

Accommodation Service System

By

All Imran Bin Mohd Nor

Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Information & Communication Technology)

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CERTIFICATION OF APPROVAL

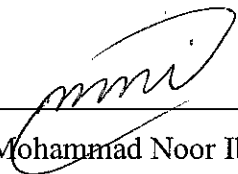
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A project dissertation submitted to the
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in partial fulfilment of the requirement for the
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Approved by,



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UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK

July 2007

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



ALL IMRAN BIN MOHD NOR [7965]

ABSTRACT

This paper is about a study of developing an Accommodation Service System (ACMSS) – a kind of Web-based application. The scope of this project will be the reservation processes and managing the hotel rooms via ACMSS that can be access through online. These include creation of necessary database for hoteliers and hotel customer/guest as well as user interface in building the application and its implementation. This system is created specially for certain hotels. Development tools being used are Apache, PHP, MySQL, phpMyAdmin, and Macromedia Dreamweaver MX. The intended users for this system are hotel customers/guest, and hoteliers such as front desk clerk/receptionist or the hotel management staff. Further research on human-computer interaction (HCI) and the advantages of Web-base application were carried out. Also covered in this report is the current problems that encountered by most of the hoteliers with their existing system. Prototype was chosen as a methodology model that will be applied in the development of such system. Study shows that, Web-based application have several advantages over their more traditional downloadable software programs thus it promote to replace it. As for the results and discussions, questionnaires were distributed and the findings were delegated to separate segments; hotel customers and the front desk. From the result and findings, it shows that the necessary of having Web-based system that can be accessed through online/Internet together with a good user-friendly interface are very encouraging. Thus, it derived the motivation to get involve and developed such application for the sake of the system users.

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TABLES OF CONTENTS

CERTIFICATION OF APPROVAL	ii
CERTIFICATION OF ORIGINALITY	iii
ABSTRACT	iv
AKNOWLEDGEMENT	v
CHAPTER 1	1
INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.2.1 Problem Identification	3
1.2.2 Project Significance	4
1.3 Objectives of the Project.....	4
1.4 Scope of Study	4
1.5 Feasibility of the Project	5
CHAPTER 2	6
LITERATURE REVIEW	6
2.1 Web Base Technology	6
2.1.1 Open Source.....	6
2.1.2 Web Based Advantages	9
2.2 Web Base Graphical User Interface.....	10
CHAPTER 3	12
METHODOLOGY / PROJECT WORK	12
3.1 Planning	13
3.2 Analysis.....	14
3.3 System Architecture and Design.....	15
3.3.1 UML Diagrams	16
3.3.2 Use Case Specifications.....	21
3.3.3 Database Design.....	25
3.3.4 User Interface Design	27

3.4	Implementation	32
3.4.1	Comparative Study of Available Tools.....	32
3.4.2	Source Code.....	34
CHAPTER 4	.....	38
RESULTS AND DISCUSSION	.....	38
4.1	Results.....	39
4.2	Implementation	45
4.2.1	Description of Implementation Plan and Method.....	45
4.2.2	Explanation on Functions Implemented	47
4.2.3	Problems Encountered During Implementations and Solutions	49
CHAPTER 5	.....	51
CONCLUSION AND RECOMMENDATIONS	.....	51
5.1	Limitations and Errors	52
5.2	Problems Encountered	53
5.3	Possible Future Enhancements and Recommendation	53
REFERENCES	.....	56
APPENDICES	.....	57

LIST OF FIGURES

Figure 3.1:	Prototype methodology model	13
Figure 3.2:	General view of the system interaction	15
Figure 3.3:	Accommodation Service System architecture	16
Figure 3.4:	Sample mappings between ACMSS and UML diagrams	17
Figure 3.5:	Use case diagram derived from ACMSS	18
Figure 3.6:	Class diagram of ACMSS	19
Figure 3.7:	Simplified sequence diagram for the “Make reservation” use case	20
Figure 3.8:	Entity Relationship Diagram	26
Figure 3.9:	System index page	28
Figure 3.10:	Admin index page	28
Figure 3.11:	ACMSS index page	29
Figure 3.12:	ACMSS admin index page	30
Figure 3.13:	Admin guest info page	30
Figure 3.14:	Admin check-in page	31
Figure 3.15:	Admin reservation page	31
Figure 4.1:	Resources used for getting information in doing hotel reservation	39
Figure 4.2:	Users view on the goodness of the system	40
Figure 4.3:	Users view on the usability of the proposed system	40
Figure 4.4:	Areas that need to be improved	41
Figure 4.5:	Most required features	41
Figure 4.6:	Hoteliers view about the existing system	42
Figure 4.7:	Easy to used of the traditional system	43
Figure 4.8:	Users view on which area should be improved	43
Figure 4.9:	Users perception about traditional system	44
Figure 4.10:	Overall Implementation Plan	46

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Web-based applications are ruling the way businesses run in today's world. Many companies are moving towards online applications not only in business environments but also in the educational perspective. To stand abreast with advancement of today technology that moves very fast and make used of tremendous advantages that it can brings, companies are moving into the e-commerce era. In the hotel industry for example, many hotel companies had applied online reservation system that based on Web application for their hotel rooms as well as other services offered by them. Well aware about the benefits, such as increase efficiency in business activities and accessible by their customers from all over the world, it leads particular company to change or to move to this direction.

The overriding difference between hotel system and traditional property management system (PMS) software is that hotel system is an advanced, hand-coded web-application that uses the global Internet for its connections; whereas most other property management systems are cumbersome, framework-developed applications that run on a hotel's Local Area Network (LAN). Consequently, hotel system is a full-blown central reservation system (CRS) as well as a powerful PMS.

There follows an explanation of why hotel system should lead to lower equipment and IT support costs; increased productivity through user confidence and instant access to a wealth of information when it is needed most; minimal staff training due to intuitive interfaces; high levels of data security; minimal down-time due to expert round-the-clock server management; and peace-of-mind through knowing that minor problems can be fixed remotely within minutes, not days.

In this research project, it undertakes the task of designing and developing a web-based accommodation services system that satisfies the requirements of ease to use, adaptability to changing requirements and reusability (in term of implementation). Basically, Accommodation Services System (ACMSS) is a Web-based application that provides services to customers and accommodates people in term of giving easy access of information to customers and information management to accommodate people.

1.2 Problem Statement

In traditional way of doing hotel reservation is through online or phone call reservation. It requires the customer to give their details about personal, stay information and others to be recorded. Later on, the hotel front desk personnel will have to key in all the given information into a traditional system - a system that being installed locally in the hotel premises and only accessible through the hotel's Local Area Network (or separate hotel networks connected by expensive radio or telecom links), making them inaccessible to the outside world without special, fixed network links.

In addition, traditional systems and their databases need to operate from a server on those particular hotel premises, which make them vulnerable to network viruses and outright theft. This server will need to be purchased, housed, maintained and upgraded periodically, which will doubtless require costly ongoing IT support and specialist knowledge of the database system in use.

Further more, traditional framework-developed in PMS normally feature interface screens that have been thrown together by someone who has no idea about usability or interface design. Consequently, they nearly always look garish, 'blocky' and are distinctly unintuitive to use. Traditional off-the-shelf PMS also simply don't have this capability, which is why they will soon be a thing of the past now that the world is waking up to the potential of web applications.

Other issues that arise in traditional systems are it's usually restricting the number of users by licence. They often slow up with more than a few people using them at the same time, and can even crash altogether under relatively modest loads by web-application standards. Beside that, traditional systems normally run on hotel's network so if there is a fire, flood or theft, everything could be lost, including any back-ups stored on local network.

1.2.1 Problem Identification

The problems occurred in the existing traditional system so called Property Management System are:

- 1.2.1.1** Repeating the same procedure in terms of collecting and keying in customer details into the system.
- 1.2.1.2** The system is inaccessible by their customer so that they can update their details information, make cancellation on their booking, and such since the traditional system was being developed or installed internally within the hotel's premises.
- 1.2.1.3** Maintaining and purchasing of server and database are required which will doubtless require costly ongoing IT support and specialist knowledge of the database system in use.
- 1.2.1.4** Such system does not have a good interface design thus violate the important elements oh Human-Computer Interaction (HCI) which is very crucial in any system development.
- 1.2.1.5** The numbers of persons who can use the system are restricting by licence.

1.2.2 Project Significance

This project focuses on managing accommodation services in ones hotel according to their present customer and reservation made by to-be customers via internet or Web based application. By using such system, the hoteliers will be able to effectively and efficiently manage their room reservation or handle check-in and check-out of their guests.

1.3 Objectives of the Project

Among the objectives are:

- Design and develop an interactive online reservation system that provides new reservation opportunity and user-friendly interface in order to reduce processing errors and to increase efficiency of hotel management.
- Design and develop a database system to store guests and transactions information to speed up the data retrieval process, facilitate and smooth the hotel management.
- To apply security features by having user authentication level and to achieve the maintainability of the system in order to maintain guest profile, hotel staff authentication, reservation, and registration information.

1.4 Scope of Study

The scope of this project will evolve around the learning of the Web based system development, Apache, PHP, MySQL, phpMyAdmin and Macromedia Dreamweaver MX in developing the application. These include creation of necessary database for hoteliers and hotel customer/guest as well as user interface in building the application and its implementation. Besides that, the intended users for this project are hotel customers/guest, and hoteliers such as desk clerk/receptionist as well as the hotel management staff. This project focuses more on how reservation is made and how the desk clerk performed their task in managing the hotel rooms to accommodate hotel customers/guests with the assisting of the proposed system.

1.5 Feasibility of the Project

The author is responsible to develop an Accommodation Service System (ACMSS) that allow a user to perform search for accommodation for their business, holidays or trip. The result generated should be the best suite with their preferences. Through this system, the users can easily retrieve the relevant information according to their reference for the future usage. It's being believed that, by using such system, the hoteliers will be able to effectively and efficiently manage their room reservation or handle check-in and check-out of their guests. The development process should be completed within two and half months.

The whole project task and timeline is represented in the Gantt chart provided in Appendix A.

CHAPTER 2

LITERATURE REVIEW

Accommodation Service System will be used as a means of assessing how much effort is to be contributed towards to increase efficiency of hotel management and system users that consist of front desk and hotel customer/guest current resources, namely time. The system is a prototype of a very large system that would be apt for any hotelier's environment; it can be a resort, hotel or even at a lower level. The main rationale of the system still remains the same as the current traditional system where it will still be the source of guidance to build a more enhanced and systematic yet attractive manner of accommodation service system. The reason this system is required is so that users can fully utilize it.

2.1 Web Base Technology

Web base technology can be refer as any system or application that was build using certain technology such as World Wide Web (WWW) so that it can be accessed through internet. From software engineering point of view, a Web application or webapp is an application that is accessed via web over a network such as the Internet or an intranet. Web applications are popular due to the ubiquity of a client, sometimes called a thin client. The ability to update and maintain Web applications without distributing and installing software on potentially thousands of client computers is a key reason for their popularity. Web applications are used to implement Webmail, online retail sales, online auctions, distant learning, discussion boards, electronic commerce, and many other functions. In this study, the author will expose about the Open source in which it's being perceived as one of the important elements in Web base technology and the advantages of applying this Web base technology.

2.1.1 Open Source

Open source is a development method for software that harnesses the power of distributed peer review and transparency of process. In other words, open source software is computer software which source code is available under a license (or arrangement such as the public domain) that meets the Open source definition. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in. Some examples of open source software/tools are PHP, MySQL, AJAX, and ASP. PHP and MySQL are used in the development of ACMSS.

