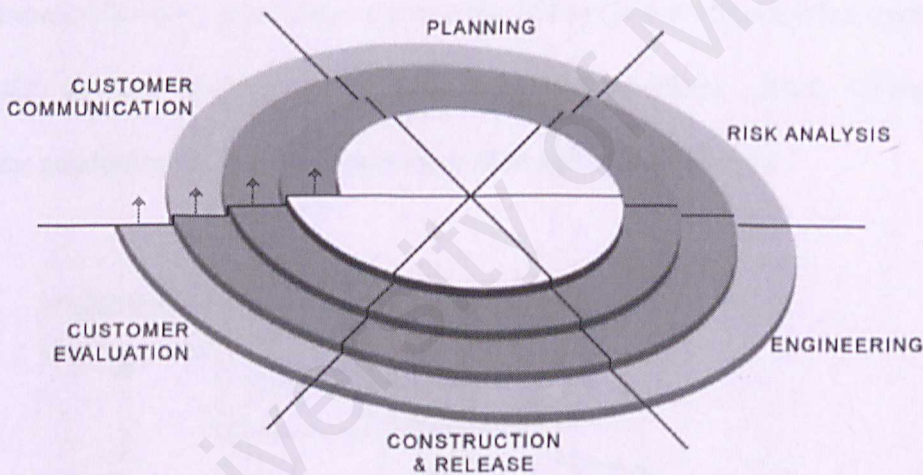


Figure 3-2: Spiral Model

### Advantages:

- i. Good for large and mission-critical projects.
- ii. Provide iterative process that can refine the output of each phase.
- iii. Risk analysis was taken serious concern.
- iv. Focus on user requirement as user involvement is treated as an important criterion.

Disadvantages:

- i. Time consuming as need to iterate to several phase and conducting testing with user.
- ii. Can be a costly model to use.
- iii. Does not work well for smaller projects.

### Incremental Model

The incremental model is an intuitive approach to the waterfall model. Multiple development cycles take place here, making the life cycle a multi-waterfall cycle. Cycles are divided up into smaller, more easily managed iterations. Each iteration passes through the requirements, design, implementation and testing phases.

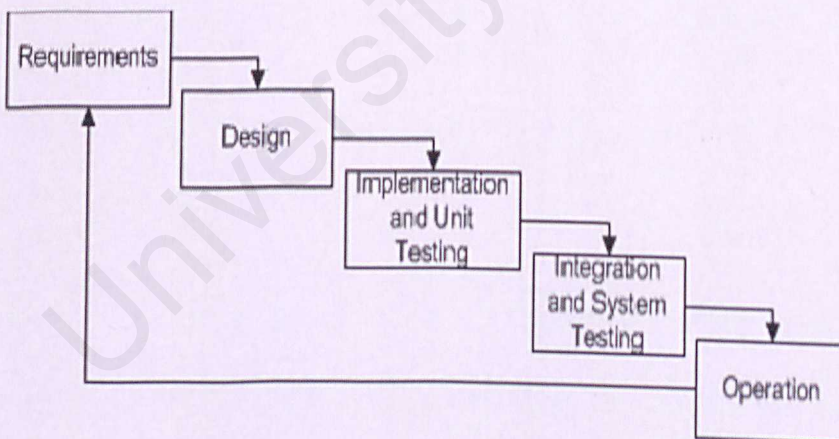


Figure 3-3: Incremental Model

### Advantages:

- i. Less costly to change scope and requirements.
- ii. Easier to test and debug during a smaller iteration.
- iii. More flexible in changing.
- iv. Easier to manage risk because risky pieces are identified and handled during its iteration

### Disadvantages:

- i. Problems may arise in system architecture because not all requirements are gathered up front for the entire software life cycle.
- ii. Each phase of an iteration is unyielding and do not overlap each other.

3.2 Methodology Used

Unified Software Development Process or just called Unified Process (UP) is an object-oriented methodology that adopted in the development of E-advertisement.

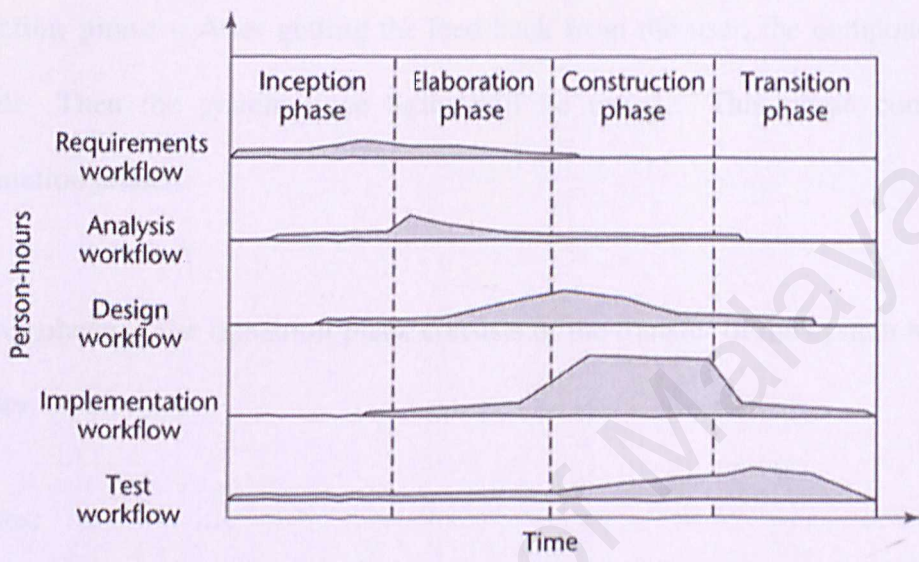


Figure 3-4: The Core Workflows and the Phases of the Unified Process

Each cycle contains four phases in Unified Process and each of the cycle will be described based on the E-advertisement:

**Inception phase** – Gather the user requirement using the primary research method. Gantt chart had been planned to show the work flow of the system. Beside of that, the secondary research also operated in the mean time which is gather information from the internet and library.

**Elaboration phase** – This phase, the blue print of the system must be come out. Some of the prototype must be come out. This phase evaluated the design of the system.

However, not the entire system must be build into the prototype. Some of the small component like forum can be done first and release to let the user to test the system component.

**Construction phase** – After getting the feed back from the user, the component is put into used. Then the system once again will be tested. This phase consider the implementation phases.

**Transition phase** – The transition phase consists of the transfer of the system to the user community.

Advantages:

- i. User requirement can be identify clearly.
- ii. Reusability is higher.
- iii. Any modification to the system is more manageable.

Disadvantages:

- i. Frequency of change of the system is high which might frustrate the users.
- ii. Provide endless option to developer which can be confusing.

## Why Unified Process?

UP is used when doing the development of E-advertisement because UP provides the detailed steps for going from an idea to a delivered software application. UP is characterized by three primary elements that can bring a success to the software development:

- i. Use-case driven

Functional requirements are captured as instructions to a black box.

- ii. Architecture Centric

The environment, tools, and components available are used to avoid re-inventing what already exists.

- iii. Incremental and Iterative

Instead of mandating perfection, the process uses continual iteration to achieve refined excellence.

## 3.3 Fact Finding Techniques

Several techniques have been utilized in order to conduct the information gathering as shown below:

- i. Brainstorming / Discussion

During the requirements elicitation, discussions with the supervisor have been carried out in order to discuss about the requirements of the system and to gain some ideas, advices, recommendations, and information on the requirements and proceedings of the project. Abundance of ideas about the design and requirements

of the system have been figured out the system. The discussion likewise exists within the partnership.

ii. Library

The library is the traditional source of information. In order to obtain skills of system development, the traditional reading strategy helped a lot. A lot of materials in the library such as journal, conference and reference books offer a relatively concise information and format for research. Library research which is through the library or digital library, information and way on how to implement the system effectively can be found.

iii. Internet searching

The Internet has become the crucial source when I am doing the system to search any required general information. Information can be gathered in the most cost effective and time efficient manner using Internet. Besides that, it is also easy to find, more convenience, and save my time from searching thousands and millions of books in the library. I did the online research with referring the existing website which are related, journals, articles, and the research which are done by expert from all over the world.

iv. Observation and Informal Interview

Observation is one kind of the informal information gathering method. By observing some of the current system, the policies, procedures or operation, and management can be clearly understood. The problems and symptoms that always occur also can be identified and defined by observing the existing system. Besides,

the needs of a better service when using the E-advertisement website also can be identified through personal observation.

### **3.4 Conclusion on Tools and Technology**

After considering the pros and cons of all the tools and technology, below are the tools that I have selected.

#### **3.4.1 Selected Web Architecture**

E-advertisement is designed to be 3-tier architecture. This architecture is more suitable apply in the system I want to build because of the advantages below:

Advantages of Three-Tier Architecture are:

- i. Provides for more flexible resource allocation.
- ii. Same upgrades can be done entirely at the server side.
- iii. Performance balancing, rules sharing, organization.
- iv. There is a little bandwidth to be used since the information is to be displayed id sent on the network.

### 3.4.2 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. Provide secured access, as well as performance improvement for wireless network.
- iv. More stable and improved troubleshooting tools.

### 3.4.3 Selected Web Server

I have decided to use Microsoft Internet Information Server (IIS) as the system web-server, because it can be fully supported by Windows XP Professional and provide powerful security, administration and development functionality.

Advantages of IIS are:

- i. Offers a superb platform for building sophisticated Internet applications.
- ii. Indexing, performance and security enhancement.
- iii. Well integrated server administration tools.
- iv. Easy to install and uninstall.

### 3.4.4 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. Open page source in Notepad to allow minor editing.

### **3.4.5 Selected Database Management System**

Microsoft SQL Server 2000 is the suitable choice for the development of proposed system as it works well with databases of any size. Additionally, Microsoft SQL Server 2000 is the most robust database for the windows family.

Advantages of Microsoft SQL Server 2000 are:

- i. Able to support large-scale database.
- ii. Allow future expansion.
- iii. High scalability, availability and reliable.
- iv. Ease of installation, deployment and use.
- v. Work well with other Microsoft's component.
- vi. Can be queried and updated via Web browsers through integration with IIS.

### **3.4.6 Selected Programming Language**

Active Server Page (ASP) is chosen due to its flexibility and usability as well as its feasibility to merge with scripting languages such as VBScript and JavaScript.

Advantages of ASP are:

- i. Easy to develop applications.
- ii. No extra software required.
- iii. Powerful and flexible.
- iv. Browser independent.

### 3.4.7 Selected Authoring Tool

Macromedia Dreamweaver MX is chosen because 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.

Advantages of Macromedia Dreamweaver MX are:

- i. Multiple technology development environments.
- ii. Animation capability is built in.
- iii. Integration with other technologies.
- iv. Standard and Accessibility support.

## **CHAPTER 4: SYSTEM ANALYSIS**

### **4.1 System Analysis**

Requirement analysis is a vital process to determine the system being built in order to meet the customer's requirements. There are two types of requirement which are functional requirement and non-functional requirement. To define user's requirements, effective and appropriate techniques have been used to gather needed information for this project. A research method such as Internet research, document review and research on sample thesis and reference books have been used.

### **4.2 Functional Requirement**

Functional requirement is a statement of the service or function that a system should provide how the system reacts to particular inputs, and how the system should behave in particular situations. E-Advertisement consists of 3 sections namely user, member and administrator.

#### **4.2.1 User section**

- i. E-advertisement has announcement board where important announcement will be posted only by admin.
- ii. User can search for item by keyword, price range, location and category.
- iii. Guest can register to be member through fill in the form of registration.
- iv. User can read files in FAQ.
- v. User can read forum.

#### **4.2.2 Member section**

- i. Member can view and edit own personal profile.
- ii. Only member can post advertisement.
- iii. Member can view and edit posted advertisement.
- iv. Member can send mail to sellers.
- v. Member can send mail to administrator through enquiry.
- vi. Member can reply mails from administrator and sellers.
- vii. Member can create, edit and delete new topic for forum.

#### **4.2.3 Administration section**

- i. Admin can view all member details.
- ii. Admin can terminate members.
- iii. Admin can add, edit and delete categories and sub categories.
- iv. Admin can add, edit and delete announcements.
- v. Admin can send mails or reply mails to members.
- vi. Admin can view all the topics and replies in the forum.
- vii. Admin can view the payment report from the advertisement fee.

### 4.3 Non-Functional Requirement

Non-functional requirement is attributes and the overall qualities that to be exhibited by the resulting software system as the system performs its job. Besides that, non-functional requirement describes a restraint on the system that limits choices for constructing a solution to a problem. Non-functional requirements are difficult to test. Therefore, they are usually evaluated subjectively. In developing E-advertisement, several non-functional requirements have been identified as below.

#### i. User Friendliness

The user interface of the E-advertisement should be user-friendly whereby users find it easy to use. It should not be too complex and difficult to use as it will deter users from using it then. It should be easy to navigate and the operations should be easy to understand even for non- technical users. Moreover, the color choice and the layout for the interface should follow the HCI (Human Computer Interaction) guidelines.

#### ii. Error-handling

The system should prompt error message when error occurs to acknowledge the user what to do.

#### iii. 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 displayed is the same query is entering to search.

#### iv. Security

The system should be able to control users' access and the types of rights given such as view, delete, add or edit and non-members are not allowed to post advertisements.

#### v. Reusability

The system will provide a high level of usability rate to its users through its easy to understand functions, user-friendly interface and prompt responses to requests made.

#### vi. Respond Time

The system must have fast response time where users will not be kept waiting for a long time for the system to respond. The response time to retrieve the information such as loading menu can be considered within a reasonable interval time. It means that all desirable information should be available to user as fast as possible. The requirement for up-to-date information is also necessary. These could be implemented by defining a good database and the applying good programming codes.

#### vii. 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.

#### **4.4 Client Side Specifications**

Client side specification serves as a technical issues paper need to be considered by user when accessing the system.

##### **4.4.1 Client Side Hardware Requirements**

The recommended hardware requirements for the client computer are list as the following:

- a) PC with a Pentium 233MHz or higher)
- b) 128 MB of RAM or higher
- c) 550 MB of hard disk space or higher
- d) VGA or other compatible monitor display
- e) Others standard computer peripherals

##### **4.4.2 Client Side Software Requirements**

The recommended software requirements for the client computer are list as the following:

- a) Windows 2000 server or higher
- b) Internet Explorer 5.5 or higher
- c) Microsoft Internet Information Server 5.5 or higher

#### **4.5 Server Side Specifications**

Server side specifications serve as a technical issues paper need to be considered in order to install the system.

##### **4.5.1 Server Side Hardware Requirements**

The recommended hardware requirements for the server computer are list as the following:

- a) PC with a Pentium IV
- b) 256 MB of RAM
- c) 550 MB
- d) VGA or higher-resolution monitor
- e) Others standard computer peripherals

##### **4.5.2 Server Side Software Requirements**

The recommended software requirements for the server computer are list as the following:

- a) Windows XP
- b) Internet Explorer 6.0
- c) Microsoft Internet Information Server
- d) Microsoft SQL server 2000

## CHAPTER 5: SYSTEM DESIGN

### 5.1 System Functionality Design

E-Advertisement system uses the Unified Modeling Language (UML) to express the design of software project because UML is a vital part of developing object-oriented software and the software development process. Moreover, UML is a standard language for specifying, visualizing, constructing, and documenting its model. With using UML model, E-advertisement uses use case diagram, sequence diagram and class diagram to design its functionality.

#### 5.1.1 Use Case

Use case is a technique to get the potential requirements of a new system or software change. The main purpose of E-advertisement uses use case is to show the functions that actor can use in the system. Moreover, the use case also shows the interactions between actors and the accessing functions. In this system, there are three actors: member, user and administrator. Figure 1 demonstrates the use case of E-advertisement. From the figure shown, member and administrator need to log in before accessing all the modules in member and administrator part. However, a user is not allowed to access all modules unless he registers as a member.