2.1.1.1 PHP

PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML. PHP is mainly focused on server-side scripting, so developers can do anything any other Common Gateway Interface (CGI) program can do, such as collect form data, generate dynamic page content, or send and receive cookies. Indeed PHP can do much more. PHP can be used on all major operating systems, including Linux, many Unix variants (including HP-UX, Solaris and OpenBSD), Microsoft Windows, and Mac OS X. PHP has also support for most of the web servers today. This includes Apache, Microsoft Internet Information Server, Personal Web Server, Netscape and others. One of the strongest and most significant features in PHP is its support for a wide range of databases such as dBase, MySQL, Oracle, Sybase, PostgreSQL, and many others. These show the advantages and capability of PHP that it can offer.

2.1.1.2 MySQL

The MySQL database has become the world's most popular open source database because of its consistent fast performance, high reliability and ease of use. It's used in more than 11 million installations ranging from large corporations to

specialized embedded applications on every continent in the world. Not only is MySQL the world's most popular open source database, it's also become the database of choice for a new generation of applications built on the LAMP stack (Linux, Apache, MySQL, PHP / Perl / Python.) MySQL runs on more than 20 platforms including Linux, Windows, OS/X, Netware, giving to the developers the kind of flexibility that puts them in control.

"MySQL continues to have a very high adoption rate across several industries and is known for its reliability, ease of use, and performance. MySQL 5.0 features are likely to boost MySQL to even higher adoption rates and may open doors for support for more packaged applications and tools." Noel Yuhanna – Forrester Research.

2.1.1.3 AJAX

AJAX (Asynchronous JavaScript and XML), or Ajax, is a web development technique used for creating interactive web applications. The intent is to make web pages feel more responsive by exchanging small amounts of data with the server behind the scenes so that the entire web page does not have to be reloaded each time the user requests a change. This is intended to increase the web page's interactivity, speed, functionality, and usability. AJAX is a browser technology, and is therefore independent of web server platforms. According to Enrich Peterson, "AJAX-enabled pages provide a slick, responsive user experience, making web-based applications function more like desktop-based ones".

The primary advantages of using AJAX in web application development are as follows:

- Reduction of unnecessary web server hits, i.e., the round trips are minimized
- Rich, responsive user interface
- Real-time web page updates
- Language neutrality

- Faster web page renderings
- Less consumption of server's resources (memory and processor load is reduced)

2.1.1.4 ASP

Active Server Pages (ASP) is a server-side scripting environment that developers can use to create and run dynamic, interactive Web server applications. With ASP, developers can combine HTML pages, script commands, and COM components to create interactive Web pages and powerful Web-based applications that are easy to develop and modify.

2.1.2 Web Based Advantages

Base on the research conducted, the author has also find out that Web-based applications have several advantages over their more traditional downloadable software programs. One of the advantages is cross-platform compatibility in which the Web-based applications have a much easier path to successful cross-platform compatibility than downloadable software applications. Several technologies including Java, Flash, ASP and Ajax allow effective development of programs supporting all of the major operating systems. Beside that, Web-based applications could offer immediacy of access that makes its need not to be downloaded, installed and configured. The system user can access their account online and they are ready to work no matter what is the setup or hardware is.

Another advantage of Web-base application is less bugs. "Web-based applications should be less prone to crashing and creating technical problems due to software or hardware conflicts with other existing applications, protocols or internal custom software" Paul Graham (2001). With web-based applications, everyone uses the same version, and all bugs can be fixed as soon as they are discovered. This is the reason why web-based applications should have far fewer bugs than traditional downloadable desktop software.

By having a Web-base application, an organization or company do not need to spend much of their money as Web-based applications do not require the distribution, technical support and marketing infrastructure required by traditional downloadable software. This allows online applications to cost a fraction of their downloadable counterparts if not being altogether free, while offering additional components and premium services at an option.

Develop applications in the language that prefer by the developers is another benefit that can be gain from Web-base application. Once applications have been severed from local computers and specific operating systems they can be also written in just about any programming language. Since Web-based applications are essentially a collection of programs rather than a single program, these could be written in any programming language out there. While for desktop software you are bound to use the same language as the underlying operating system this is not the case when the software application is independent of the operating system.

2.2 Web Base Graphical User Interface

Based on a research carried out by Nicky Danino (2001), the interface is a fundamental part of making the site more successful, safe, useful, functional, and in the long run, more pleasurable for the user. This emphasizes on the importance of human-computer interaction in the development of any Website and it shows that it is not to be taken lightly. It has been exposed that a large percentage of the design and programming effort of projects go into the actual Website design.

A definition

Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them, Hewett (1996).

The tools and techniques that have been developed in this field have contributed immensely towards decreasing costs and increasing productivity. Savings have been created through decreased task time, fewer user errors, greatly reduced user disruption, reduced burden on support staff, the elimination of training, and avoidance of changes in maintenance and redesign costs. Studies have shown that, by estimating all the costs associated with usability engineering, the benefits can amount to 5000 times the project's cost. HCI is a Web imperative now, and it'll continue to be so in future, Nicky Danino (2001).

Through research carried out, the current system features that may influence users' satisfaction such as loading time, colour and font use, organization of information content, navigability, active links, etc is not taken into consideration in the current system. The system is not appealing to be used. As for the current traditional system, the page is too wordy, there are no graphics to enhance the appearance of the system and the arrangement of hypertext is not appropriate. Herzberg (1993) points out that “these factors determine the user satisfaction on using a web page”.

Boschkow (2002) points out that “to determine the effectiveness of an online system, it is important for the system to act as a motivator where all the Human Computer Interaction properties are met”. Boschkow (2002) says that the main factor that determines the effectiveness of a Web-based system is the appearances of the page. The appearance he meant here is the usage of font in terms of size, style and colour, the layout of the page in terms of the arrangements of buttons, links and graphics, and also the colour combination of the background as compared to the contents of the page. Boschkow (2002) also mentioned that a too wordy page may also be very distracting to a user's performance as well as interest in using the application. This falls back to the current traditional reservation system where it only consists of words and it difficult to read them all.

CHAPTER 3

METHODOLOGY / PROJECT WORK

Most software development is a disordered activity, often characterized by the phrase "code and fix". Especially when it comes to building a good functional website, it is known that developing it surely will have to go through complex process so the website is written without much of an underlying plan, and the design of the system is cobbled together from many short term decisions. Furthermore bugs become increasingly prevalent and increasingly difficult to fix. A typical sign of such a system is a long test phase after the system is "feature complete". Such a long test phase plays havoc with schedules as testing and debugging is impossible to schedule.

After comparing and studying a lot of methodologies, one methodology has been identified and relatively suits the system development for this Accommodation Service System. The methodology used is derived from a prototype model in the SDLC (System Development Life Cycle). Because the project is in continuous phase it is improved from time to time and has adapted and iterative process. This can be illustrated as Figure 3.1 below:

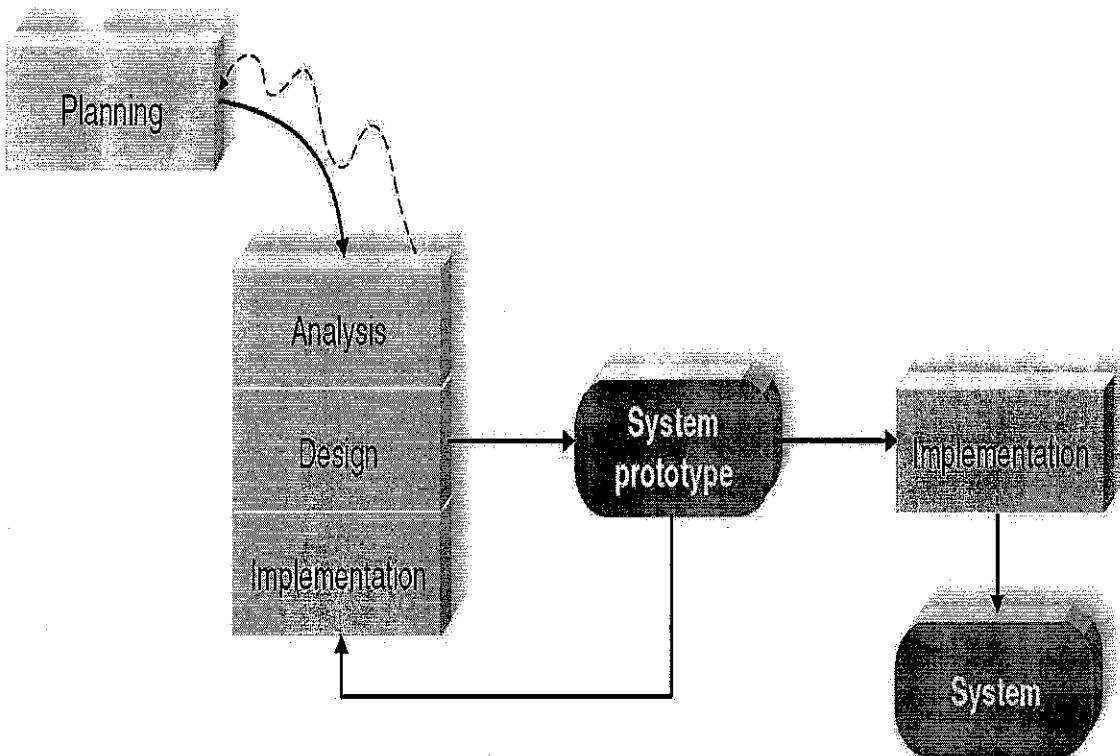


Figure 3.1: Prototype methodology model.

3.1 Planning

The planning phase is the fundamental process of understanding *why* an information system should be build and determining *how* the project or system developers will go about building it. To answer the questions of why information system should be build, the author had take a few method such as observation and interviewing the hoteliers for the purpose to know the real dilemma or problems that they are facing with current traditional accommodation service system. Second question is tackle by the author by conducted a research to get the necessary information on what knowledge, components, tools, and correct procedure that can be used for this project. A full understanding of these requirements and well system planning will ensure the successful of one system. This planning stage can be best view on the Gantt chart provided in the appendix A.

3.2 Analysis

The analysis phase answers the question of *who* will use the system, *what* the system will do, and *where* and *when* it will be used. During this phase, the author had investigated a few current systems, identifies improvement opportunities, and develops a new concept for the new system. In the mean time, the functional and non-functional requirements of the system were identified. Functional requirements are associated with specific functions, tasks or behaviours the system must support, while non-functional requirements are constraints on various attributes of these functions or tasks. Because non-functional requirements tend to be stated in terms of constraints on the results of tasks which are given as functional requirements (e.g., constraints on the speed or efficiency of a given task), a task-based functional requirements statement is a useful skeleton upon which to construct a complete requirements statement. That is the approach taken in this work.

Functional requirements of the system:

- The system must have the ability to check availability of the rooms.
- Restrict access to the admin site of the system.
- The system should allow the administrator to operate the system.
- Provide today's view information regarding check-in and check-out of the customers, as well as the room conditions whether it is available to be book or not.

Non-functional requirements of the system:

- The system should be able to work on any Web browser.
- The system should be available for use 24 hours per day, 365 days per year.
- Only administrator and authenticated user can login into the system with different privilege.

3.3 System Architecture and Design

To develop an actual model, any model that is, it needs to have the blue print or design phase to refer to and so that it will be constructed in an organized way. Firstly, it is important to know the system architecture as it depicted the relationships among the components involved in the system. Second design that the author emphasize on is database design in which it is crucial to have a good database design or the system will end up unorganized and might come into a complex data problem. Last but not least, the user interface design has also been taken into consideration.

System architecture of Accommodation Service System (ACMSS) was carefully designed to make sure the originality of development is recognized and also working accordingly. Figure 3.2 shows the general view of the system interaction and system architecture of the ACMSS is shown in Figure 3.3.