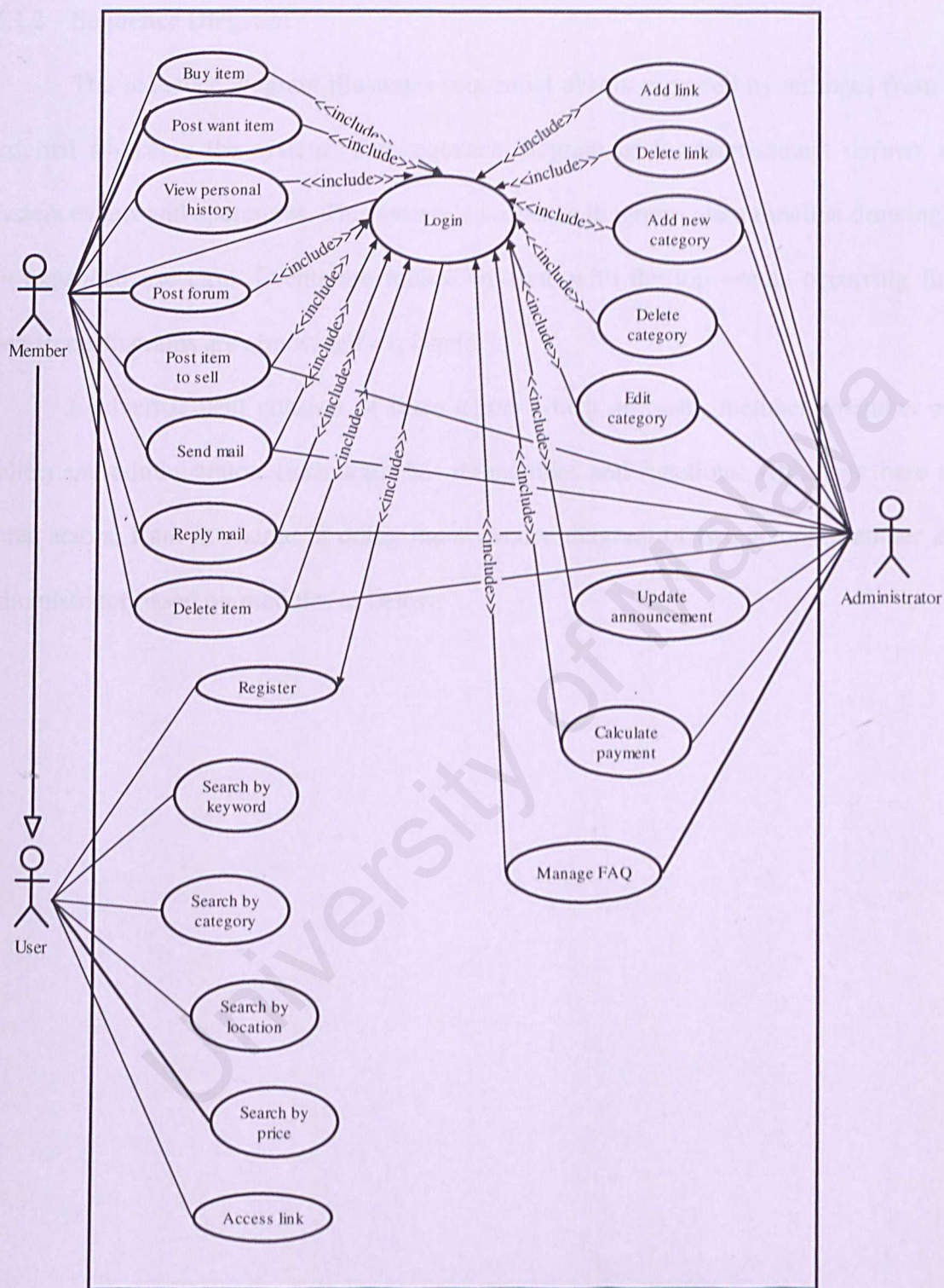


Figure5-1: Use case for E-advertisement

5.1.2 Sequence Diagram

The sequence diagram illustrates sequential events triggered by an input from an external source to the system. The sequence diagram of E-advertisement defines the system events and operations. This system's sequence diagrams are a timeline drawing of an expanded use case. Events are related by time with the top events occurring first. Sequence diagrams are almost self explanatory.

E-advertisement consists of three actors which are user, member (member and seller) and administrator. Each actor has its modules and functions. Although there are three actors, I am in charge in doing the sequence diagram of two actors, member and administrator based on modules as below.

5.1.2.1 Member Modules

After a user registers as a member, he can access the member modules to post advertisement and send mails.

View history

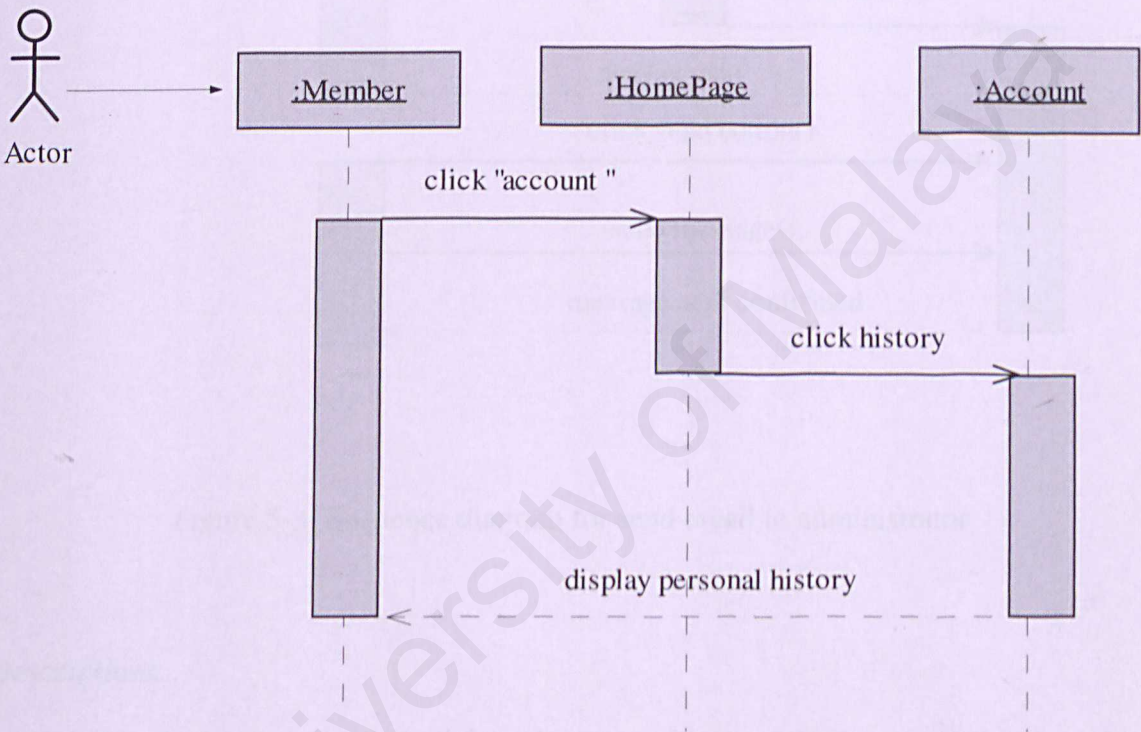


Figure5-2: Sequence diagram for view member’s history

Description:

A member can view his history like item posted when he clicks the button of account. A personal history is displayed.

Send Email

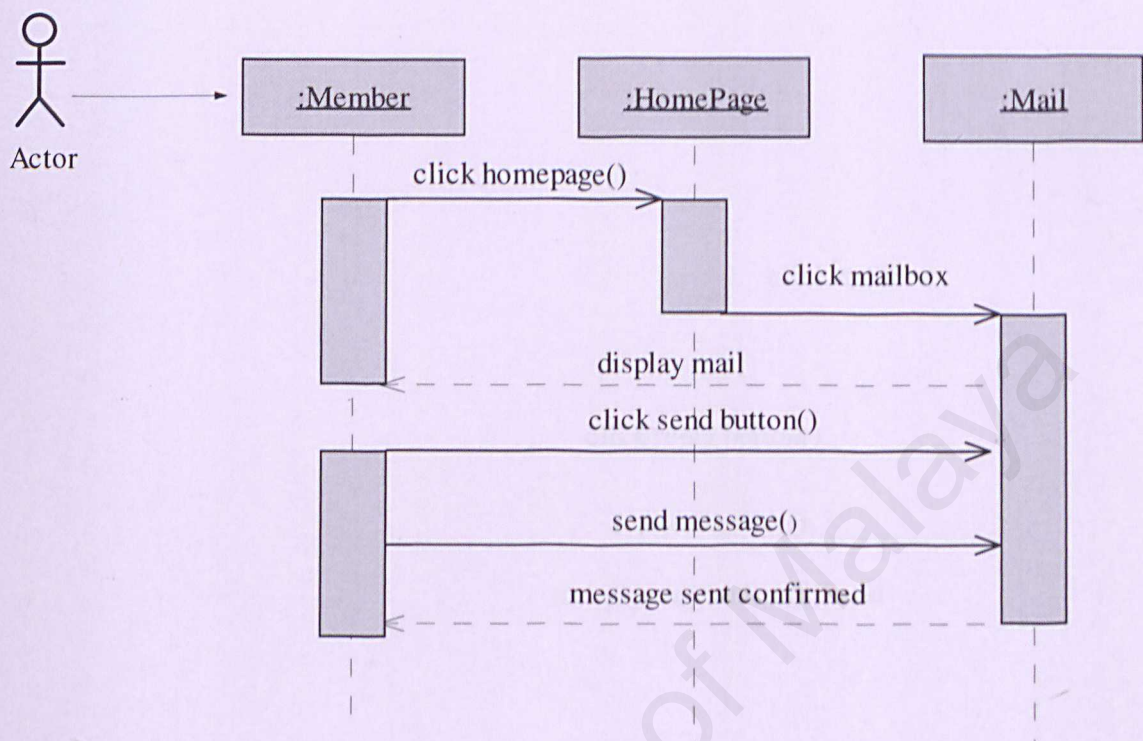


Figure 5-3: Sequence diagram for send email to administrator

**Description:**

After login, member can click on button mailbox to check new mails or send an email to administrator in the home pages. After typing the messages, he has to click on the send button to send the mail to the administrator. If the messages are sent, a message is displayed as the mail is sent.

Reply Message

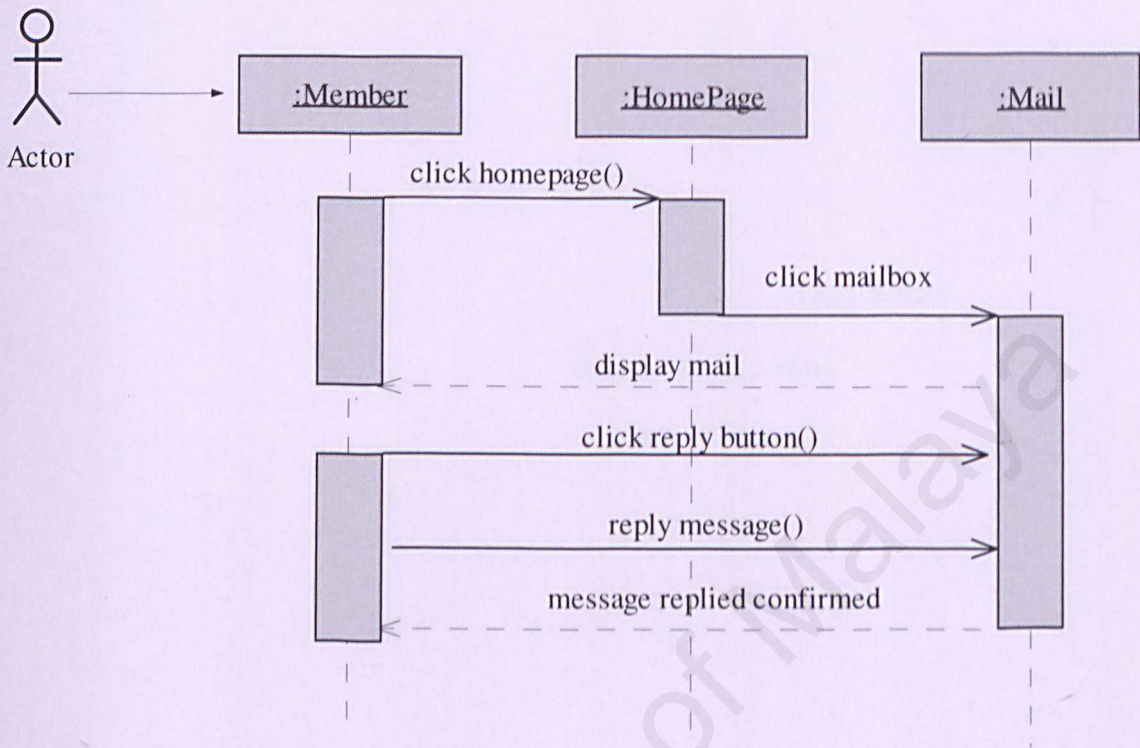


Figure 5-4: Sequence diagram for reply message

**Description:**

If there is new mail, a message is displayed. The member can reply email by clicking the reply button. After the mail is being sent out, a message replied is confirmed.

Post Forum

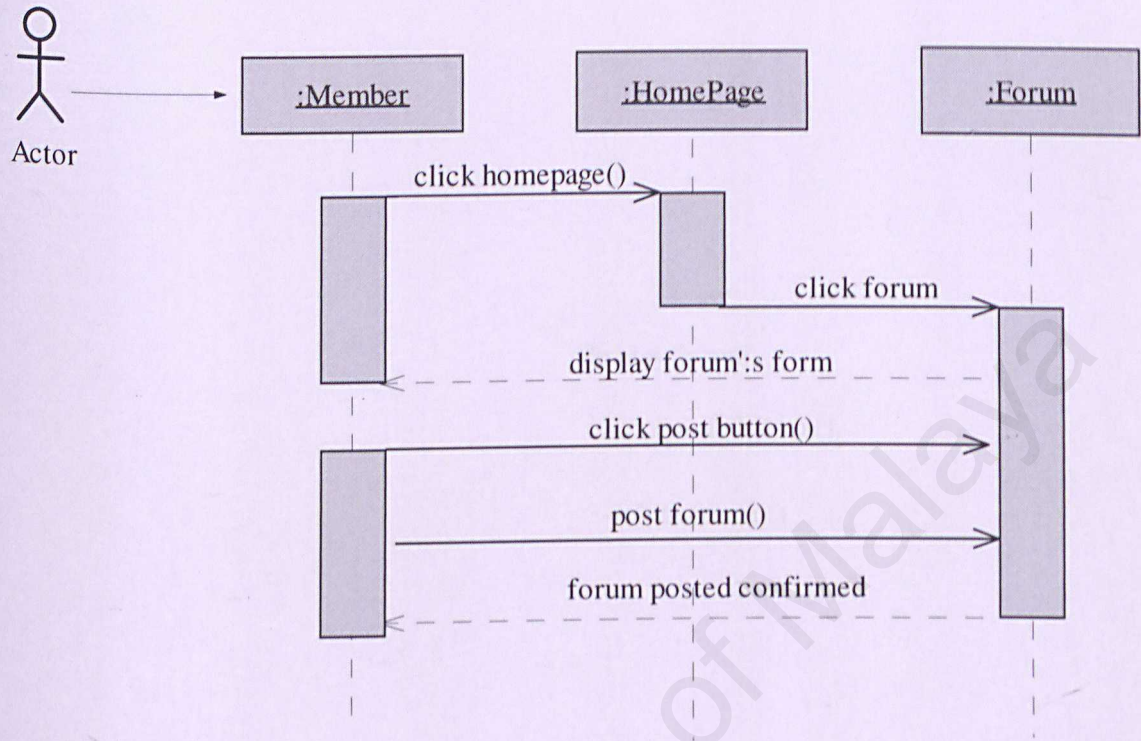


Figure 5-5: Sequence diagram for post forum

**Description:**

When a member clicks the forum button, the system displays the forum. The member fills in a forum in order to post a message before forum posted out. The member then clicks post button. The message is displayed at the forum section.

Delete Forum

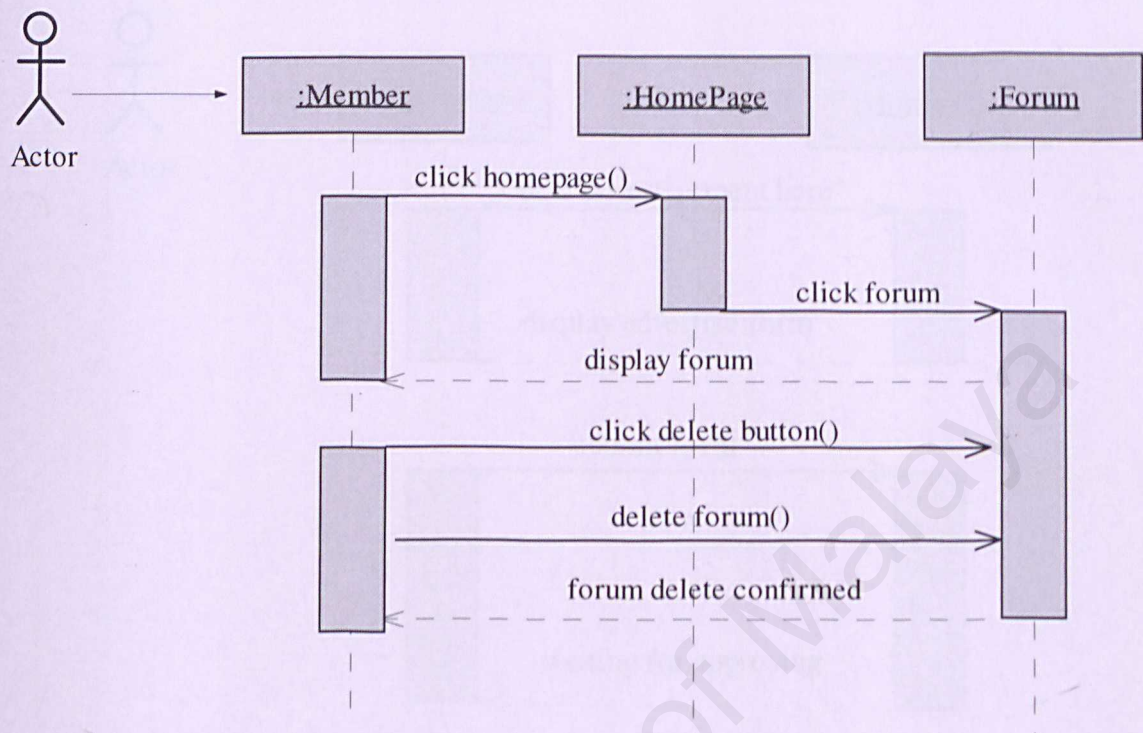


Figure 5-6: Sequence diagram for delete forum

**Description:**

When a member clicks the forum button, the system displays the forum and the member maybe able to delete the forum he/she posted before. When he clicks the delete button, the message is deleted.