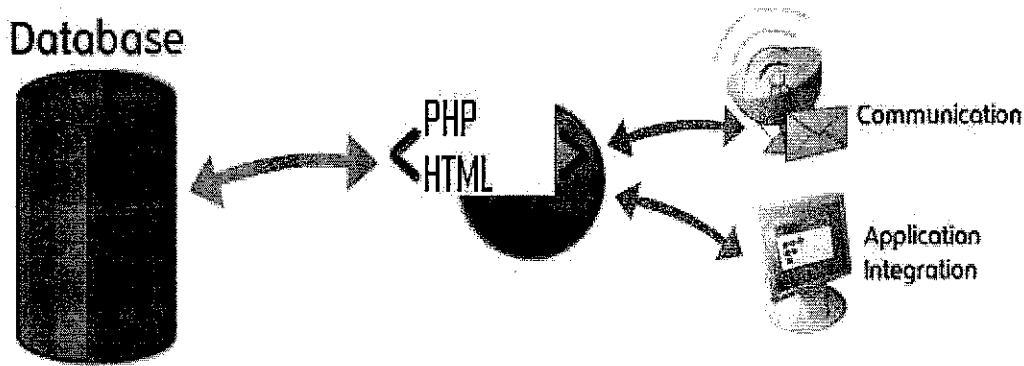


Figure 3.2: General view of the system interaction.

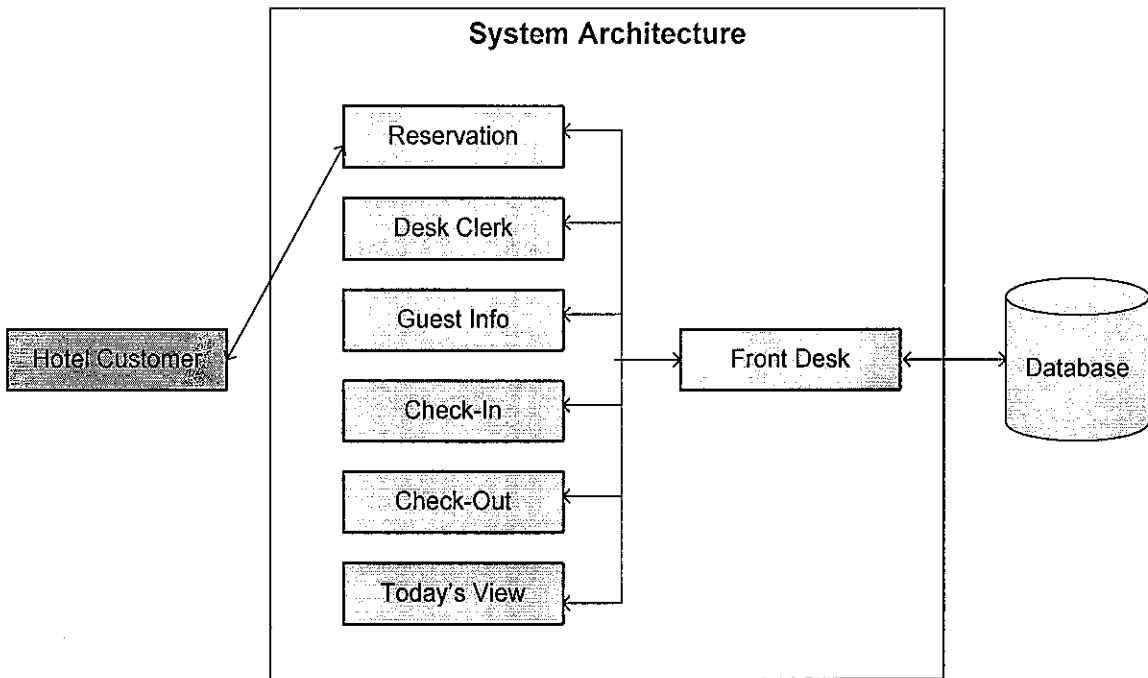


Figure 3.3: Accommodation Service System architecture.

3.3.1 UML Diagrams

The Unified Modelling Language or UML is a standard set of diagramming techniques that provides a graphical representation that is rich enough to model any system development project from analysis through implementation. The UML uses a set of different diagrams to portray the variations views of the evolving system. The diagrams are grouped into two broad classifications: structure and behaviour. The structure diagrams include class, object, package, deployment, component, and composite structure diagram. The behaviour diagrams include activity, sequence, communication, and use case diagram. For the purpose of this study, the author provided three diagrams namely use case, class, and sequence diagram, Figure 3.4.

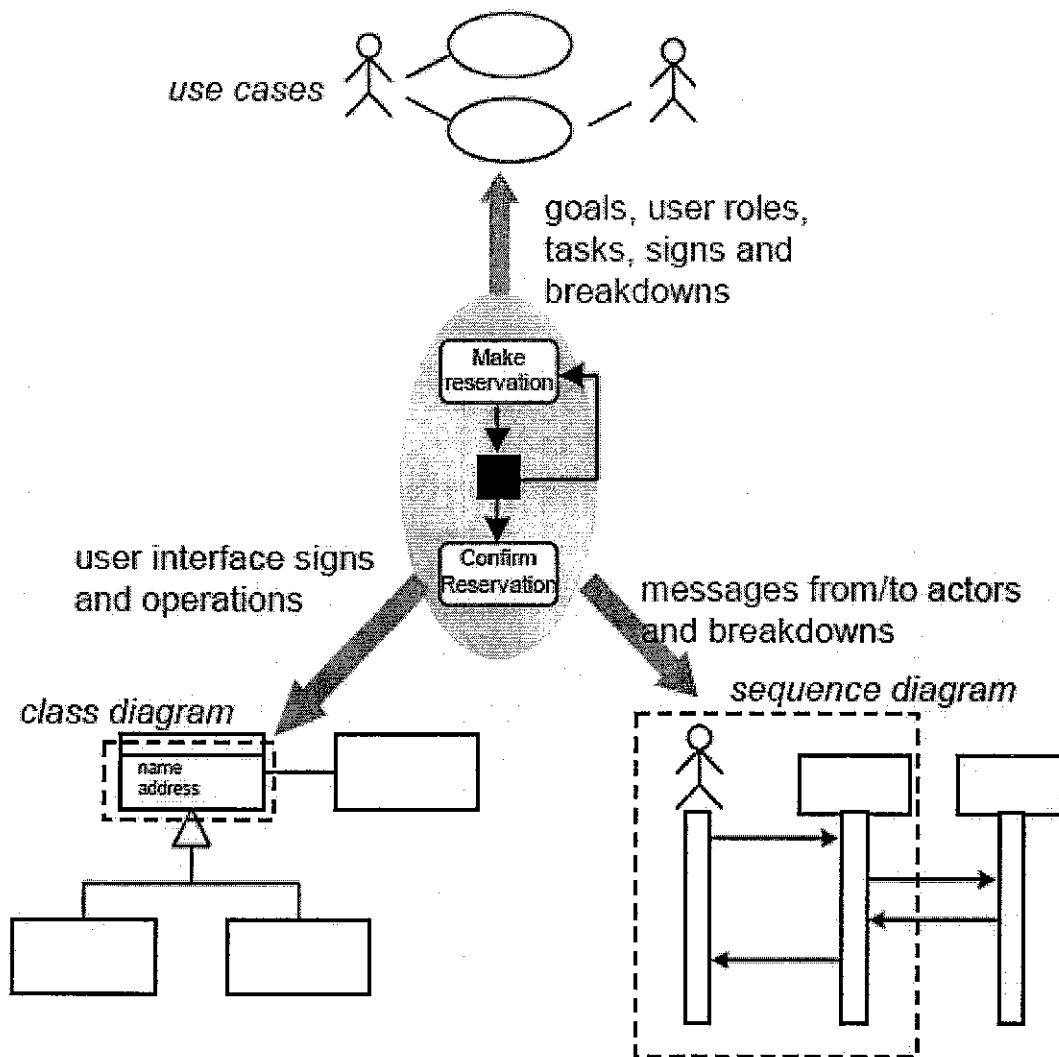


Figure 3.4: Sample mappings between ACMSS and UML diagrams.

3.3.1.1 Use Case Diagrams

The Use case diagram is used to “identify the primary elements and processes that form the system” (James, 2002). The developer wants to represent the functionalities of the system in a simplified and easily understandable manner to understand the functional aspects of the system at hand. While developing the use case diagram, significant characteristics in the system were discovered and this will further help with the design of the system.

The preliminary investigation conducted helped in the design of the system as the use case diagram shows and depicts what are the functionalities of the system. The user requirements gathered are showcased in Figure 3.5. Each use case represents the functions available in the system, who are the users of the system and what functions are available for their use.

As a conclusion, with the help of preliminary investigation that took place, user requirements were gathered and with the help of use case diagrams, the user requirements were finalized and they were defined and modelled which will lead to the proper development of the prototype of the system.

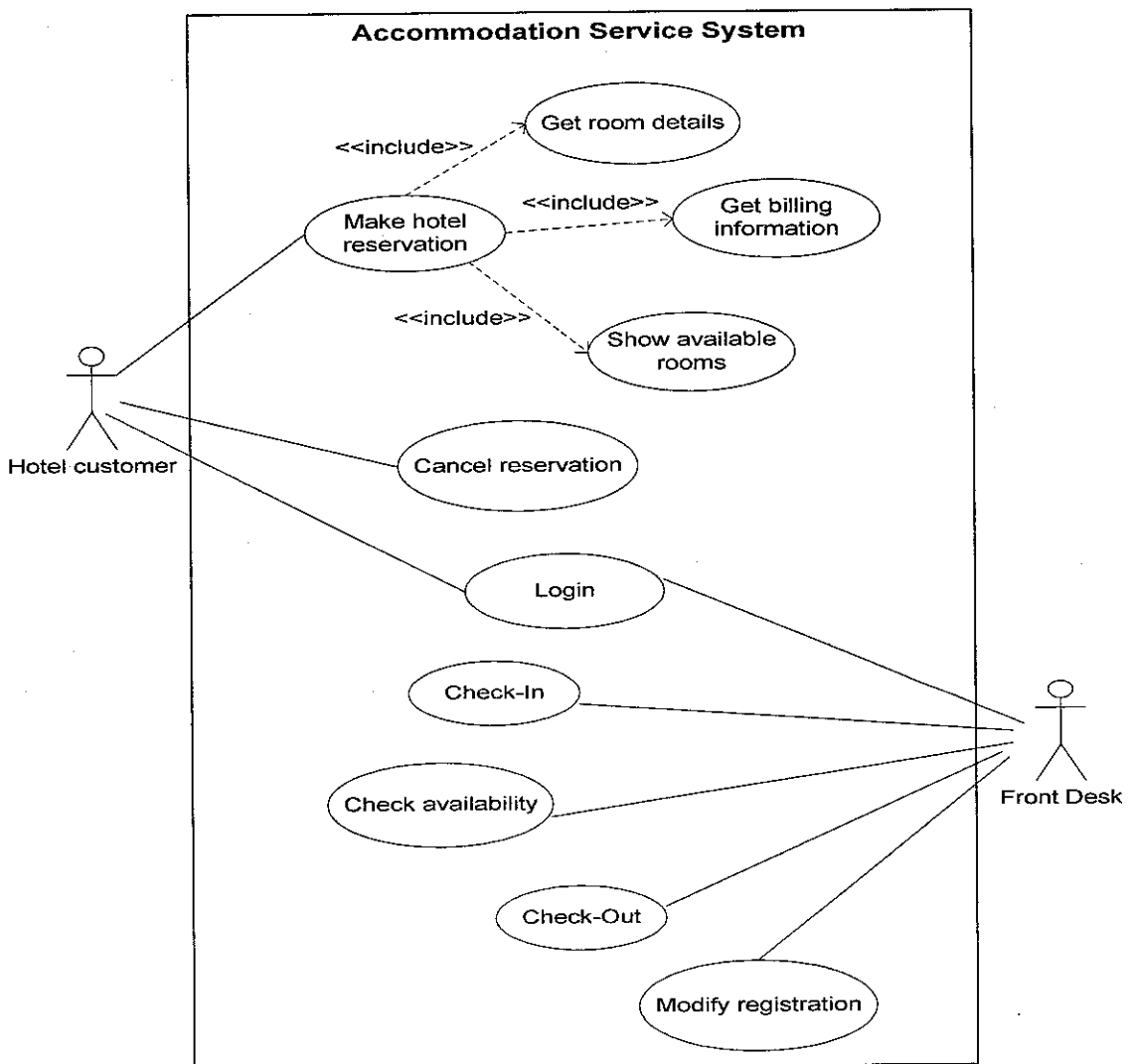


Figure 3.5: Use case diagram derived from ACMSS.