Post Advertisement

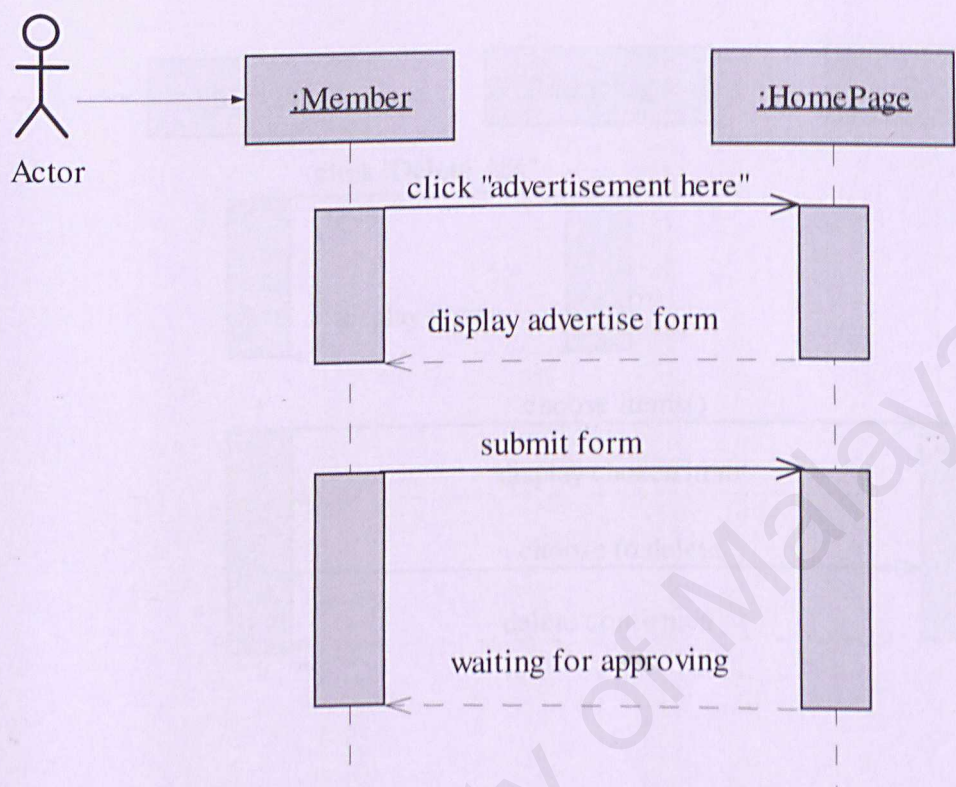


Figure 5-7: Sequence diagram for Post advertisement

**Description:**

A member clicks on the button of “post ads” to post advertisement. An advertise form is displayed. After submitting the form, the member needs to wait for approval.

Delete Advertisement

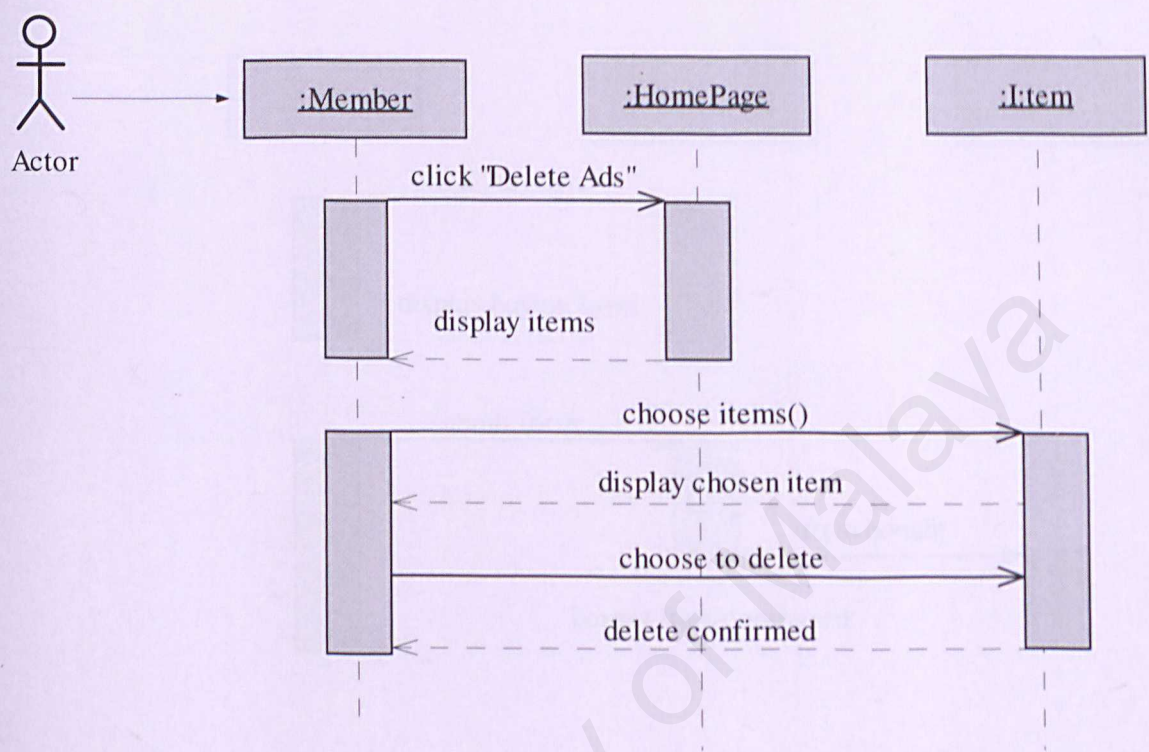


Figure 5-8: Sequence diagram for delete advertisement

**Description:**

A member clicks the “delete ads” button and the all active advertisements are displayed. He can choose which items to delete. Before deleting the items, a pop up message is displayed to confirm the delete action.

## Buy Item

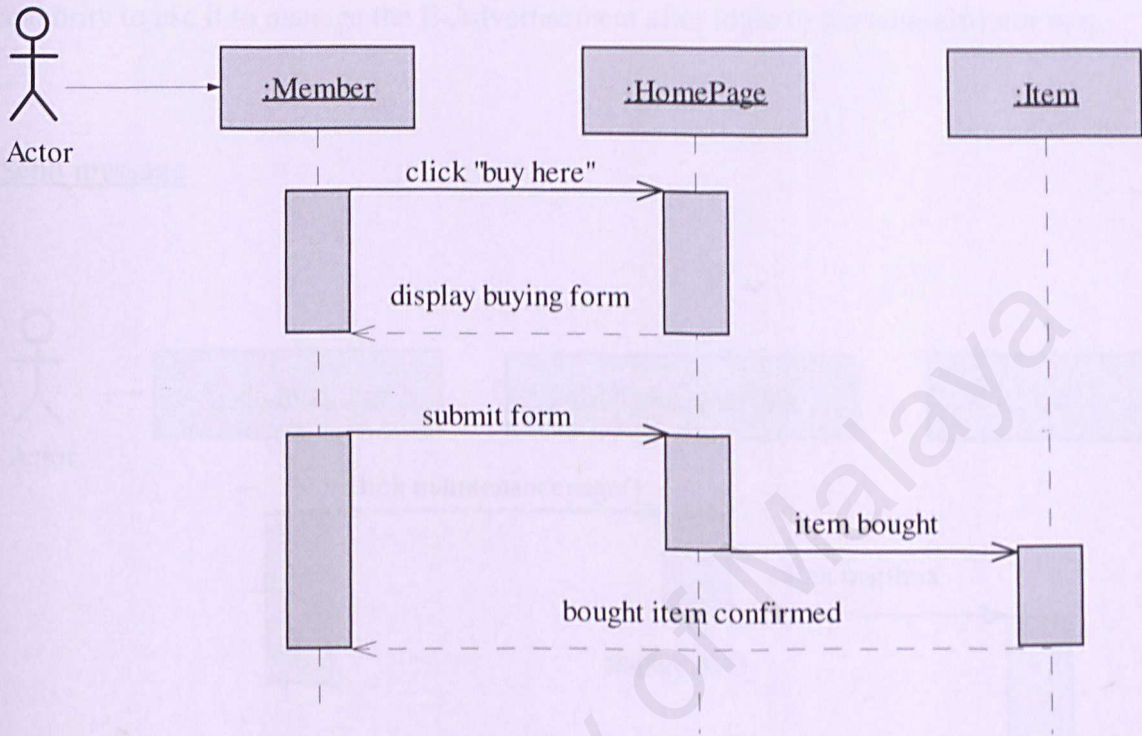


Figure 5-9: Sequence diagram for buy

### **Description:**

A member posts advertisement that he would like to buy and wait for other members to sell. However, member has to fill the buying form and submit it. After submitting, the item will be inserted into table item in database.

5.1.2.2 Administrator Modules

The administrator modules are the modules which the administrator has full authority to use it to manage the E-Advertisement after login to the administrator part.

Send message

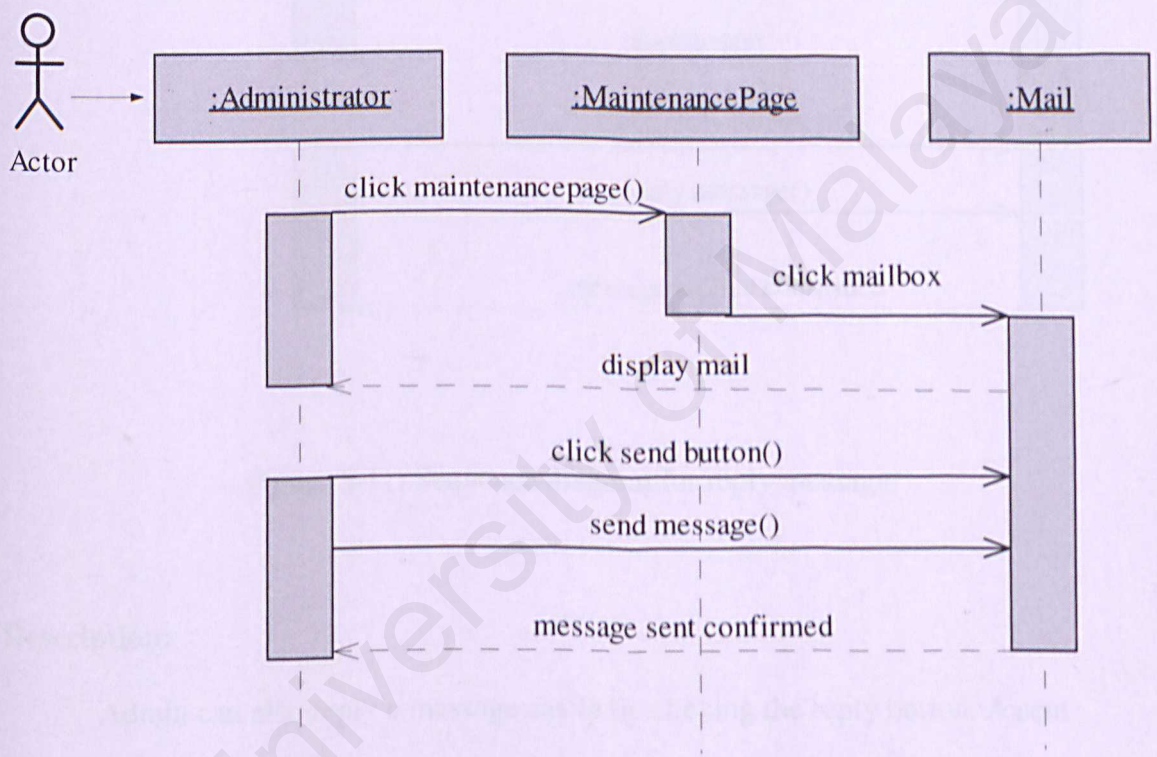


Figure 5-10: Sequence diagram for send message

**Description:**

Admin can send a message to a member when they click on the maintenance page.  
A message is displayed to show that the mail is being sent.

Reply message

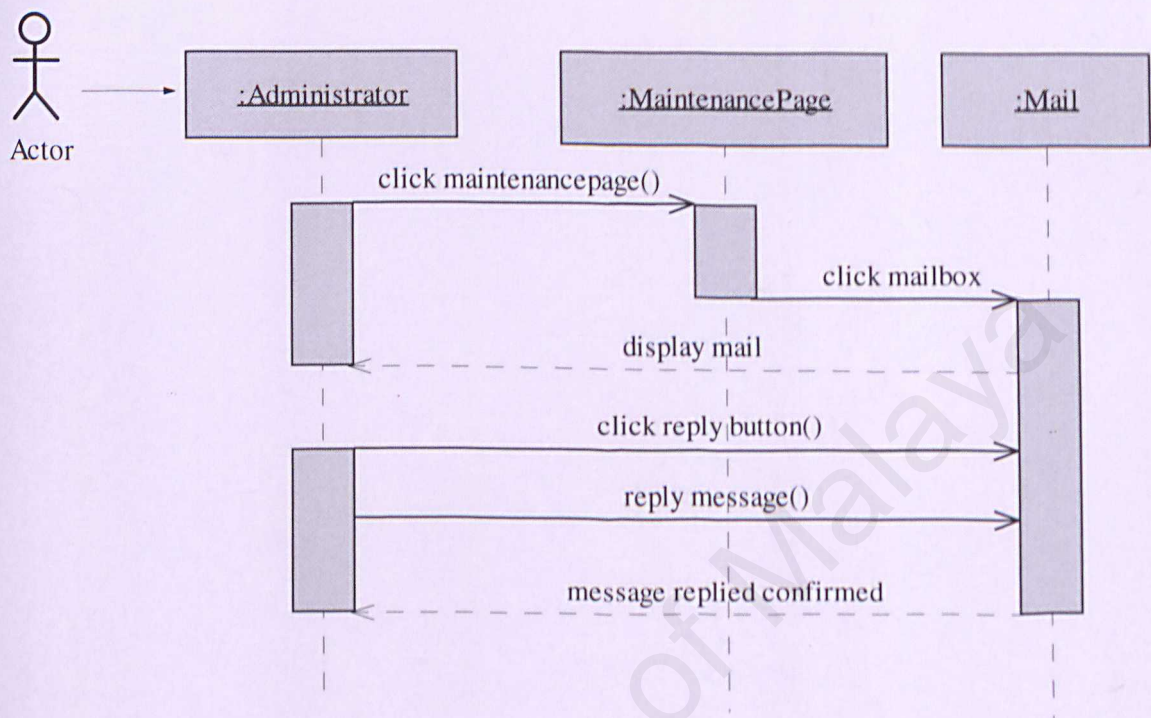


Figure 5-11: Sequence diagram for reply message

**Description:**

Admin can also reply a message easily by clicking the reply button. A sent message is displayed.

Delete message

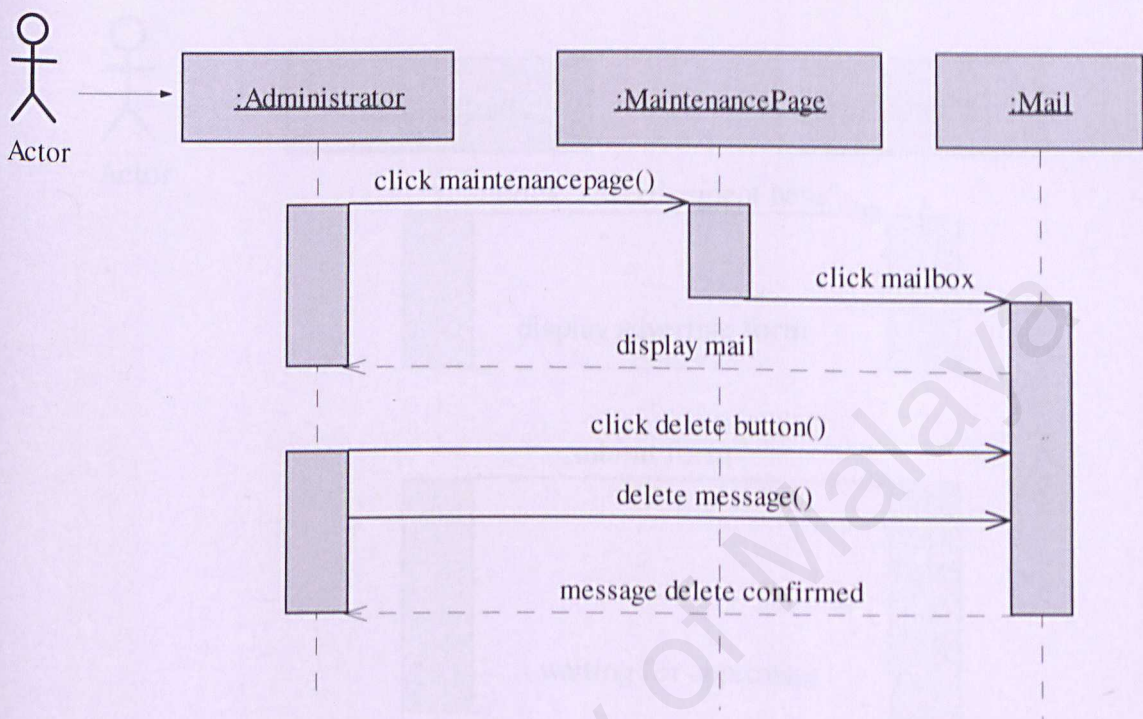


Figure 5-12: Sequence diagram for delete message

**Description:**

Admin can delete a message by clicking up on the delete button in the mailbox of the maintenance page. A confirmation of delete message pops up and alerts the admin that the action cannot be undone.

Post advertisement

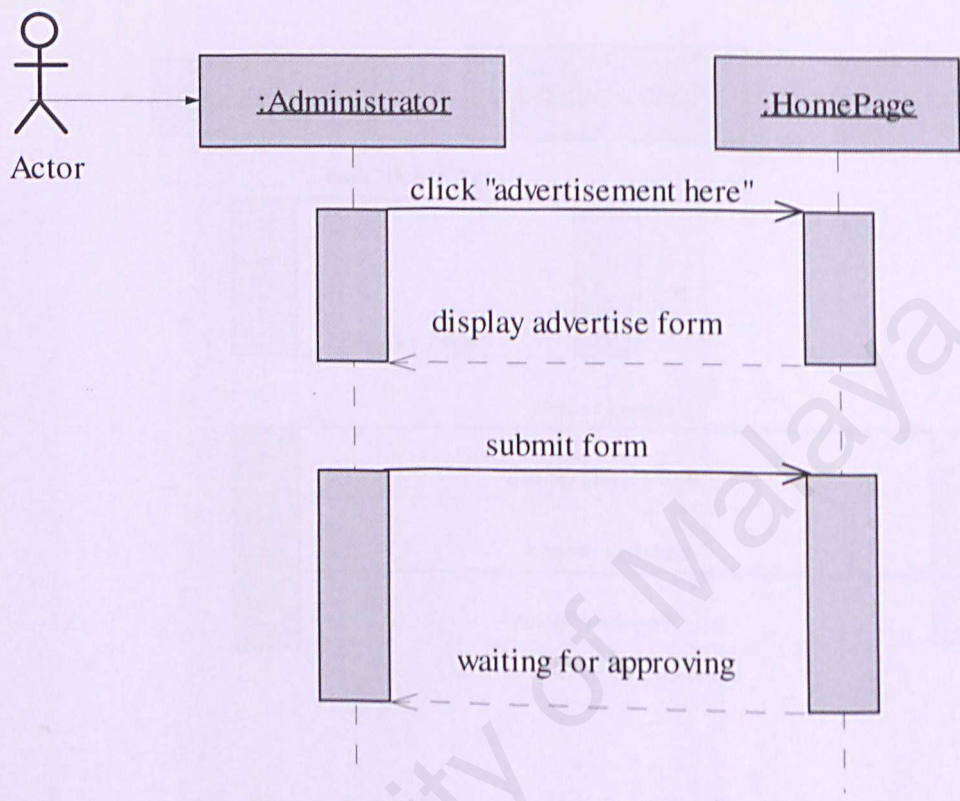


Figure 5-13: Sequence diagram for post advertisement

**Description:**

Admin may post an advertisement by clicking on the button of an advertisement here in the maintenance page. When he clicks the submit button, the details of the advertisement is stored in table item.

Delete Advertisement

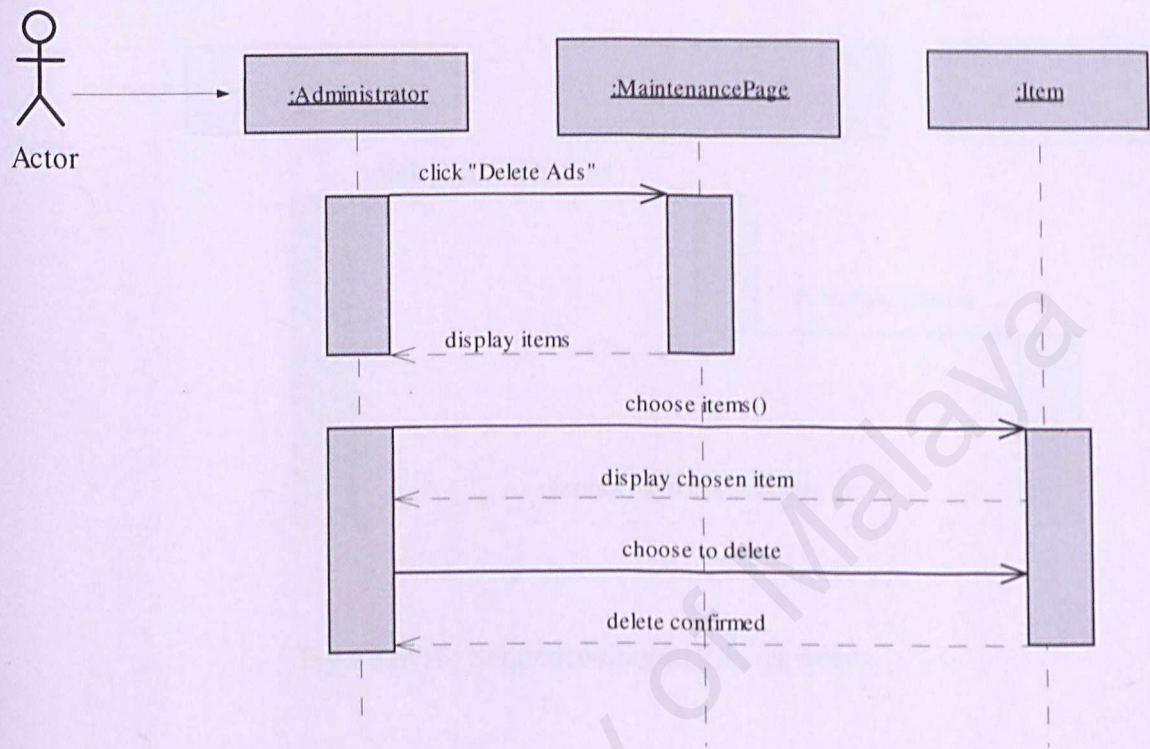


Figure 5-14: Sequence diagram for delete advertisement

**Description**

Admin clicks the delete the button to delete the unwanted advertisement. However, a message is popped out for deleting confirmation.

Payment

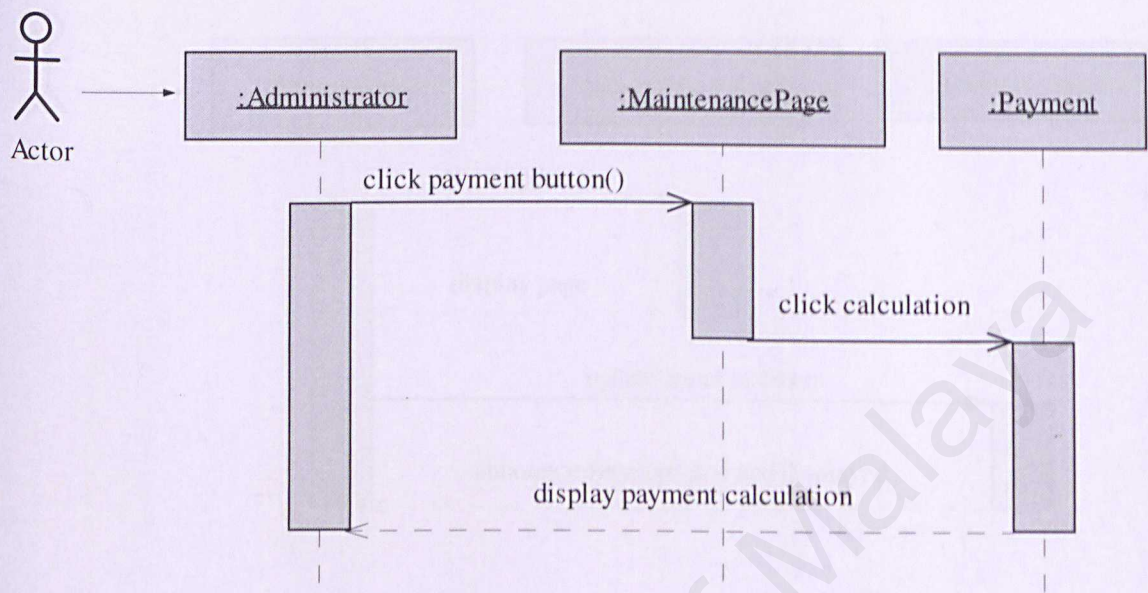


Figure 5-15: Sequence diagram for payment

**Description:**

When the administrator clicks on the payment button, payment page is displayed

Update Announcement

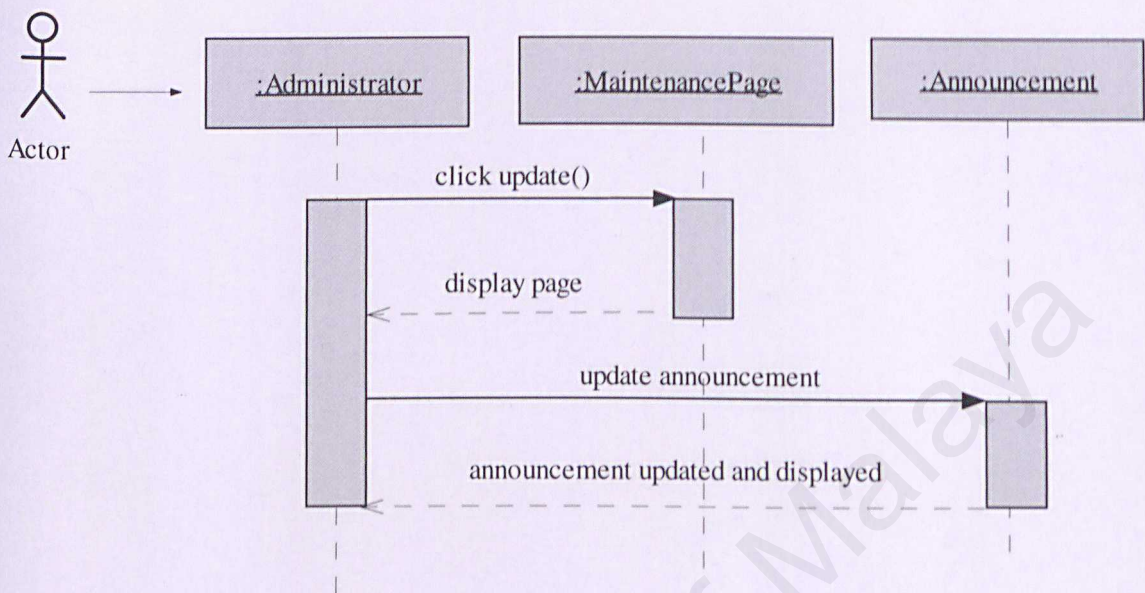


Figure 5-16: Sequence diagram for update announcement

**Description:**

When the administrator clicks the update announcement in the maintenance page, the page for updating the announcement is displayed. Administrator updates the announcement. Finally the updated announcement is displayed.

**Delete Announcement**

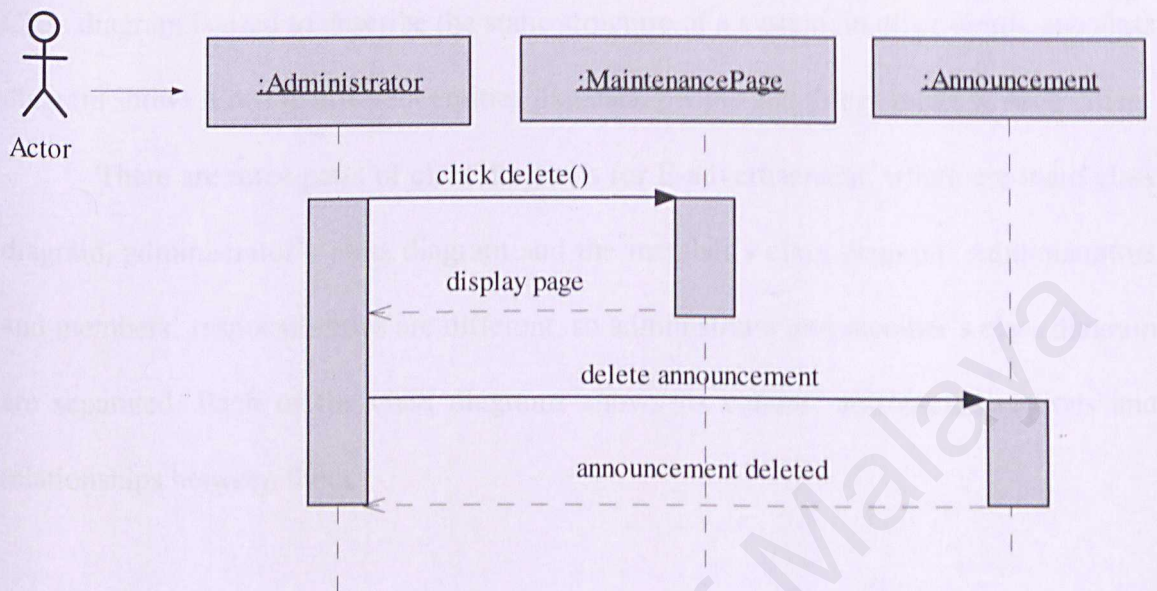


Figure 5-17: Sequence diagram for delete Announcement

**Description:**

When the administrator clicks the update announcement in the maintenance page, the page for updating the announcement is displayed. Administrator updates the announcement. Finally the updated announcement is displayed.

### 5.1.3 Class Diagram

Class diagrams are the backbone of every object-oriented method including UML.

Class diagram is used to describe the static structure of a system, in other words, the class diagram shows how the different entities like data, people and things relate to each other.

There are three parts of class diagrams for E-advertisement, which are main class diagram, administrator's class diagram and the member's class diagram. Administrators and members' responsibilities are different, so administrator and member's class diagram are separated. Each of the class diagrams shows its classes, attributes, functions and relationships between them.

5.1.3.1 Main Class Diagram

Main class diagram shows the overall relationship between the administrator, member and the E-Advertisement system's classes.

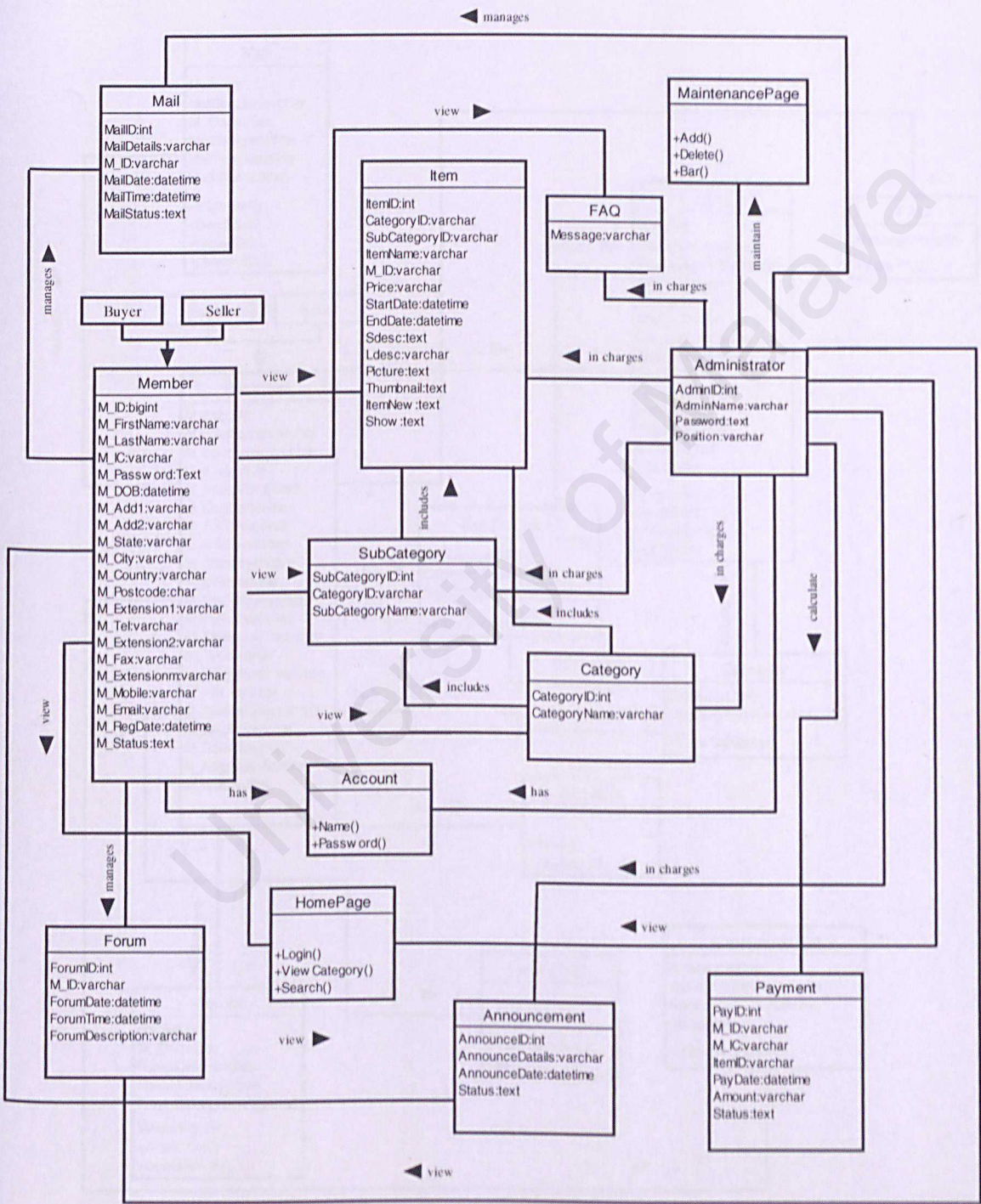


Figure 5-18: Main Class diagram

5.1.3.2 Member's Class Diagram

Member's class diagram shows the relationship between the member and the E-Advertisement system's classes.