3.3.1.2 Class Diagrams

The class diagram here shows the static existence of classes, class categories, and their relationships. This diagram would provide the readers with a clearer picture on the functionalities of the system and how they operate, Figure 3.6.

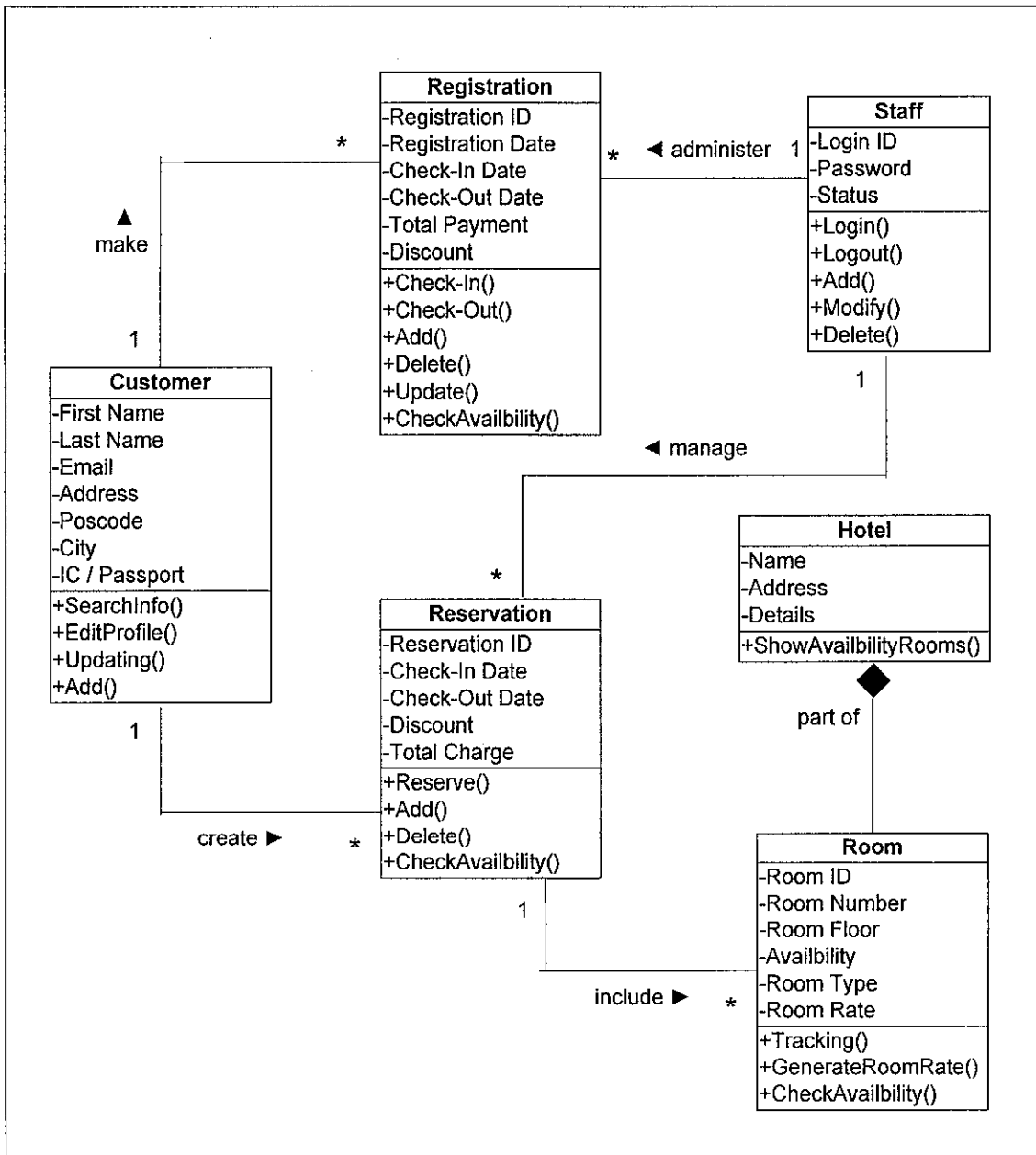


Figure 3.6: Class diagram of ACMSS.

3.3.1.3 Sequence Diagrams

The sequence diagram shows how the objects interact with others in a particular scenario of a use case. The sequence diagrams were used to show the behaviour of the system. To show the reader as to how the interaction takes place in the system, the sequence diagrams were used. These diagrams allow the user to understand what interaction and when the interaction takes place. The analysis sequence diagrams show the reader the interactions in a simplified manner, Figure 3.7. Design sequence diagrams allow the reader to see what needs to be implemented in the system and what interaction takes place from the developer's point of view. The diagrams attached here are concerning the core functions of the system.

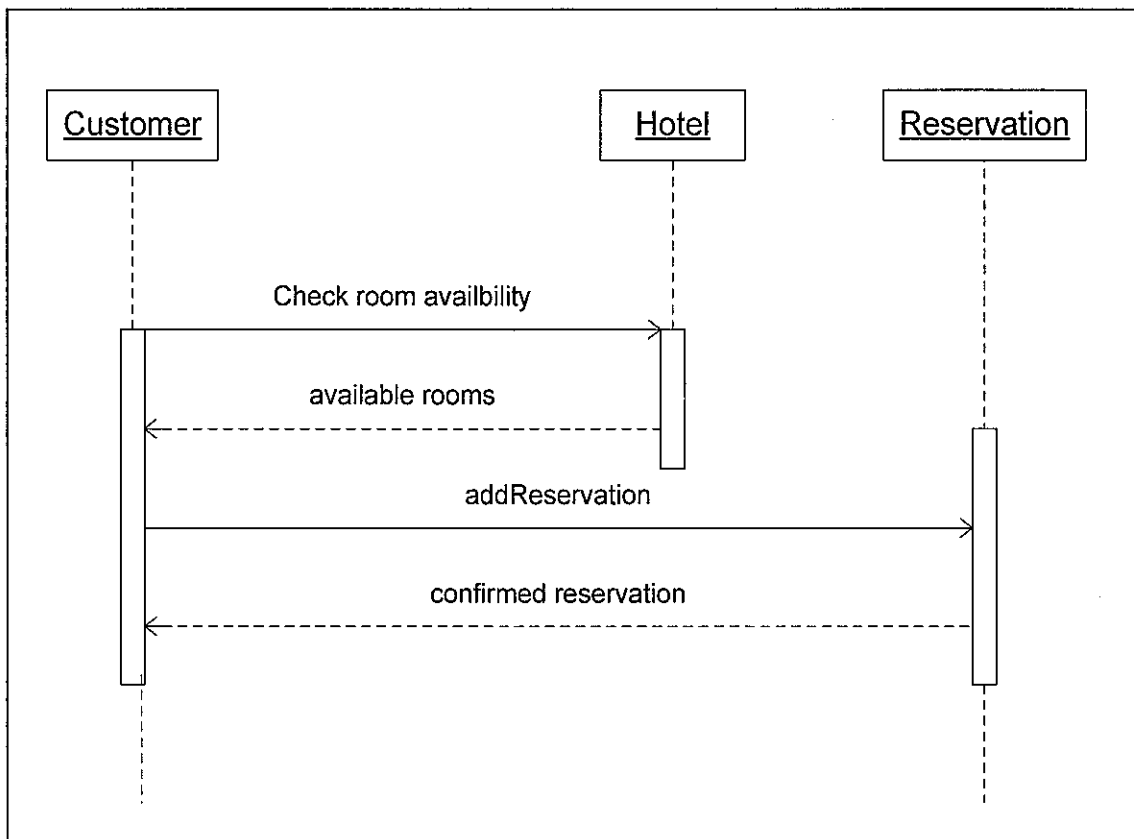


Figure 3.7: Simplified sequence diagram for the “Make reservation” use case.

3.3.2 Use Case Specifications

Use case specifications allow for better understanding of the flow of events that take place in a system. The use case specifications are as a reference to the sequence diagrams that are attached at the later part of this documentation. The use case specification is used to understand the possible set of event that can take place in the system.

3.3.2.1 Customer/guest Module

Use case: Make reservation

Use Case Name: Make reservation	ID: <u>1</u>	Importance Level:
Primary Actor: Customer	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Describes the processes involve whenever a customer wants to book a hotel room. Customer has to select the check-in and check-out date as well as room types, number of adults and children.		
Trigger: Customer plan to rent a room for their trips. Type: External		
Relationships: Association: Include: Get room details, get billing information, and show available rooms. Extend : Generalization:		
Normal Flow of Events: <ol style="list-style-type: none"> 1. Customer/guest visit particular hotel website to book a room on their preferred date. 2. Customer will fill up a form with all necessary information like check-in date, check-out date, room types, number of adults, and number of children's. 		
Subflows:		

Use case: Cancel reservation

Use Case Name: Cancel reservation	ID: <u>2</u>	Importance Level:
Primary Actor: Customer	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Describes the processes involve whenever a customer wants to cancel a reservation that was made. Customer has to login into the system and change or modify the reservation status by entering valid User ID, password and the reservation ID.		
Trigger: Customer intended to cancel their reservation made previously. . Type: External		
Relationships: Association: Include: Extend : Generalization:		
Normal Flow of Events: <ol style="list-style-type: none">1. Customer/guest login into the system by entering valid user ID and password.2. Once successful login into the system, the customer will have to key in their reservation ID and then change/modify their reservation status and update it.		
Subflows:		

3.3.2.2 Admin Module

Use case: Login

Use Case Name: Login	ID: <u>3</u>	Importance Level:
Primary Actor: Front desk/hoteliers	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Front desk will need to login into the system prior to perform their task such as administer registration, check-in, check-out, and modify the registration. Correct user ID and password are required.		
Trigger: Front desk people need to perform their daily routine of their work/task. Type: External		
Relationships: Association: Include: Extend : Generalization:		
Normal Flow of Events: <ol style="list-style-type: none">1. Front desk login into the system by entering valid user ID and password.2. Once successful login into the system, the front desk would be able to manage the		

accommodation service system.
Subflows:

Use case: Check-In

Use Case Name: Check-In	ID: 4	Importance Level:
Primary Actor: Front desk/hoteliers	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Front desk will need to manage the customer check-in details such as customer and staying information and rate/charge applied.		
Trigger: Front desk received reservation made by the customer through the online system and to give the service to the customer during the registration.		
Type: External		
Relationships: Association: Include: Extend : Generalization:		
Normal Flow of Events: 1. Front desk login into the system by entering valid user ID and password. 2. Successful login will trigger the front desk with admin site page that consist of a few operations that can be executed. 3.		
Subflows:		

Use case: Check-Out

Use Case Name: Check-Out	ID: 5	Importance Level:
Primary Actor: Front desk/hoteliers	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Front desk will need to manage the customer check-out details such as check-out date, staying information and rate/charge applied.		
Trigger: Customer staying period has expired. Customer will have to check-out at the front desk personnel.		
Type: External		
Relationships: Association: Include:		

Extend : Generalization:
Normal Flow of Events: <ol style="list-style-type: none"> 1. Front desk login into the system by entering valid user ID and password. 2. Front desk will take appropriate action once check-out made by the customer is successful. For instance, make the room available for the next reservation and clear the guest record.
Subflows:

Use case: Check availability

Use Case Name: Check availability	ID: 6	Importance Level:
Primary Actor: Front desk/hoteliers	Use Case Type: Overview, essential	
Stakeholders and interests:		
Brief Description: Front desk will need to manage the reservation made by the hotel customers in order to determine the vacancies of the room thus, make it available for the customers.		
Trigger: Received reservation from the hotel customer/guest. Room availability status must be updated everyday by the front desk in order to determine the availability of the hotel rooms.		
Type: External		
Relationships: Association: Include: Extend : Generalization:		
Normal Flow of Events: <ol style="list-style-type: none"> 1. Front desk login into the system by entering valid user ID and password. 2. Customer check-in and check-out will be monitor by the front desk through the system. Thus, 		
Subflows:		

3.3.3 Database Design

Before constructing the actual database system, a good design and database framework planning has to be done. One part of doing this is by constructing data modelling and another is functional modelling. The data model focuses on what data should be stored in the database while the function model deals with how the data is processed. To put this in the context of the relational database, the data model is used to design the relational tables. The functional model is used to design the queries that will access and perform operations on those tables. Data modelling is preceded by planning and analysis. The effort devoted to this stage is proportional to the scope of the database. The information needed to build a data model is gathered during the requirements analysis.

3.3.3.1 Entity Relationship Diagram (ERD)

The ERD showcases the relationships between tables, Figure 3.8

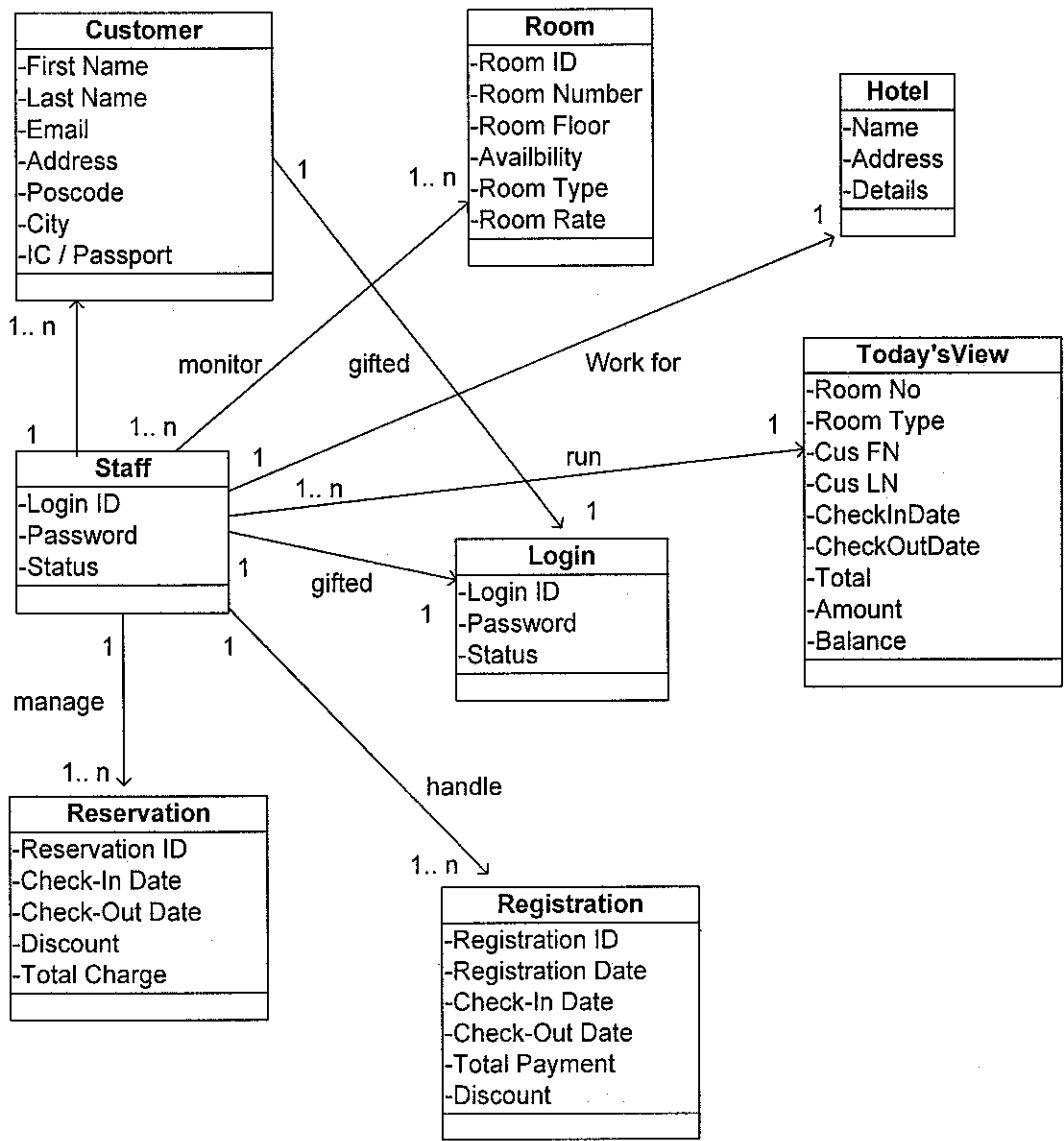


Figure 3.8: Entity Relationship Diagram.

3.3.4 User Interface Design

Based on the research done on human computer interaction book by Dix Finlay Abowd Beale, there are a lot of elements that must be taken seriously in order to design the interface of the website since it is considered on of the most important issue in developing my Dietary Website. The interface has to be simple, organized, straightforward and easy to navigate. Help menu is also added to the mobile music store for a user's beginner's guide.

Throughout designing the user interface for the whole system, the author had applied the eight Shneiderman's Principles of Human-Computer Interface design. The eight principles are:

- i) Strive for consistency
- ii) Enable frequent users to use shortcuts
- iii) Offer informative feedback
- iv) Design dialogs to yield closure
- v) Offer error prevention and simple error handling
- vi) Permit easy reversal of actions
- vii) Support internal locus of control and
- viii) Reduce short-term memory load

It is important to design the interface so that time is not wasted trying to figure out what the system should look like. The interface designs shown here only concern the index page of the developed system and the index page for the admin. Others design is being standardized.

3.3.4.1 Storyboarding

Index page of ACMSS

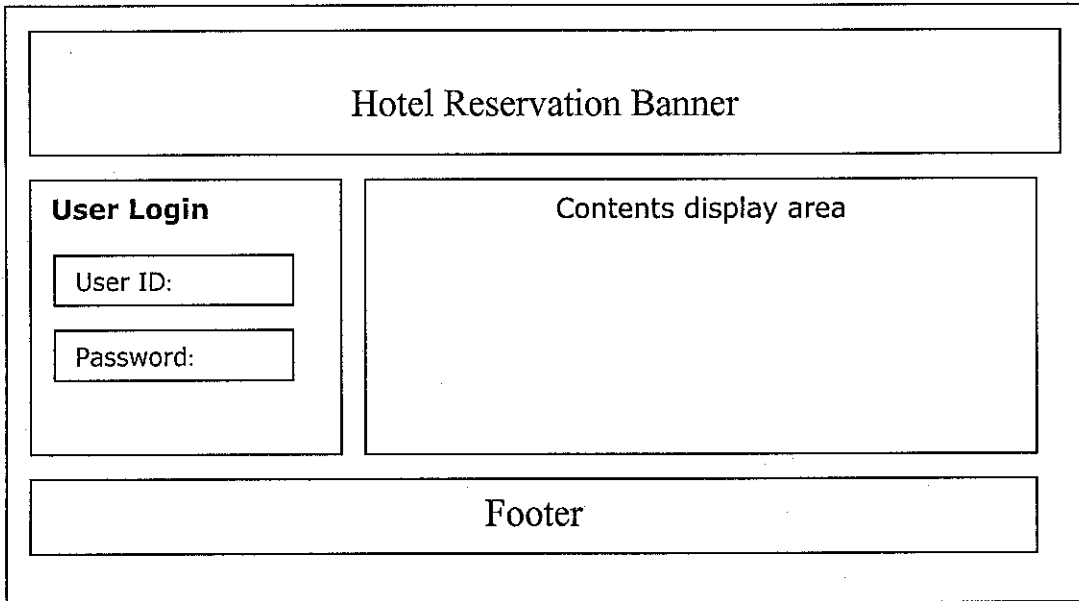


Figure 3.9: System index page

Admin index page of ACMSS

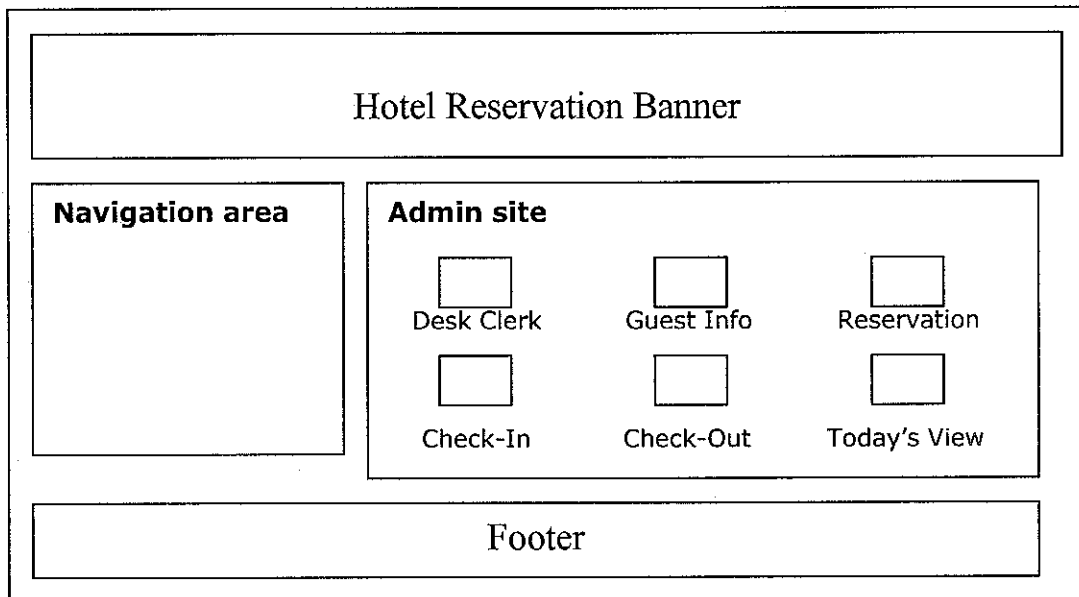


Figure 3.10: Admin index page.