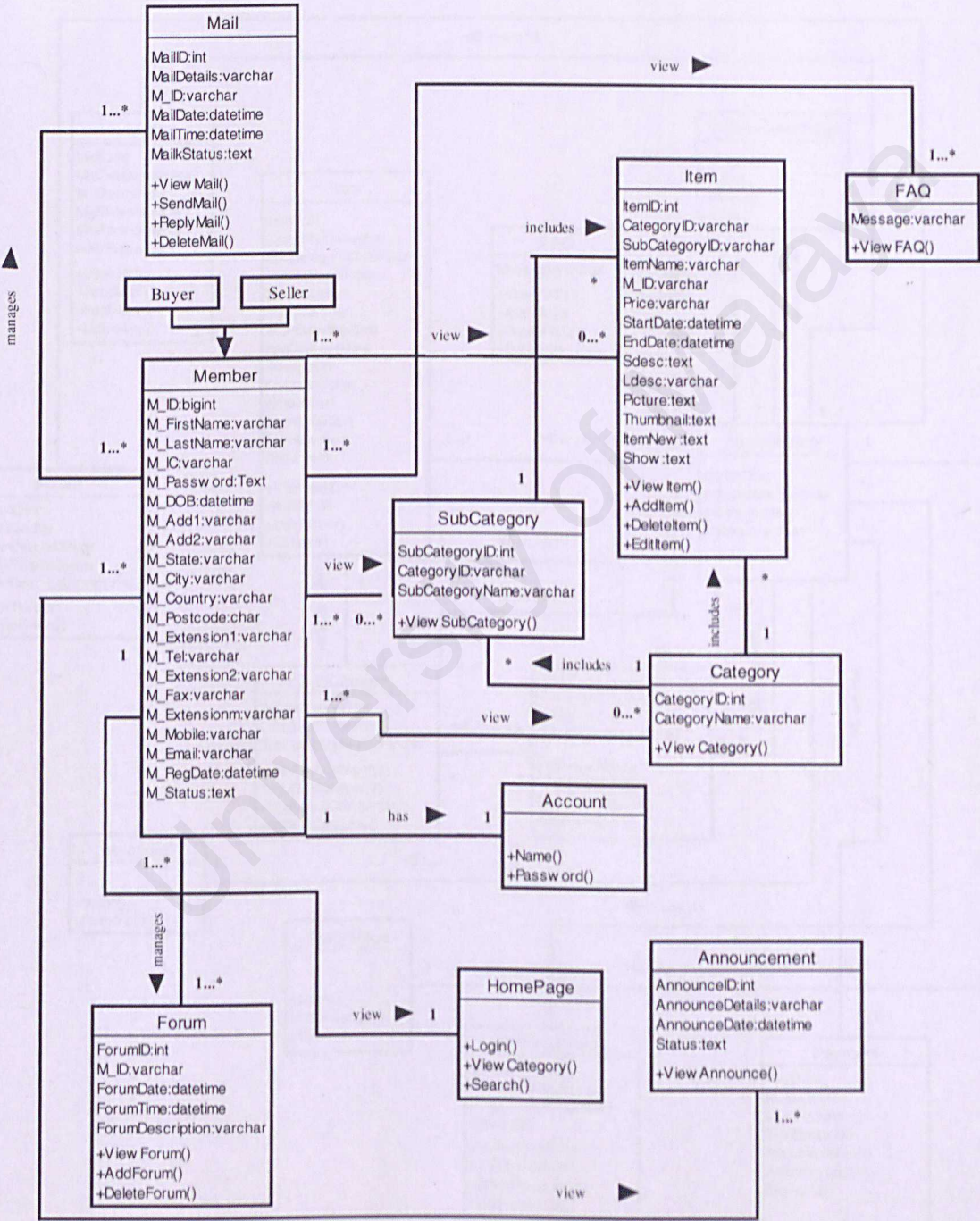


Figure 5-19: Member's class diagram

5.1.3.3 Administrator’s Class Diagram

Administrator’s class diagram shows the relationship between the administrator and the E-Advertisement system’s classes.

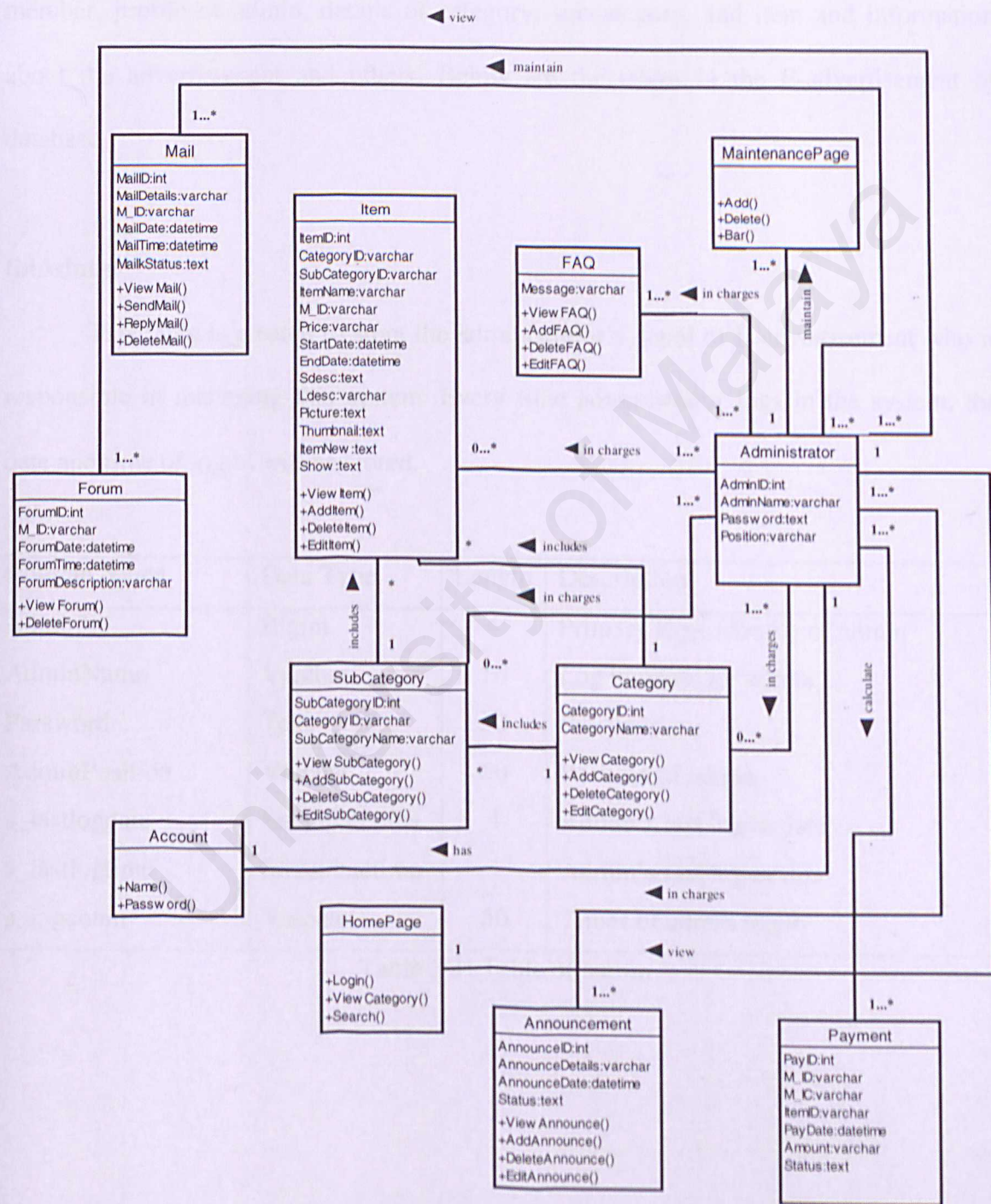


Figure 5-20: Administrator’s Class diagram

5.2 Database Design

E-advertisement is designed in order to simulate data stored in real online advertisement system database. This database consists of data related to the profile of member, profile of admin, details of category, subcategory, and item and information about the advertisement and others. Below are the tables in the E-advertisement of database.

tblAdmin

This table is created to store the administrator's detail of E-advertisement who is responsible in managing this system. Every time administrator logs in the system, the date and time of log in will be stored.

Column Name	Data Type	Length	Description
AdminID	Bigint	4	Primary Key. Identity of admin
AdminName	Varchar	16	Log in name for admin
Password	Text	50	Password
AdminPosition	Varchar	50	Position of admin
a_lastlogdate	Smalldatetime	4	Admin's last log in date
a_lastlogtime	Smalldatetime	4	Admin's last log in time
a_logcount	Varchar	50	Times of admin log in

Table 5-1: Table of admin

**tblMember**

When user registers as member of E-Advertisement, his or her details will be inserted into table member as reference. This table is used to store the member's personal information.

Column Name	Data Type	Length	Description
m_ID	bigint	8	Primary Key. Identity of member
m_firstname	Varchar	50	Member's first name
m_lastname	Varchar	50	Member's last name
m_IC	Varchar	16	Member's IC
m_password	Text	16	Member's password
m_dob	datetime	8	Member's date of birth
m_address1	Varchar	50	Member's address1
m_address2	Varchar	50	Member's address2
m_state	Varchar	20	State
m_city	Varchar	50	City
m_country	Varchar	30	Country
m_postcode	Char	5	Postcode
m_extension1	Varchar	10	Extension of telephone
m_tel	Varchar	10	Telephone number
m_extension2	Varchar	10	Extension of fax
m_fax	Varchar	10	Fax number
m_extensionm	Varchar	10	Extension of mobile phone
m_mobile	Varchar	10	Mobile phone number
m_email	Varchar	50	Member's email
m_regdate	Smalldatetime	8	Registration date
m_status	Bit	1	Active member? 0= inactive, 1= active
m_lastlogindate	Smalldatetime	4	Member's last log in date
m_lastlogoutdate	Smalldatetime	4	Member's last log in time

Table 5-2: Table of member

**tblAnnouncement**

All the announcements of the E-advertisement that administrator create will be stored in this table. Administrator can either show or not to display the announcement by setting the Show as 0 or 1. If the announcement is marked as show, all users can view the announcement at the main page of E-advertisement.

Column Name	Data Type	Length	Description
AnnounceID	Bigint	8	Primary Key. Identity of announcement
Title	Varchar	50	Title of the announcement
AnnounceDetails	Varchar	50	Details of announcement
Show	Bit	1	New? 0= Not show, 1= Show
AnnounceDate	Smalldatetime	4	Date of announcement

Table 5-3: Table of announcement

**tblCategory**

This table is created to store all the categories that are available in the E-advertisement. Under the category, there are subcategories and items.

Column Name	Data Type	Length	Description
categoryID	Int	4	Primary Key. Identity of category
categoryName	Varchar	50	Name of category

Table 5-4: Table of category

**tblSubCategory**

This table is under the tblCategories to store subcategories. Hence a relationship has to make between tblCategory and tblSubcategory as categoryID is foreign key for tblSubcategory.

Column Name	Data Type	Length	Description
subCategoryID	Int	4	Primary Key. Identity of subcategory
categoryID	Int	4	Foreign Key. Identity of category
subCategoryName	Varchar	50	Name of subcategory

Table 5-5: Table of sub category

tblItem

When member posts his or her items or services according the categories and subcategories, the details of the items will be inserted into table item.

Column Name	Data Type	Length	Description
itemId	Bigint	8	Primary Key. Identity of item
categoryID	Int	4	Foreign Key. Identity of category
subcategoryId	Int	4	Foreign Key. Identity of subcategory
itemName	Varchar	50	Name of item being posted
m_ID	Bigint	8	Foreign Key. Member ID
price	Varchar	10	Price of the advertisement
startDate	Smalldatetime	8	Date started to post advertisement
endDate	Smalldatetime	8	Due date of the advertisement
sdesc	Text	16	Short description about the adv
ldesc	Varchar	50	Long description about the adv
picture	Text	16	Actual size of picture of product
thumbnail	Text	16	Thumbnail of product
itemNew	Text	16	New item? 0= Not new, 1= New
itemShow	Text	16	Show? 0= Not Show, 1= Show

Table 5-6: Table of item

**tblForum**

This table is created to store whatever members post their messages in the forum. Details like date and time of the messages posted and the description of the messages, especially the member's id will also be put into this table.

Column Name	Data Type	Length	Description
forumID	Int	4	Primary Key. Identity of forum
m_ID	bigint	8	Foreign Key. Identity of member
FourmDate	Smalldatetime	8	Date of forum posted
ForumTime	Smalldatetime	8	Time of forum posted
ForumDescription	Varchar	50	Forum description

Table 5-7: Table of forum

**tblMail**

For E-advertisement system, users can send mail to administrator. Hence, the purpose of this table is to store all the mails that sent by users. Administrator can be alerted with the new mail if the "MailViewed" is set as 0.

Column Name	Data Type	Length	Description
MailID	Bigint	8	Primary Key. Identity of mail
Mailtitle	Varchar	50	Title about the mail
MailDetails	Varchar	50	Details about the mail
m_ID	bigint	8	Member ID
MailDate	Smalldatetime	4	Date of mail
MailTime	Smalldatetime	4	Time of mail
MailViewed	bit	1	Viewed? 0= Unread mail, 1=viewed

Table 5-8: Table of mail

**tblPayment**

For E-advertisement, every advertisement posted will be charged. For ensuring all the payment is received. A table named tblPayment is created to show the status of payment whether it is passed, unknown or cancelled. Creation of tblPayment can also be a record or reference of all payments is made.

Column Name	Data Type	Length	Description
payID	bigint	8	Primary Key. Identity of payment
m_ID	bigint	8	Member's ID
m_IC	Varchar	16	Member's IC
ItemID	Varchar	50	Item ID
payDate	Smalldatetime	8	Payment date
amount	Varchar	50	Amount paid
status	text	16	1= passed, 2= unknown, 0=cancelled

Table 5-9: Table of payment

### 5.3 Interface Design

The main purpose of interface design is to provide the best way for users to interact with the computers. It is very vital to provide a good interface because with having good interface, it can attract more people to use the website. It also can improve personnel productivity, quality of work performed and effectiveness of an organization. Hence, for a website design, it is important to take into considerations the user's needs and preferences. Components of the whiteboard should be displayed in an organized and easy-to-use pattern.

Some key elements are addressed during the design of E-advertisement:

- i. Consistency in the menu selection, data display, data input, message prompts is important. An inconsistent user interface will only confuse the users.
- ii. Meaningful feedback should be displayed to the particular cases to ensure that user will be informed and directed for further actions. Only information that is relevant to the current content will be displayed.
- iii. Confirmation messages will be asked before certain action is taken. For example, a message will be popped out when user or administrator would like to delete record.

For E-advertisement, there are two different types of interfaces. One is for the user's interface and the other is for administrator's interface. User's interface is designed for user so it needs to be attractive, neat and user friendly.