3.3.4.2 Screen shoot

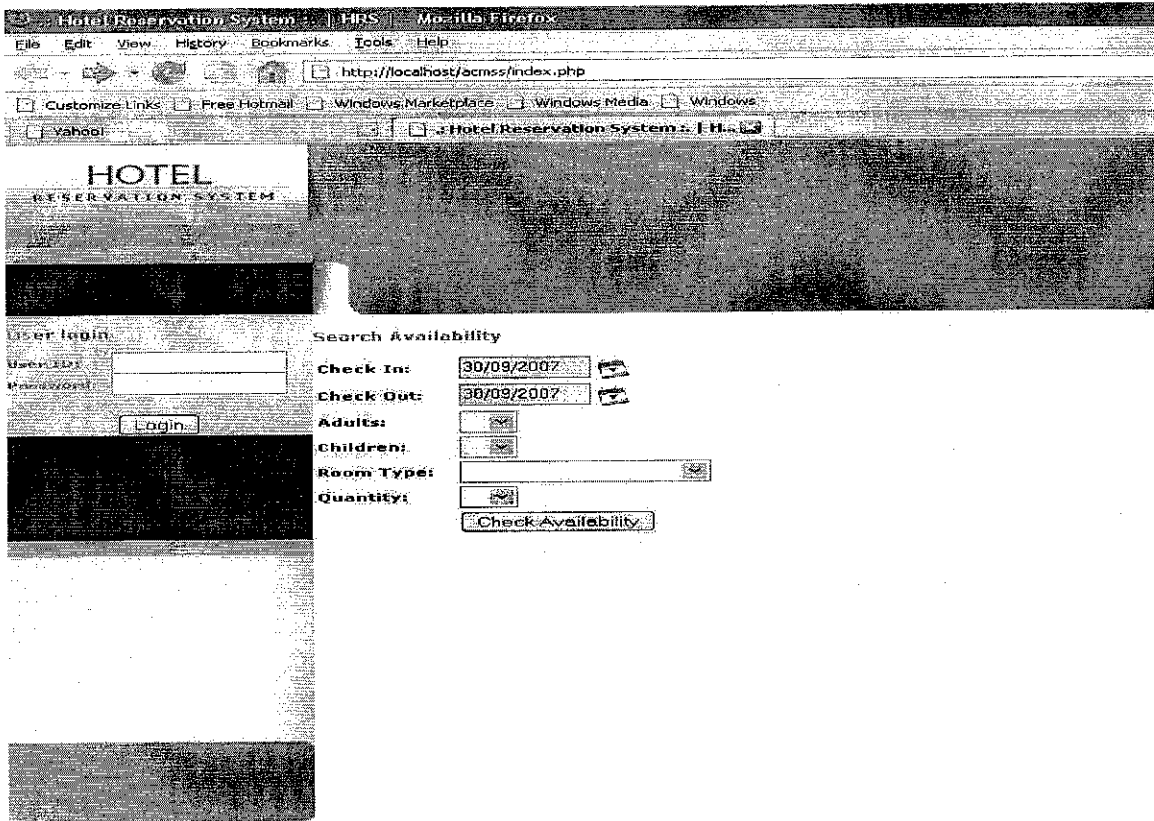


Figure 3.11: ACMSS index page.

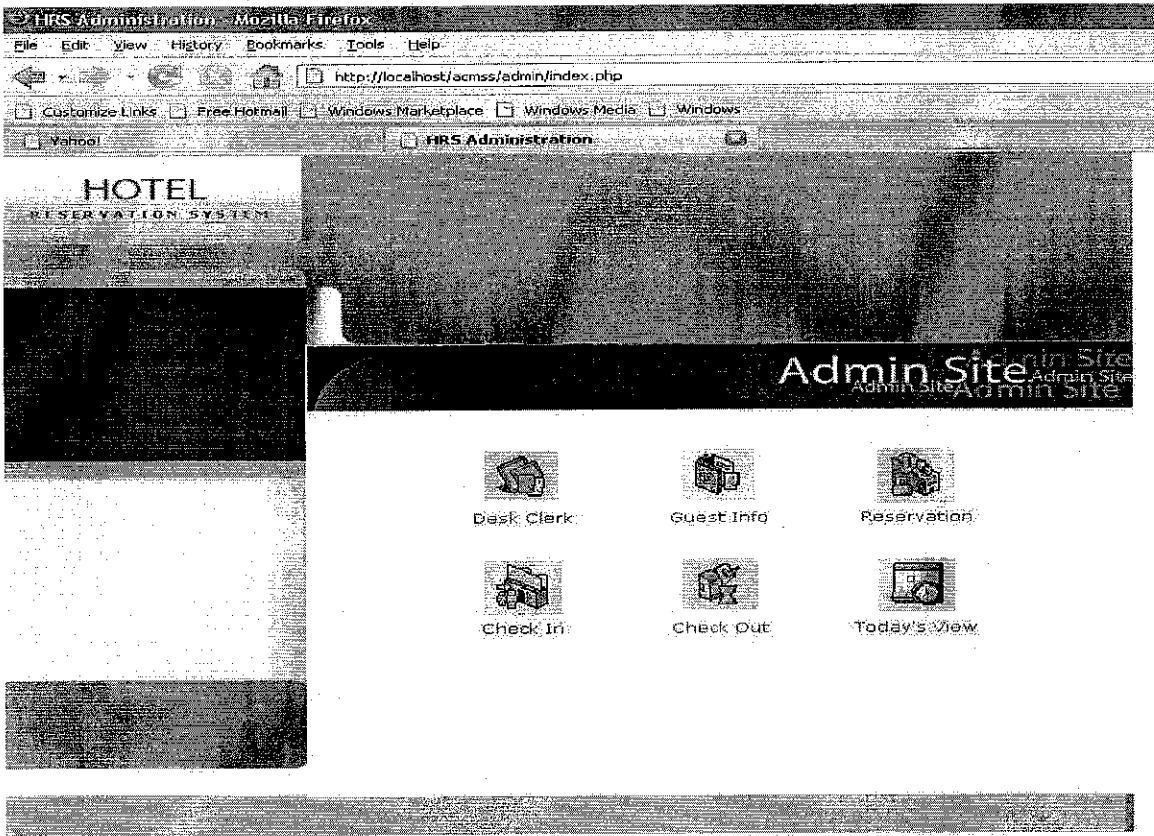


Figure 3.12: ACMSS admin index page.

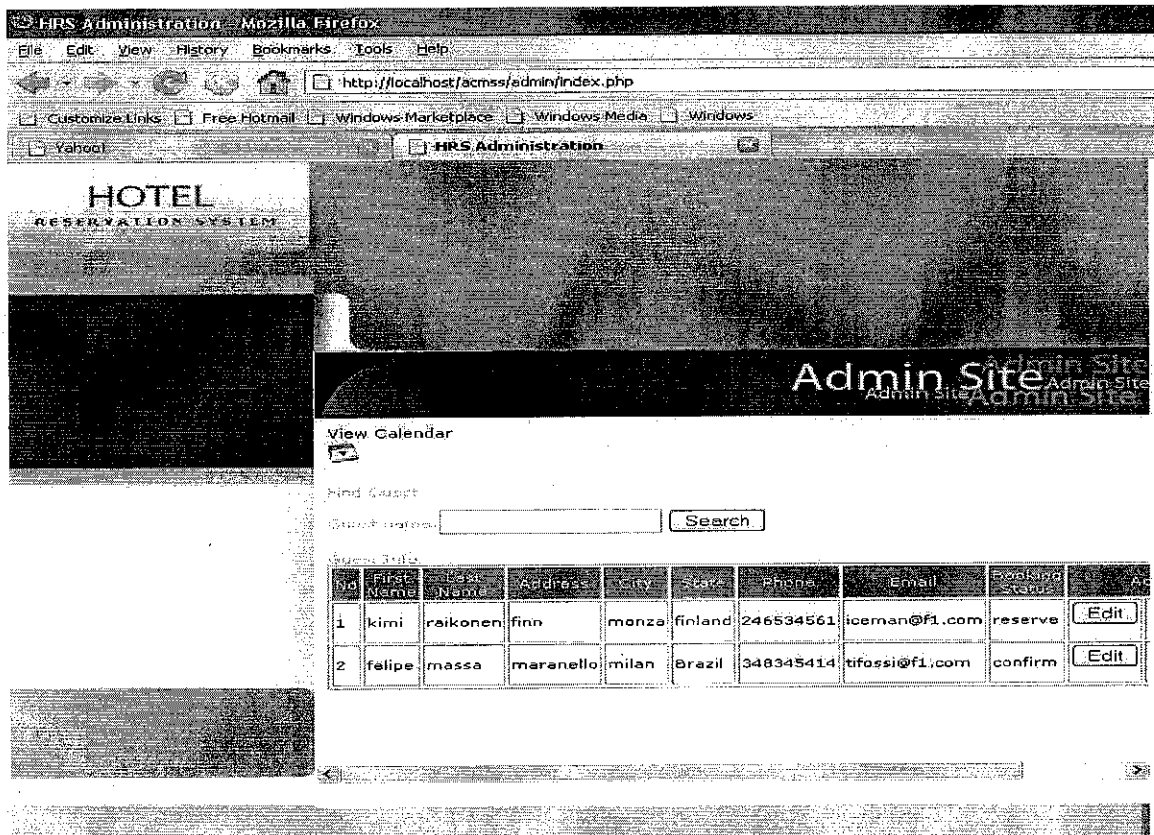


Figure 3.13: Admin guest info page.

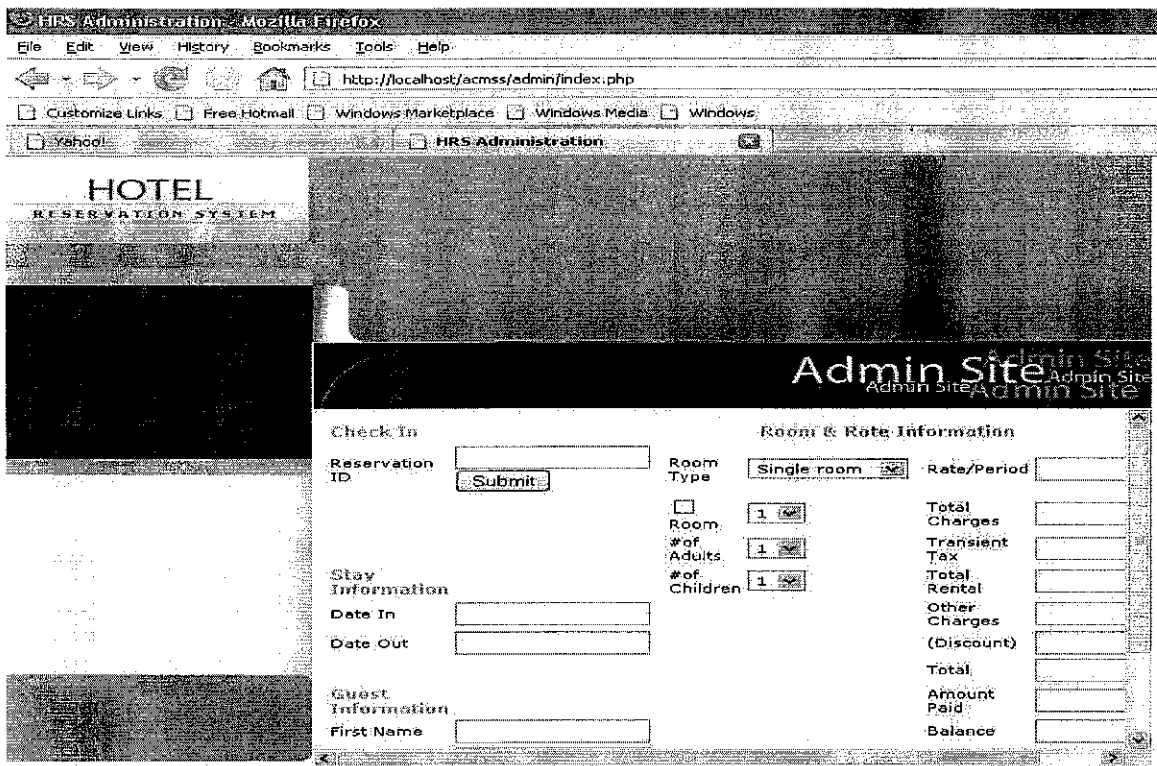


Figure 3.14: Admin check-in page.