5.3.1 Home Page of E-advertisement

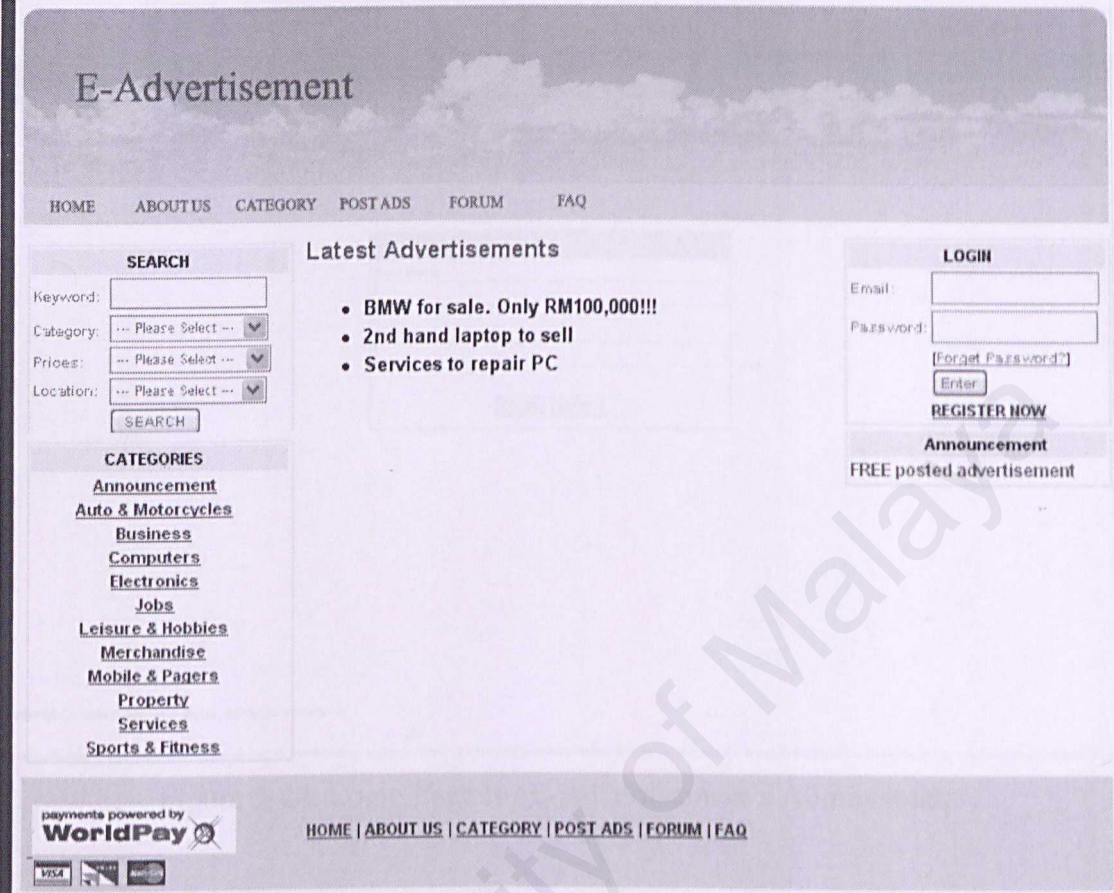


Figure 5-21: Home Page of E-advertisement

5.3.2 Login Page for E-Advertisement’s Administrator

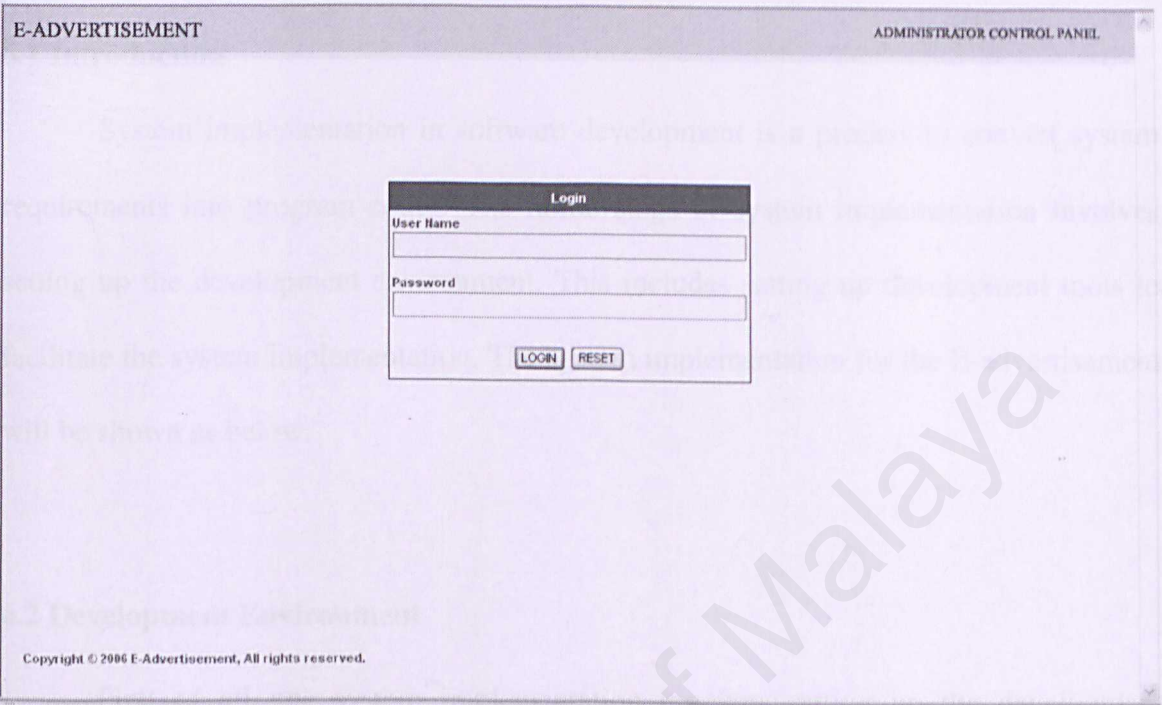


Figure 5-22: Login Page for E-Advertisement’s Administrator

Administrator is more focusing on the usable of the system and privacy, hence any back-end pages are not allowed to access for everyone except administrator.

## **CHAPTER 6: SYSTEM IMPLEMENTATION**

### **6.1 Introduction**

System implementation in software development is a process to convert system requirements into program codes. The initial stage of system implementation involves setting up the development environment. This includes setting up development tools to facilitate the system implementation. The system implementation for the E-advertisement will be shown as below.

### **6.2 Development Environment**

First of all, the system implementation involves setting up the development environment. Development environment is very vital to the development of a system because suitable hardware and software will determine the success of the project.

#### **6.2.1 Hardware Configuration**

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

- Intel Pentium IV 2.0 Ghz
- 256MB SD RAM
- 80 GB Hard Disk
- 15" color monitor capable of 1024 x 768 resolution
- Standard Input and Output
- Others standard computer peripherals

6.2.2 Software Configuration

Developing the E-advertisement needs 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 based on the percentage of specific usage.

Software	Usage	Description
Microsoft Windows XP	System Development	Operating System
Microsoft SQL Server 2000	Database	Database Management System
Internet Explorer 6.0	System Development	Web Browser
Microsoft Word	System Development	Documentation
Macromedia Dreamweaver	System Development	Interface Design

Table 6-1: Software Used

6.3 Platform Development

The platform development includes setting up the operating system and web server must be set up is the first step before starting any works.

6.3.1 Setting up Operating System

The operating system for this system is Microsoft Windows XP. 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.

6.3.2 Configure Internet Information Services 6.0

Internet Information Server (IIS) for free from the Windows XP Pro installation CD and configure it to run on the system by the instructions below:

1. Put the Windows XP Professional CD-Rom into your CD-Rom Drive.
2. Click 'Start', click 'Setting', click 'Control Panel' and select 'Add or Remove Programs'.
3. Click 'Add/Remove Windows Components'. The Windows Components Wizard appears.
4. Place a tick in the check box for 'Internet Information Services (IIS)' leaving all the default installation settings intact as follow:

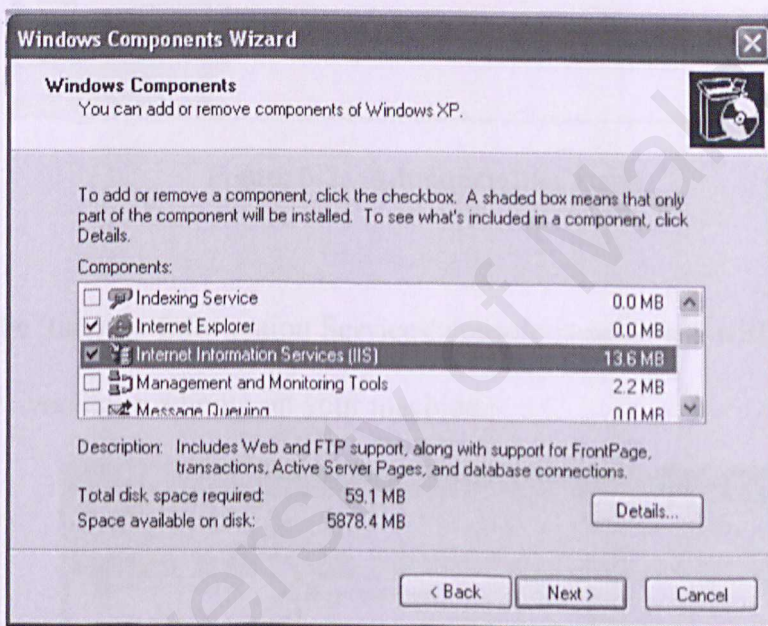


Figure 6-1: Windows Components Wizard

5. Then follow the on-screen instructions to install IIS.
6. To ensure the IIS is being installed, click 'Administration Tools' in the 'Control Panel'. (The 'Internet Information Services' console can be found in the 'Administration Tools' in the 'Control Panel' under 'Performance and Maintenance', if you do not have the control panel in Classic View).
7. Double-click on the 'Internet Information Services' icon.

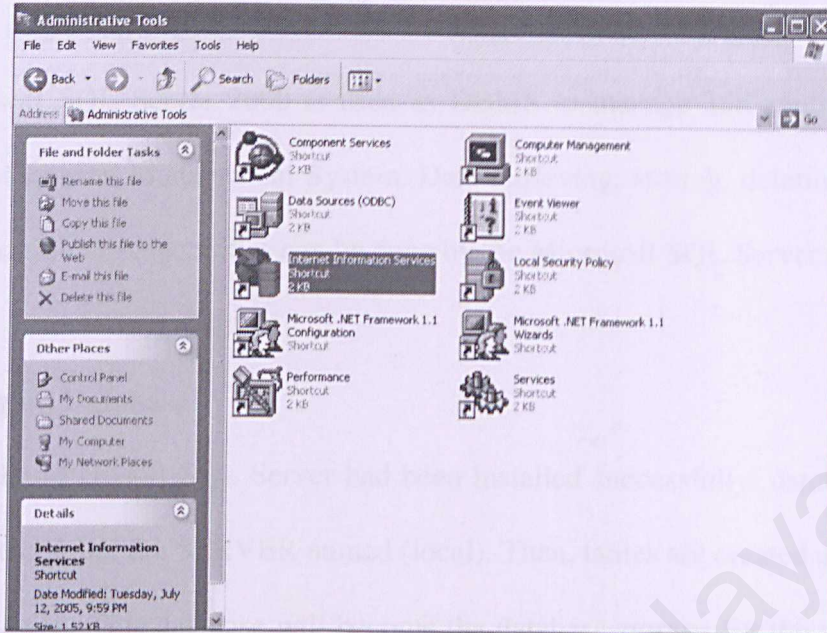


Figure 6-2: Administrative Tools

8. Once the 'Internet Information Services' console is open you will see any IIS web services you have running on your machine.

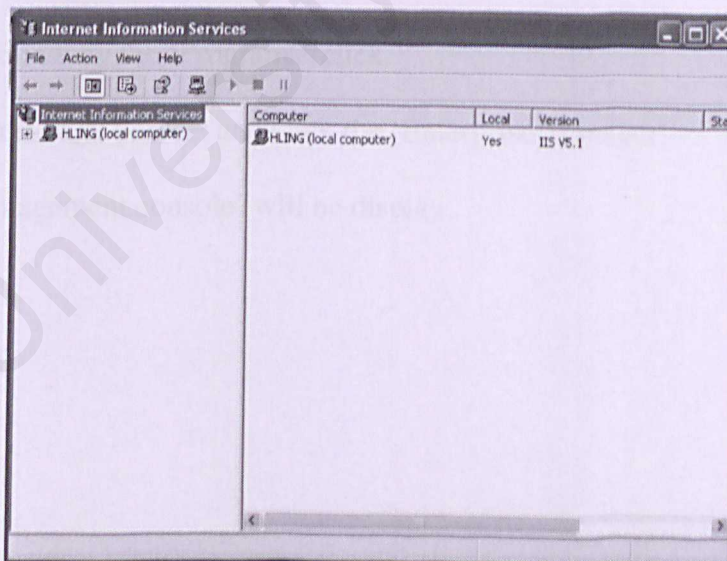


Figure 6-3: Internet Information Services

## 6.4 Database Implementation

Microsoft SQL Server 2000 is used as DBMS to manage and control database access in Kindergarten Management System. Data retrieving, storing, deleting and other information manipulation activities can be done by the Microsoft SQL Server 2000.

### 6.4.1 Setting up Database

After the Microsoft SQL Server had been installed successfully, database named Eads was created under the SERVER named (local). Then, tables are created according to the database design. This database will become the database storage for the system. The tables are used to store all the data used in all modules of this web application. Allocating the hard disk space for the database to maximize the performance of the SQL Server and to ensure there is enough of space to store the record.

To ensure that the SQL Server has been installed:

1. Click 'Start' follow by the 'Programs' click.
2. Go to 'Microsoft SQL Server' and click the 'Enterprise Manager'
3. 'Microsoft management console' will be display.

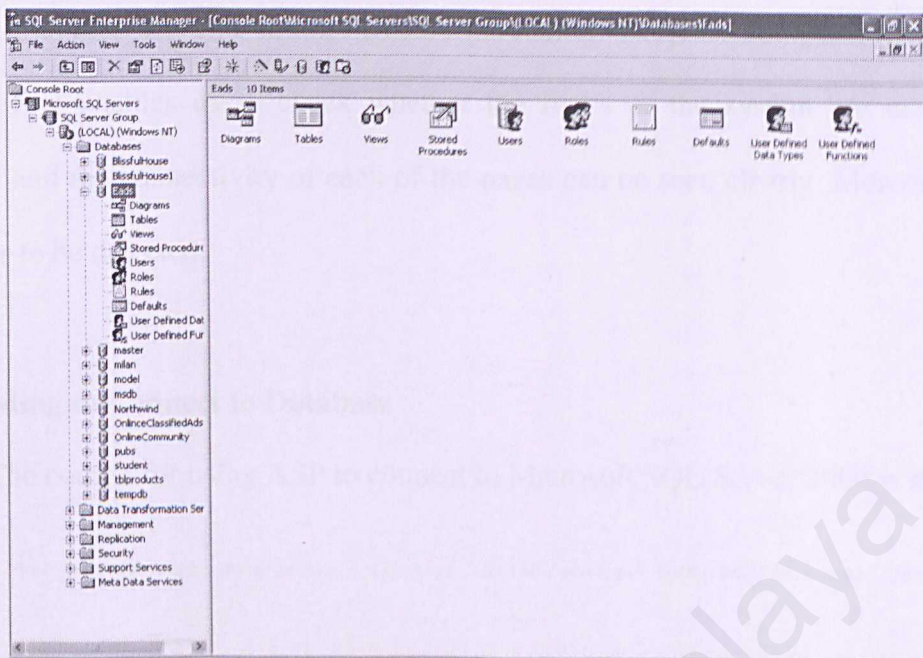


Figure 6-4: Console Root/Microsoft SQL Server

## 6.5 Program Implementation

E-advertisement is a web application so most of the scripts are coded decided using ASP, code behind Java script that could support and enhance web application. Good coding approach provides easy identification and clear guide for programmers during the maintenance phase of the system.

### 6.5.1 Coding Approach

The coding approach that was used is bottom-up approach. The bottom-up approach entails the development of the simple modules first followed by the complex module. Each lower-level function and procedure was developed individually which are then integrated into appropriate high-level modules accordingly. The purpose of using the Bottom-up approach is to enable tests to be done on the simple module while the

complex modules are still in the process of coding. Besides, completing the simple modules first enables us to check whether the flows of the system are the same as designed and the connectivity of each of the pages can be seen clearly. Moreover, faults are easier to be detected.

### 6.5.2 Coding to Connect to Database

The coding for using ASP to connect to Microsoft SQL Server 2000 is shown.

```
<%  
sConnStr = "Provider=SQLOLEDB; Data Source = (local); Initial Catalog = Eads; User Id = user; Password=123"  
%>
```

### 6.5.3 Coding to Select, Add, Update and Delete Records

Use forms to get input from users and perform select, add, update and delete action using store procedures created in SQL Server.

- i. Select records from database

```
<%  
OpenConnection  
  
Set Conn = Server.Createobject("adodb.connection")  
Conn.open sConnStr  
  
SQL = "SELECT tblCategory.* FROM tblCategory order by CategoryName"  
Set Rs = server.CreateObject("ADODB.Recordset")  
Rs.Open SQL,Conn,3,2,1  
%>
```

ii. Add Records from database

```
<%
OpenConnection
Set Conn = Server.CreateObject("adodb.connection")
Conn.open sConnStr

SQL = "insert into tblCategory(categoryname,categorynew,categoryenabled" & _
" )" & _
" values(" & _
" '" & Convert$(Request.Form("categoryname")) & "'," & _
" '" & Request.Form("new") & "'," & _
" '" & Request.Form("show") & "'" & _
")"

Conn.Execute(SQL)
%>
```

iii. Update Records from database

```
<%
openConnection
Set Conn = Server.CreateObject("ADODB.Connection")
Conn.open sConnStr

id = Request("id")

SQL = "Update tblCategory set categoryname='" & Convert$(Request.Form("categoryname")) & "'" & _
",categorynew='" & Request.Form("new") & "',categoryenabled='" & Request.Form("show") & "'" & " where categoryid=" & id
Conn.Execute(SQL)
%>
```

iv. Delete Records from database

```
<%
OpenConnection
Set Conn = Server.CreateObject("ADODB.Connection")
Conn.open sConnStr
id = Request("id")

SQL = "delete from tblCategory where categoryid=" & Request.QueryString("id")

Conn.Execute(SQL)
%>
```

## Include File

```
<!--#include file="include\header.asp"-->
```

The above command is used to display the header banner, which scripts indeed are written in all files of the system.

## Java Script Input Control

Using the Java Script to check form whether the field is empty.

```
<script language="javascript">  
function chkfrm(){  
    if(document.frm1.categoryname.value==""){  
        alert("Please Enter Category.");  
        document.frm1.categoryname.focus();  
        return false;  
    }  
    return true;  
}  
</script>
```

## CSS(Cascading Style Sheets)

CSS (Cascading Style Sheets) is also used to gain better control of the interface design.

```
.arial1 {  
    FONT-SIZE: 12px;  
    FONT-FAMILY: Arial;  
    font-weight: bold;  
    color:#4B5016  
}  
  
.arial2 {  
    FONT-SIZE: 11px;  
    FONT-FAMILY: Arial;  
    font-weight: bold;  
    color:#000000  
}  
  
.arial3 {  
    FONT-SIZE: 12px;  
    FONT-FAMILY: arial;  
    font-weight: bold;  
    color:#CC3300  
}  
  
.arial4 {  
    FONT-SIZE: 12px;  
    FONT-FAMILY: Arial;  
    Font-weight: bold;  
    color:#000000  
a:link.titleLink1 {  
    COLOR: #0000FF;  
    TEXT-DECORATION: underline;  
    font-size:'9pt';font-weight:'normal';  
    font-weight: normal  
}  
a:visited.titleLink1 {  
    COLOR: #0000FF;  
    TEXT-DECORATION: underline;  
    font-size:'9pt';  
    font-weight:'normal';  
    font-weight: normal  
}  
a:active.titleLink1 {;  
    COLOR: #0000FF;  
    TEXT-DECORATION: underline;  
    font-size:'9pt';  
    font-weight:'normal';  
    font-weight: normal  
}  
a:hover.titleLink1 {  
    COLOR: #CC0000;  
    TEXT-DECORATION: underline;  
    font-size:'9pt';  
    font-weight:'normal';  
    font-weight: normal;  
}
```

## **6.6 Problem Encountered and Solution**

When I am doing the E-advertisement, there are some problems that I faced. However, with the help of rich resources available on the Internet such as forum and bulletin board, reference book and friends, I manage to overcome most of the problems.

### **6.6.1 Lack of knowledge in ASP and Java Script**

A lot of resources are available in the Internet about ASP and Java Script. Most of them could be found the explanation in the Internet and this has become one of the solutions for this particular problem encountered.

The knowledge on irregularities and unorganized coding style and methods is most serious problems. There have no standard style of code is used with the reason that misunderstanding different sample codes in the reference books.

In addition, friends also help lots to solve problem during the development of system. Trying to understand the coding using longer time is another way to overcome these problems. Internet also provides a lot of resources for the solutions when the problems were found.

## CHAPTER 7: SYSTEM TESTING

### 7.1 Introduction

Software testing of the website is an extremely creative and intellectually challenging task, which considered as a part of software engineering. Software testing for the website involves operation of a system or application under controlled conditions and evaluating the results. System testing is also involved the process of validation and confirmation of the system to ensure that the quality of the system has meet the specific requirement. Software testing help should intentionally attempt to make things go wrong to detect the incorrect things happen and the necessary things do not work.

During the system testing process, the specification, design, and program will be reevaluated to ensure that it is error free. Generally, the purposes of system testing are as follow:

- i. To detect and verify errors that exists during the implementation phase.
- ii. To minimum amount of time and effort on rework.
- iii. To make sure the requirements and specification of the website have been meet.
- iv. To correct all the errors and bugs.

## 7.2 Testing Strategies

There are a lot of strategies can be used in the software testing of the system. The testing strategies are divided into 4 main tests:

- i. Unit Testing
- ii. Module Testing
- iii. Integration Testing
- iv. System Testing

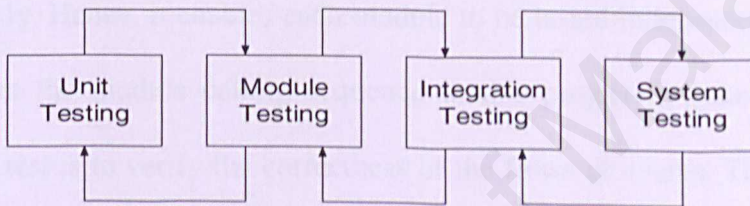


Figure 7-1: Testing Process

### 7.2.1 Unit Testing

Unit test is the first process to test the individual and the smallest component to ensure that function work properly. Each component is tested independently. Unit test is performed concurrently with the development process to test particular functions or code modules. Detailed knowledge of the internal program design and code is required in unit testing. Unit testing is easily done as the application has a well-designed architecture with tight code.

Following steps are used in carry out the unit testing for E-advertisement:

- i. Control objects are tested to ensure its functionality.

- ii. Test cases are developed to ensure that the input is properly converted into the desired output.
- iii. The code of the program is examined by reading through it to spot for possible algorithm, data and syntax faults.

Different data types are used to test the error handling function.

### **7.2.2 Module Testing**

Module testing is a collection of dependent components that encapsulates related components only. Hence, it enables each module to be tested independently. This testing will ensure that the module calling sequence in this project is systematic. The main purpose of the test is to verify the correctness of the flows of events. Therefore, with the system development process being carried out module by module, the module testing will also be carried out once a module has been completed.

### **7.2.3 Integration Testing**

Integration test is needed when all modules are combined. This type of testing is especially important to client/server and distributed systems.

Integration testing provides systematic approaches for assembling the software in an incremental fashion. There are generally two approaches, which are top down integration and bottom up integration.

The approach that is used in integration testing for this system is bottom up integration. Bottom up testing involves integrating and testing the modules at the lower levels in the hierarchy, and then working up the hierarchy of modules until the final

module is tested. This approach does not require the architectural design of the system to be completed so that it can start at an early stage in the development process.

Generally, integration testing is carrying out to ensure the interface between modules can function properly. The most common problem that arises in large software system is subsystem interface mismatches.

#### **7.2.4 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.

There are several types of system testing, which included:

i. **Function Testing**

Function testing focuses on the functionalities of the system. Black-box type testing geared to functional requirements of an application. This testing has high probabilities in detecting the faults and these are increased the quality of the system.

ii. **Performance Testing**

This testing is used interchangeably with stress and load testing. Ideally performance testing is performed to compare the integrated modules with the non-functional system requirements. In this testing, the system response time degrades or fails is tested. Performance testing is useful to describe such tests as system functional testing while under unusually heavy loads, heavy repetition of certain actions or inputs, input of large numerical values, and large complex queries to a database system.

### iii. Acceptance Testing

Acceptance Testing is the final testing based on specifications of the end-users. Users of the website lead the acceptance testing and define their own time data sets that used as test cases.

## 7.3 Test Cases

Test cases are developed to show that the input is properly converted to the desired output. They are used as some set of structural input is given and the output is observed. The test cases are designed to perform unit testing until integration testing with the specific results. Repetitive testing is done on a single test case to prove the consistency of the results. For example:

- i. The action that users try to access the post advertisement and mailbox pages before login or try to access the administrator page is forbidden.
- ii. The login password must match the password that users entered during the registration.

## CHAPTER 8: SYSTEM EVALUATION

### 8.1 Introduction

System evaluation is the last phase of developing a system and a vital phase before delivery the system to the end users. System evaluation is related to user environment, attitudes, information priorities and several other concerns that are to be considered carefully before effectiveness can be concluded.

This section has shown the overall conclusion of the system development. Assessment about the successful or unsuccessful of the project would be evaluated. Limitation and future enhancement also included in this phase. The learning experience throughout the different phases of the project will also be mentioned inside this critical evaluation chapter.

### 8.2 System Strengths

Below are the strengths of E-advertisement:

- i. Simple and user friendly interface

The color / interface of the website are attractive. Besides, it is user friendly. The user will not feel boring navigate through the website. The graphics enhance the website make it more attractive and nicer.

- ii. Provide database maintenance

The administrator can easily add, edit and delete the records using the forms provided. As a result, the administrator no need to add / edit/ delete the records through database and can do it anywhere as well as anytime.

iii. Implements error handling

To avoid run time error, this system is developed with error handling function.

Error message will be displayed when exceptions encounters.

iv. Significant validation on input data

Check for the validation of every data input in the field and prompt the user of invalid data being input and ask for valid data. Data field that required will also prompt the user about the error if the user does not fill the required field.

v. Fast Response Time for Information Retrieval

The Web pages are designed in such a manner that they are loaded in a reasonable amount of time to ensure users need not wait for a long time to view the pages. Heavy graphics and big size pictures are avoided.

vi. Effective User Login and User Identification System.

Users are protected by authentication feature. Login and password are required before allowing the users access to the protected site. All types of users using a same login page to login their account. The system is able to identify different type of user and the level of access to the system. The system will only allow the user to access to respective links only.

### 8.3 Weaknesses and System Limitations

#### i. Lack of Security Features

Only the basic security features involving the session variables manipulation are implemented in the website. This only for determining the status and identification of the user and make sure that a user whether is granted to access to the specific function or not. Anyway, it is lack of advance security features implemented because of the time constraint. Security issue is the one of the most important issue for the web-based system.

#### ii. Browser limitation

This system can only run in Internet Explorer 5.0 and above. This is due to the deployment of VBScript and java Script language, which are the default supporting language for ASP. User uses browsers that do not support these features will not be able to use the functions available in this system.

#### iii. Limited reporting analysis

Functions in E-advertisement are limited to few report generation. Besides, no graphical illustrations such as chart and bar chart.

#### iv. Language limitation

This system only provides English version.

## 8.4 Future Enhancements

Below are the suggestions for E-advertisement:

i. Error Detection Features

More comprehensive error detection features to ensure that the valid input is being passed to the database server and make sure that the system is robust and easy to maintain the reliability of the system.

ii. Provide Report Generating Function

This function should be included in futures because this function will allow user to generate report in printable format regarding the survey data, results and graphical illustrations such as chart, bar chart and so on.

iii. Provide other languages version

Since the system's target users are Malaysian Citizens, so besides English, language of Bahasa Malaysia can be provided.

## 8.5 Knowledge and Experience Gained

By doing this project, I have learnt a lot of things from different aspect. During the literature review, a lot of research and studies have been made to find out all the relevant information and gathered the information. The information can be used for future references.

Besides that, communication and presentation skills are really vital during the viva session. Presentation material must be attractive and also informative to describe the whole system. At the same time, the fluency of language and body language also play an important role during the whole presentation. The presentation experience provides me a step forward as to prepare me for the future working environment.

During the system coding and implementation, a lot of knowledge and techniques in ASP, HTML, VBScript, and JavaScript are gained. By practically apply them in the application; it is able to improve the understanding about the languages themselves as well as their integration.

Moreover, during discussion with another partner, a lot of communication skills are required to achieve cooperation and comprehension. It provides advantage in exploring circumstance that similar to future working environment.

Involvement and experiences gained during system development have provided the change for self-improvement and evaluation. System design and coding give a great chance to express my own opinions and ideas.

## REFERENCES

1. C.C. Eric, N.H Narayana. (2000). Comparing interfaces based on what users watch and do. Proceedings of The Symposium on Eye Tracking Research & Applications, Florida, United States, pp. 29-36. Retrieved October 14, 2005, from the ACM Digital Library.
2. C.C. Hsu, I.C. Wu. "An event-driven framework for inter-user communication applications". Information and Software Technology, 10 August 2005.
3. B. Myers. "Challenges of HCI design and implementation". Interactions, Vol 1, No. 1 (January, 1994): 73-83.
4. S.C. Roger. How to create advertising that works. Journal of Business & Industrial Marketing, Vol 10, No. 2 (1995): 20-33.
5. C. Rohrer, J. Boyd. (2004). The rise of intrusive online advertising and the response of user experience research at Yahoo!. Conference on Human Factors in Computing Systems, (CHI'04), Vienna, Australia, April 24-29, 2004, pp. 1085-1086. Retrieved August 2, 2005, from the ACM Digital Library.
6. N. Surendra, P.D. Nikunj. "Web Home Pages As Advertisements". Communications of the ACM, Vol 42 (1999): 8.

## ONLINE RESOURCES

1. ClassifiedAds.com: <http://www.classifiedads.com/> (Last accessed: 15 September, 2005).
2. Media Exchange: <http://www.media.com.my> (Last accessed: 15 September 2005).

3. SearchWin2000.com: <http://searchwin2000.techtarget.com/> (Last accessed 14 September, 2005).
4. Want ads: <http://www.wantadsonline.com/> (Last accessed: 14 September, 2005).
5. Webportal Malaysia: <http://www.webportal.com.my/> (Last accessed: 15 September, 2005).
6. PasarBorong.com: <http://pasarborong.com/> (Last accessed: 10 October, 2005).
7. Ebay: <http://www.ebay.com/> (Last accessed: 25 March, 2005).
8. Information Fluency: [http://info.wlu.edu/literature\\_review/literature\\_review.html](http://info.wlu.edu/literature_review/literature_review.html) (Last accessed: 25 March, 2006).
9. Media College: <http://www.mediacollege.com/internet/javascript/pros-cons.html> (Last accessed: 26 March, 2006).
10. Wikipedia: [http://en.wikipedia.org/wiki/Spiral\\_model](http://en.wikipedia.org/wiki/Spiral_model) (Last accessed: 28 March, 2006).

## USER MANUAL

Our user manual will provide step by step instruction which will guide and

facilitate the user effectively in order to use the system.

### 1. Login

# APPENDIX

Search here by  
entering key word,  
category, price and  
location.

Figure 1. Main Page of the Login

1. Key in the Email Address and Password in Login field as is shown in the Figure 1.
2. Click Submit button. The system will check the email address and the password. If the email is correct, the main page after login will be shown below.

Figure 2)

# USER MANUAL

This user manual will provide step-by-step instruction, which will guide and facilitate the user effectively in order to use this system.

## 1. Login

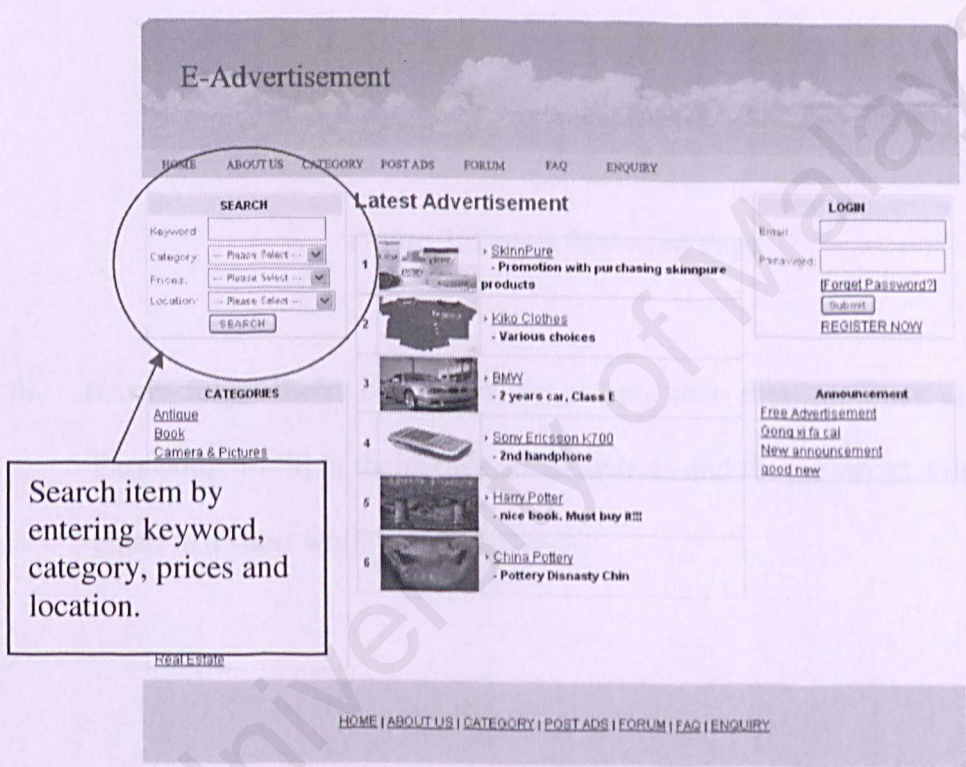


Figure 1: Main Page before Login

- i. Key in the Email Address and Password in Login textboxes as shown in the Figure 1.
- ii. Click Submit button. The system will validate the email address and the password. If the detail is correct, the main page after login will be show (refer Figure 4).

E-Advertisement

HOME ABOUT US CATEGORY POST ADS FORUM FAQ ENQUIRY

Forget Password

Member ID (email address ) :

Submit Reset

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY

Figure 2: Forget Password Page

- iii. If user forget their own password already then they can click on the “Forget Password” to fill in their own email address and the password will send to their email in a short while (refer Figure 2).