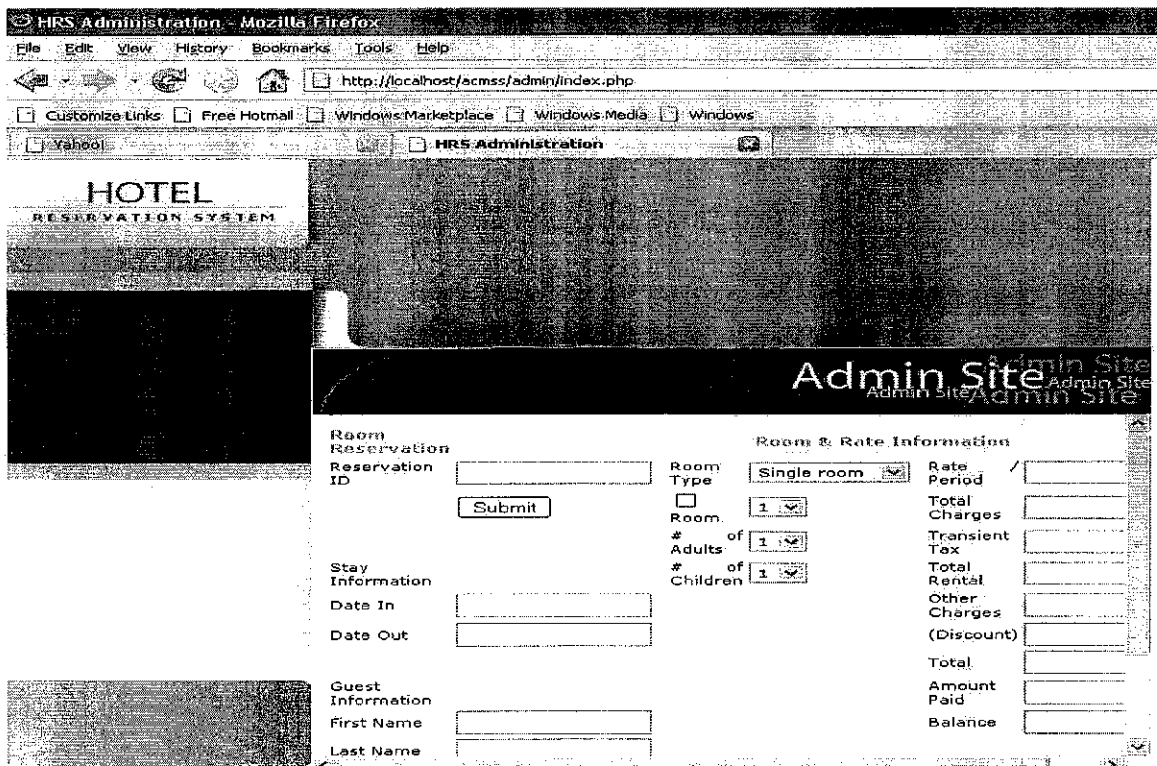


Figure 3.15: Admin reservation page.

3.4 Implementation

The final phase in the SDLC is the implementation phase, during which the system is actually built. It involves designing the interface, linking the pages, create the database, and link it with the Web pages. This phase actually was done concurrently with the research part in order to confirm the tools used and for testing purposes. It is assumed to take almost 80% of the time consumed for this phase to be done.

3.4.1 Comparative Study of Available Tools

Research on technical matter explains the reasons as to why the programming language, database server and other relevant technical matters are chosen. This section explains to the reader in detail what made the developer chose and why it was chosen to help with the development and implementation of the system at hand.

3.4.1.1 Programming Platform Used (PHP and JavaScript)

The suitable programming languages for the system are PHP and Java Script.

PHP Hypertext Processor is a server-side web programming language that can be embedded into HTML. PHP uses are widespread, and can include any kind of server functionality that takes user's input and displays or manipulates the input. PHP can run on both UNIX and Windows servers, which makes it more accessible than Windows (ASP). This scripting language is growing day by day.

Another plus of PHP is that the language interfaces very well with MySQL, a popular type of online database. MYSQL is a commercial trade database application that is made available free under the Open Source to anyone.

Another plus of PHP is that it is Open Source Code. The actual code that is PHP is available to the public for free, while the source code for products such as ASP is not. So PHP is very cheap. Because PHP is open source, there is a large community of PHP programmers that help each other with code. This means PHP programmers can rely on each other by using reusable pieces of code called functions and classes rather than constantly reinventing the wheel.

This can dramatically cut down on production time. PHP is based on C++ language and the syntax used in PHP is quite similar to C/C++. C/C++ is still considered the best programming language by many programmers and people who love this language would surely feel more comfortable with the syntax of PHP. PHP and MySQL are excellent choice for webmasters looking to automate their web sites.

3.4.1.2 Database Server Used (MySQL)

The database will enquire MySQL as the database program and Apache as the hosting. The advantages of using MySQL are as follows:

- MySQL is similarly easy to understand and learn.
- MySQL can support large databases of 50 million rows or more.
- MySQL is compatible with the vast majority of operating systems (UNIX, Windows etc.).
- MySQL is freely available under the GNU GPL (General Public Licence) and can be tailored to suit individual requirements and personally customized under the terms of the licence.

3.4.1.3 Macromedia Dreamweaver MX 2004

This software is used to develop the user interface for the system. This is the ideal software to use when developing system with PHP. Some features of Macromedia Dreamweaver MX 2004 are:

- CSS support is vastly improved, making it easy to create and edit styles.
- Cut and paste directly from Word and Excel - preserving fonts, colours, and styles.
- Secure FTP encrypts file transfers to help make your site more secure.
- Support for XHTML, XML, ASP, PHP, and SQL with code libraries and colour coding.
- New start screen makes it a snap to access most recently edited files and more.

3.4.1.4 Adobe Photoshop

This software is used to create and enhance the banner of the web-based system or any images or graphics that will be included in the web-based.

3.4.2 Source Code

The following section will shows some of the coding writes by the author in order to develop this system. The basic programming languages used are HTML and PHP. Cascading Style Sheet (CSS) is also being applied.

3.4.2.1 Coding for Login Site

```
<?php
$userID = $_POST['userID'];
$password = $_POST['password'];

if ($userID == "")
{
    echo "<br><br><br><center>Please fill in your Login name. </center><br><br><br>";
    echo "<br><br><br><center><a href='\"index.php\"'>Click Here to login
again</a></center><br><br><br>";
    die();
}
elseif ($password == "")
{
    echo "<br><br><br><center>Please fill in your Password. </center><br><br><br>";
    echo "<br><br><br><center><a href='\"index.php\"'>Click Here to login again
</a></center><br><br><br>";
    die();
}
$con = mysql_connect("localhost","root","");
if(!$con)
{
    die('Could not connect:' .mysql_error());
}

mysql_select_db("acmss",$con);
$sql = ("SELECT * FROM Login WHERE UserID = '$userID' && Password =
'$password'");
$result = mysql_query($sql);
if($row = mysql_fetch_array($result))
{
    header ("location: admin/index.php");
}
else
{
    echo "<br><br><br><center>Login fail.</center><br><br><br>";
    echo "<br><br><br><center><a href='\"index.php\"'>Click Here to try login
again</a></center><br><br><br>";
}
?>
```

3.4.2.1 Coding for Config File

```
<?php
$con = mysql_connect("localhost","root","");
if(!$con)
{
    die('Could not connect:' .mysql_error());
}
mysql_select_db("acmss",$con);
?>
```

3.4.2.1 Coding for Reservation Site

```
<link rel="stylesheet" type="text/css" href="../css/my_styles.css" />
<p></p>
<p class="text"><a href="main.php" target="_self">Home</a><span class="text"> >></span><span
class="mainTitle"> Reservation</span>
<br /><br />
<link rel="stylesheet" type="text/css" href="../css/my_styles.css" />
<body>
<p><span class="text">Reservation ID</span></p>
<form action="reservationA.php" method="get">
<input type="text" name="reservation_ID" size="17" value="<?php echo $_GET['reservation_ID']; ?>" />
  <input name="search" type="submit" value="Search">
</form>
<?php
  include ("../include/config.inc");

  if (isset($_GET['reservation_ID']))
  {
    $revID = $_GET['reservation_ID'];
    $result = mysql_query("SELECT * FROM reservation WHERE resID LIKE '$revID'");
  }
  echo "<table class='table1' border='1' width='62%'>
    <tr class='header'>
      <td width='216'><span class='text'><strong>Stay
      Information</strong></span></td>
      <td width='398'><span class='text'><strong>Details &
      Discription</strong></span></td>
    </tr>
    <tr>
      <td><span class='text'>Date In </span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'>Date Out</span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'><strong>Guest Information </strong></span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'>First Name</span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'>Last Name</span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'>IC/Passport No.</span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'><strong>Room& Rate </strong></span></td>
      <td>&nbsp;</td>
    </tr>
    <tr>
      <td><span class='text'>Room Type</span></td>
      <td>&nbsp;</td>
    </tr>
```

```

<tr>
    <td><span class='text'># of Adult</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'># of Children</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'>Rate</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'>Other Charges</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'>Deposit</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'>Balance</span></td>
    <td>&nbsp;</td>
</tr>
<tr>
    <td><span class='text'>Total Charges</span></td>
    <td>&nbsp;</td>
</tr>";

```

```

$i = 1;
while($row = mysql_fetch_array($result))
{
    echo "<tr class='content'>";
    echo "<td class='text'>$i</td>";
    echo "<td class='text'>".stripslashes($row['Bulletin_title'])."</td>";
    echo "<td class='text'>".stripslashes($row['Short_story'])."</td>";
    echo "<td class='text'> <center>".$row['Date_released']. "<center></td>";
    echo "<td class='text'>".$row['Year']. "</td>";
    $id = $row['ID'];
    echo "<td class='text'>
    <form method='post' action='bulletin_edit.php'>
    <input type='hidden' name='id' value='$id' />
    <input type='submit' name='edit' value='Edit' />
    </form></td>";
    echo "<td class='text'>
    <form method='post' action='bulletin.php'>
    <input type='hidden' name='hiddenDelete' value='$id' />
    <input type='submit' name='delete' value='Delete' /><br />
    </form></td>";
    echo "</tr>";
    $i++;
}
echo "</table>";
mysql_close($con);
?>
<p><select name="select" class="text">
    <option></option>
    <option>Check-In</option>
    <option>Reserved</option></select>
    <input type="submit" name="save2" value="Save" />
    <input type="submit" name="close2" value="Update" />
    <input type="submit" name="close22" value="Close" /></p>

```

CHAPTER 4

RESULTS AND DISCUSSION

As the aim of the research is to do research on the function and role played by Accommodation Service System (ACMSS) in bringing the efficient way to provide systematic features to the hoteliers, and the users by easing everyone's task. Data gathered from the feedback of system's primary end users (hotel customers/guests) was compiled, analyzed and summarized to justify the feasibility of implementing ACMSS to ensure that the system's goals is met which is to further meet the specific needs of current system's users. Results from the attempted data collection techniques, namely, questionnaires (See Appendix A) and feedback from prototypes will serve to determine user requirements and used as a basis to measure the effectiveness and usability of the system. The feedback analyzed through the questionnaire is as shown below in the form of pie charts.

As the data was analyzed the author has develop a rough idea on how the system should be working. This was done by using the class diagram where it is a core to object-oriented design. The class diagram describes the types of objects in the system and the static relationships between them. The class diagram in this case is used to show the classes existing within the model of the system. Design class diagrams allow the reader to see what needs to be implemented in the system from the developer's point of view. The diagrams attached here are concerning the core functions of the system.

4.1 Results

These pie charts are derived from the respondents view and opinion through the Questionnaire (See Appendix A) handed out to them. A pie chart was derived for each question to get a better understanding on the primary end users view on the current system and functionalities that they expect to be in the proposed system. This survey was carried out among 50 final year ICT/BIS students.