## 2. New User Registration

**E-Advertisement**

HOME ABOUT US CATEGORY POST ADS FORUM FAQ ENQUIRY

**REGISTRATION FORM**

\*Indicates the Compulsory fields

First Name :  \*

Last Name :  \*

I/C :  \*

Date of Birth : Day  Month  Year  \*

Address #1 :  \*

Address #2 :  \*

State :  --- Please Select --- \*

Postcode :  \*

City :  \*

Tel : +  -  \*

Fax : +  -  \*

Mobile Tel : +  -  \*

Email :  \*

Your email will become your login ID while login time.  
Please make sure it is a valid email address.

Password :  \*

At least 6 character long

Reconfirm Password :  \*

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY

Figure 3: New User Registration Page

- i. Click the Register Now link as shown in Figure 1. User Registration page will be shown (refer Figure 3)
- ii. Key in all the corresponding information in the relevant fields. \* means compulsory.
- iii. Click Submit to complete the registration. System will validate the registration to check if the user already registered. A message will be shown to state if the user already in list.

3. Main Page

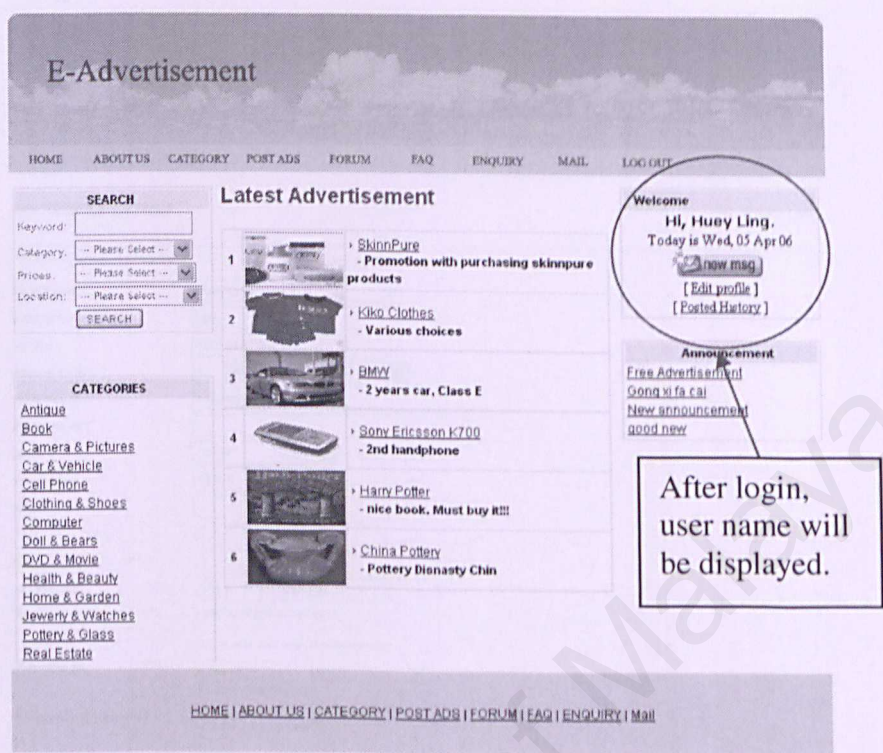


Figure 4: Main Page after Login

- i. Those users whose are not member yet are not accessible into the Post Ads, Forum, Enquiry and Mail. Hyperlink of Categories and Announcement are also provided in main page.

4. Edit Profile

E-Advertisement

HOMEABOUTUSCATEGORYPOSTADSFORUMFAQENQUIRYMAILLOG OUT

MY PROFILE DETAILS

Hi, Huey Ling

\*Indicates the Compulsory fields

First Name :

Lee

\*

Last Name :

Lee

\*

IC No:

830101015001

\*

Date of Birth :

1

January

1983

\*

Address #1 :

1 Seksyen 17/21B

\*

Address #2 :

\*

State :

Johor

\*

Postcode :

42400

\*

City :

\*

Tel :

+

\*

Fax :

+

\*

Mobile Tel :

+ 013

7891234

\*

Email :

hueyling9@hotmail.com

\*

Your email is your Login ID while login time.

Password :

\*\*\*\*\*

\*

At least 6 characters long

Reconfirm Password :

\*\*\*\*\*

\*

Submit

Reset

Cancel

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY | Mail

Figure 5: Edit Profile Page

- i. After login, the Edit Profile hyperlink will be shown in the home page.
- ii. Click the Edit Profile hyperlink. The Edit Profile Page will be appeared.
- iii. Members can edit the information in theirs own profile.
- iv. Click Submit button. The profile will be updated.

5. Post Ads

E-Advertisement

HOMEABOUT USCATEGORYPOST ADSFORUMFAQENQUIRYMAILLOG OUT

Post Advertisement

Welcome: [Bueyting]

\*

Category

Sub Category

Item Name

Upload Picture

Price

Start Post Date

Duration Posted (days)

State

Short Description

Long Description

Book

Story Book

Shaggy Dog

C:\Documents and Settings\Admin User\ (JPG and GIF ONLY, Less than 1MB) Browse...

12.90

4 April 2006

7 days

Pulau Pinang

Shaggy Dog

A funny story book !!!

Post

Cancel

HOMEABOUT USCATEGORYPOST ADSFORUMFAQENQUIRY

Figure 6: Post Advertisement Page

- i. Clicks on the Post Ads button of the header to post new ads.
- ii. Key in all the corresponding information in the relevant fields. \* means compulsory (refer Figure 6)
- iii. Click Cancel to return to the Main Page to terminate the posting process.

**E-Advertisement**

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY | MAIL | LOG OUT

Post Advertisement Welcome [huseyling]

Category	: Book
Sub Category	: Story Book
Item Name	: Shaggy Dog
Price	: 12.9
Start Post Date	: 4/4/2006
End Post Date	: 4/11/2006
State	: Pulau Pinang
Short Description	: Shaggy Dog
Long Description	: A funny story book !!!
Posting Fee	: RM 10

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY

Figure 7: Confirmation Posting Page

- iv. The further process will be continued and member will ask for confirmation before payment transaction can be made in the next step (refer Figure 7).

**E-Advertisement**

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY | MAIL | LOG OUT

Payment Advertisement Welcome: [huseyling]

\* Indicates the Compulsory fields

Item Name	: Shaggy Dog
Price	: RM 10
Payment Method	: <input checked="" type="radio"/> Master Card <input type="radio"/> Visa
Credit Card No.	: <input type="text" value="1234567891234567"/>
Credit Card Expired Date	: <input type="text" value="15/3/2007"/>

Eg (mm/yyyy)

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY

Figure 8: Payment Transaction Page

- v. Member is required to fill in the payment methods; credit card number and expired date to precede the payment transaction (refer Figure 8).

## 6. Posted History



Figure 9: Posted Advertisement Page

- i. Click the Posted History hyperlink.
- ii. Members can edit theirs own posted advertisement which are still valid in edit item page (refer Figure 9 )
- iii. Click Submit button. So, details of advertisement will updated automatically.

7. Category

Users can search all categories by click on the Category button on the header, a list of categories included its own subcategories and items which are available in the E-Advertisement will be listed out.

8. Forum

- i. Click on the forum button on the header of E-Advertisement.
- ii. Forum page included what category inside are shown (refer Figure 10).

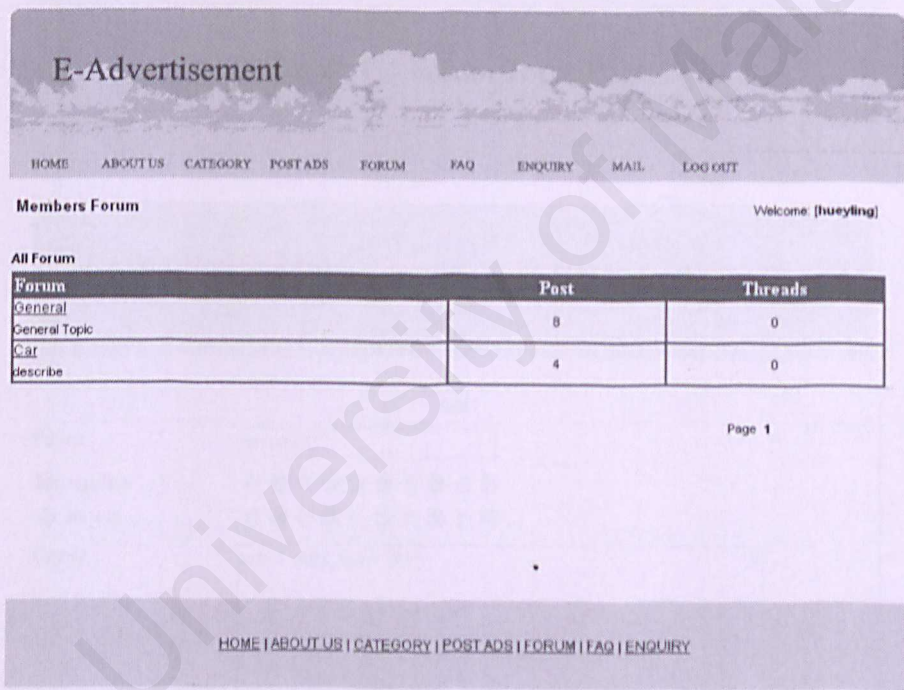


Figure 10: Forum Page

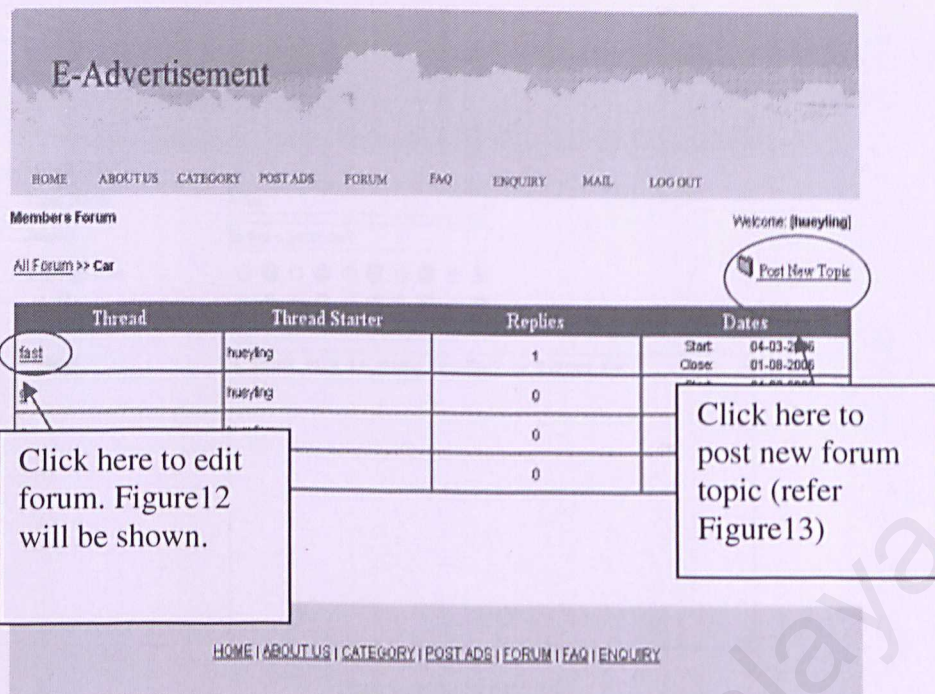


















Figure 11: Forum Topic Page

**E-Advertisement**

Add

Subject :

Message Icon : ☐        

☒ No icon ☐        

Content :

Figure 12: Edit / Reply Forum Page

## E-Advertisement

Forum Topic

Topic Name :

Subject :

Message Icon : ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ No icon ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Content :

Figure 13: Add Forum Topic Page

## E-Advertisement

[HOME](#) | [ABOUT US](#) | [CATEGORY](#) | [POST ADS](#) | [FORUM](#) | [FAQ](#) | [ENQUIRY](#) | [MAIL](#) | [LOG OUT](#)

Forum Welcome (hueyling)

All Forum >> Car >> fast

Author	Tlread	
hueyling Member Since : 27-02-2006 3:44:00 PM From : hueyling Replied on : 04-03-2006	<b>Subject :</b> too fast asd	
hueyling Member Since : 27-02-2006 3:44:00 PM From : hueyling Replied on : 04-04-2006	<b>Subject :</b> i dont think so i think it is fast too	

[HOME](#) | [ABOUT US](#) | [CATEGORY](#) | [POST ADS](#) | [FORUM](#) | [FAQ](#) | [ENQUIRY](#)

Figure 14: Forum Posted Page

- iii. Click on the particular topic in Figure 14 to view others member's posted forum.

9. Enquiry

E-Advertisement

[HOME](#) [ABOUT US](#) [CATEGORY](#) [POST ADS](#) [FORUM](#) [FAQ](#) [ENQUIRY](#) [MAIL](#) [LOG OUT](#)

Enquiry

Welcome: [hueyling]

Fields indicated with an asterisk (\*) are mandatory information required

Title

Comments / questions ?

Submit

Clear

[HOME](#) | [ABOUT US](#) | [CATEGORY](#) | [POST ADS](#) | [FORUM](#) | [FAQ](#) | [ENQUIRY](#)

Figure 15: Enquiry Page

- i. Click on the enquiry button when member has something to ask the administrator.
- ii. Title and comments or questions are required to fill in before submission is made.

10. Mail

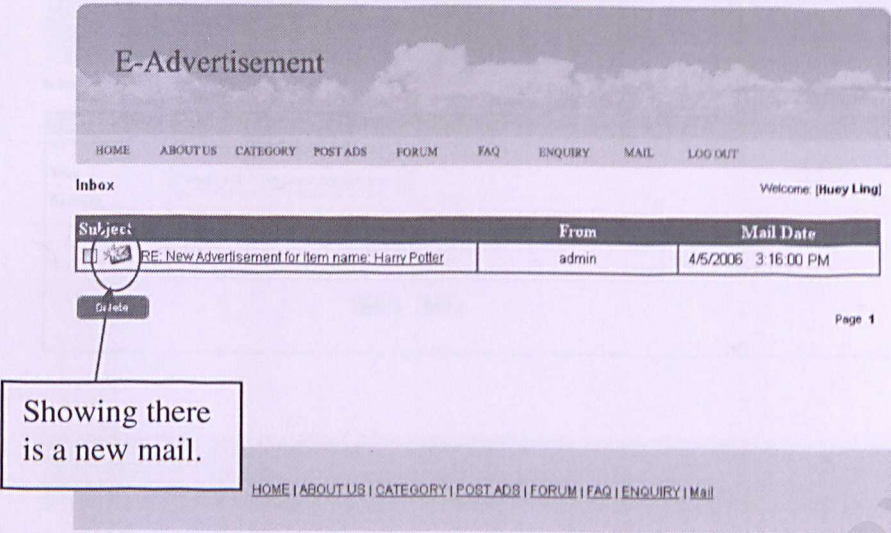


Figure 16: Email Page

- i. Click on the Email button at the header then the Email page will be shown (refer Figure 16).
- ii. Click on a particular email in Figure 16 to view the e-mail's details (refer Figure 17).

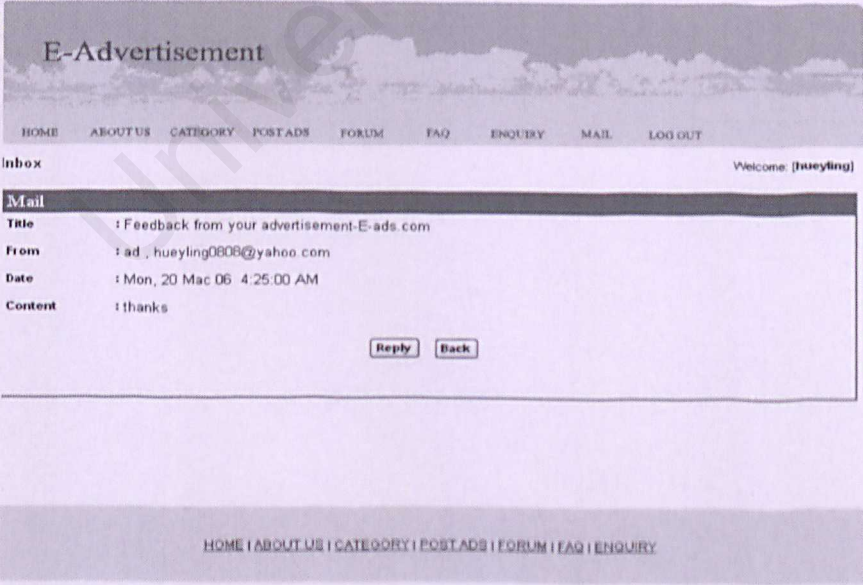


Figure 17: Mail's Details Page

E-Advertisement

HOME ABOUT US CATEGORY POST ADS FORUM FAQ ENQUIRY MAIL LOG OUT

Inbox Welcome: [hueyding]

**Send Mail**

To : ad , hueyding0808@yahoo.com

Title : Feedback from your advertiser

Content :

HOME | ABOUT US | CATEGORY | POST ADS | FORUM | FAQ | ENQUIRY

Figure 18: Reply Mail Page

- iii. Click on the Reply button to reply email and Back button to back to the Figure 17 (refer Figure 18).