4.1.1 What is the prime resource that you used to obtain information and doing the hotel reservation.

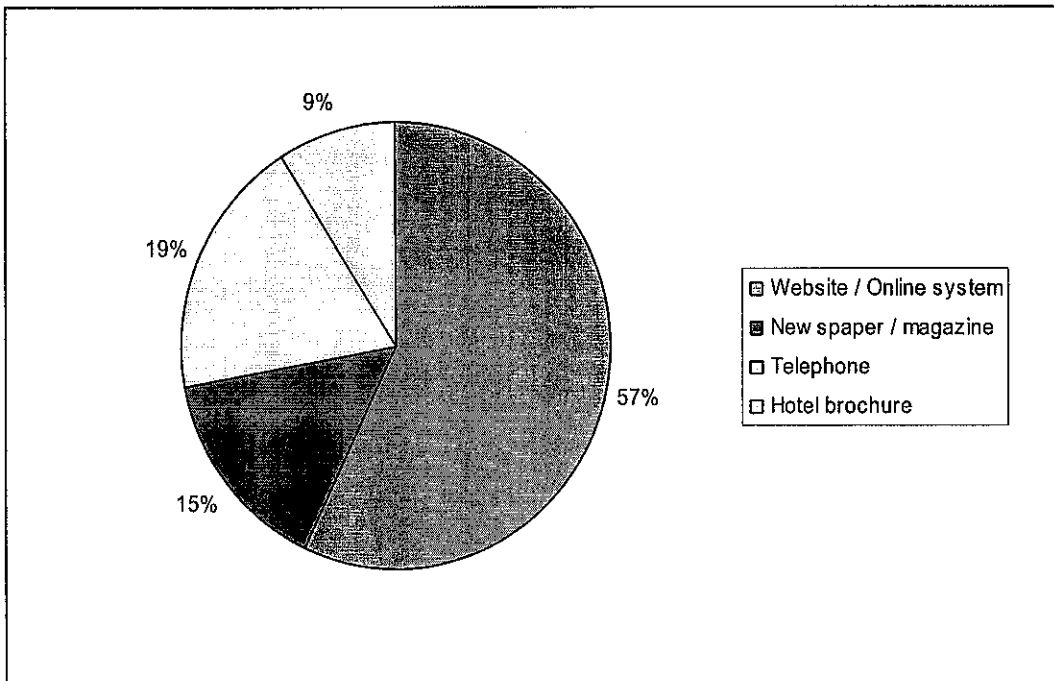


Figure 4.1: Resources used for getting information in doing hotel reservation.

Based on the responds given by the users, it shows that website or online system has become the prime resource of obtaining information for doing the hotel reservation. This data clearly shows on the efficiency of the current system.

4.1.2 Do you think that the ACMSS is full of information and helpful.

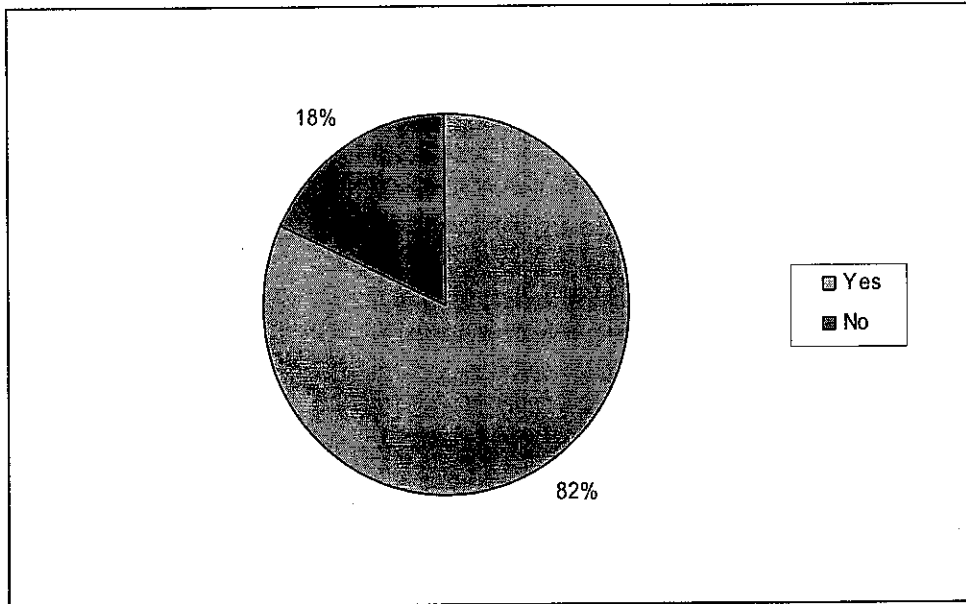


Figure 4.2: Users view on the goodness of the system.

Based on the pie chart above, majority of the users which is about 82% think that the current system is full with information and helpful.

4.1.3 Did you find out that it is relatively easy to use the current system.

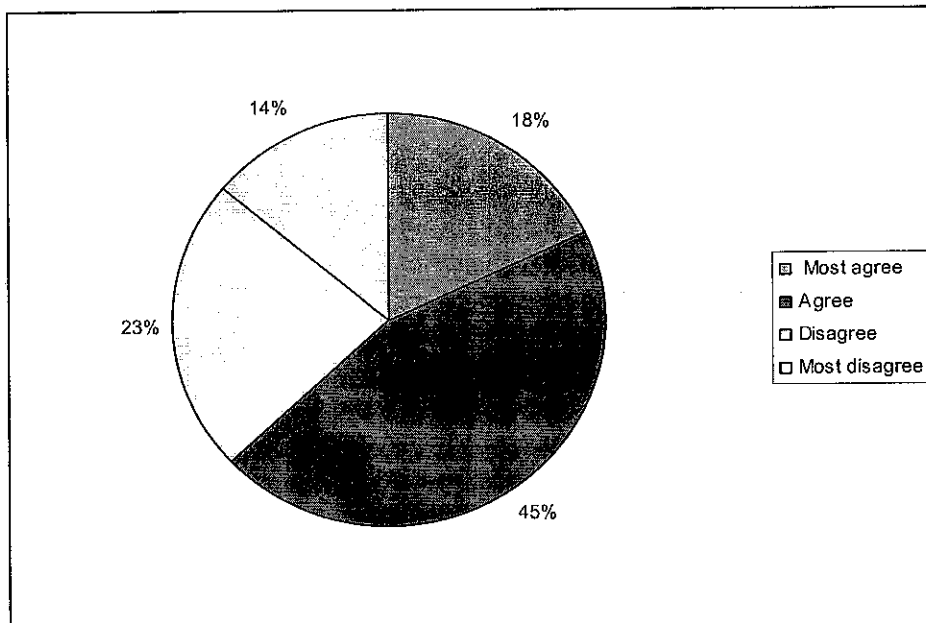


Figure 4.3: Users view on the usability of the proposed system.

According to the data above, it shows that majority of the users agree that it is relatively easy to use the current system.

4.1.4 In which area do you think that the traditional hotel reservation system can be improved.

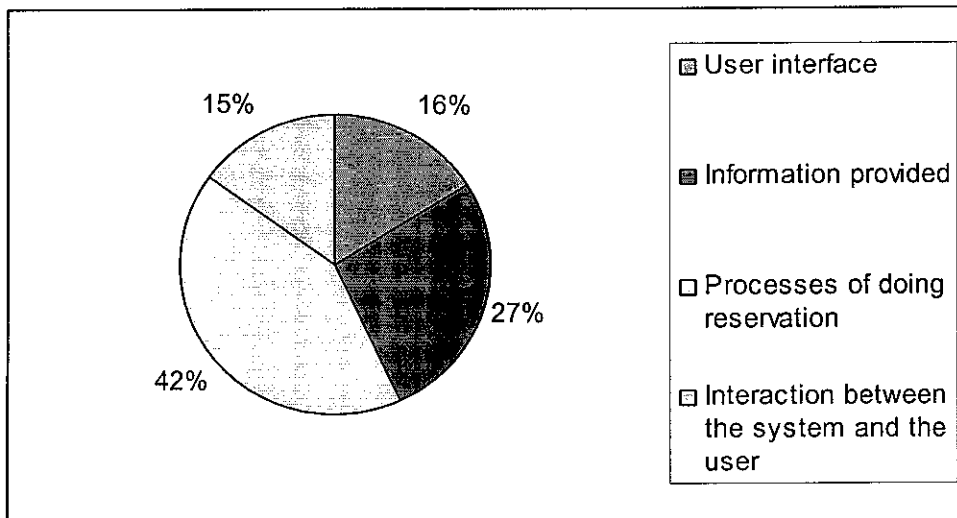


Figure 4.4: Areas that need to be improved.

Referring to the data obtained, as shown in Figure 4.4, process of doing reservation is the area that needs most improvement follows by the information provided, user interface, and the interaction between the system and the users.

4.1.5 What are the features that you think the most wanted in any online hotel reservation system.

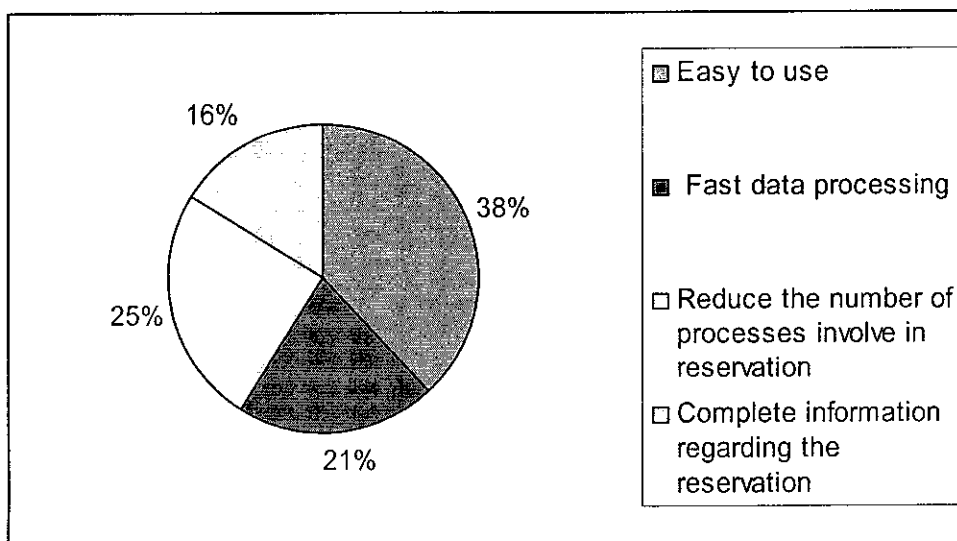


Figure 4.5: Most required features.

Base on the result above, easy to use and reduce the number of processes that involves in reservation are the top two features that most wanted by the user in any online reservation system.

4.1.6 Do you think that the existing traditional hotel reservation system is full of information and helpful.

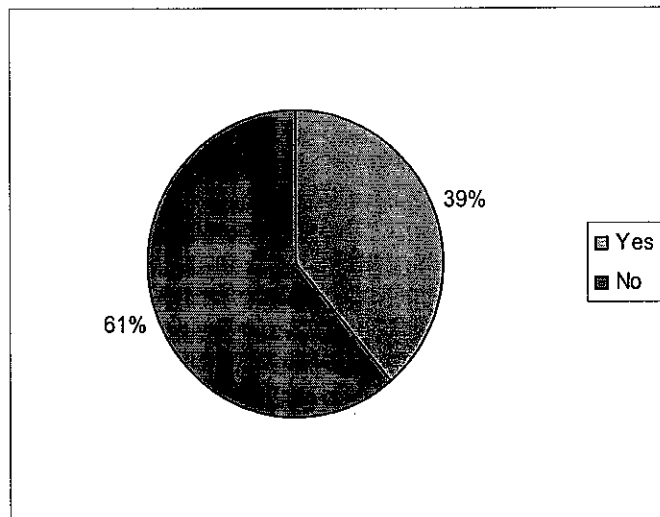


Figure 4.6: Hoteliers view about the existing system.

About 61% hoteliers perceived that the existing traditional hotel reservation system was not very helpful and full with information, Figure 4.6.

4.1.7 Did you find out that it is relatively easy to use the traditional hotel reservation system.

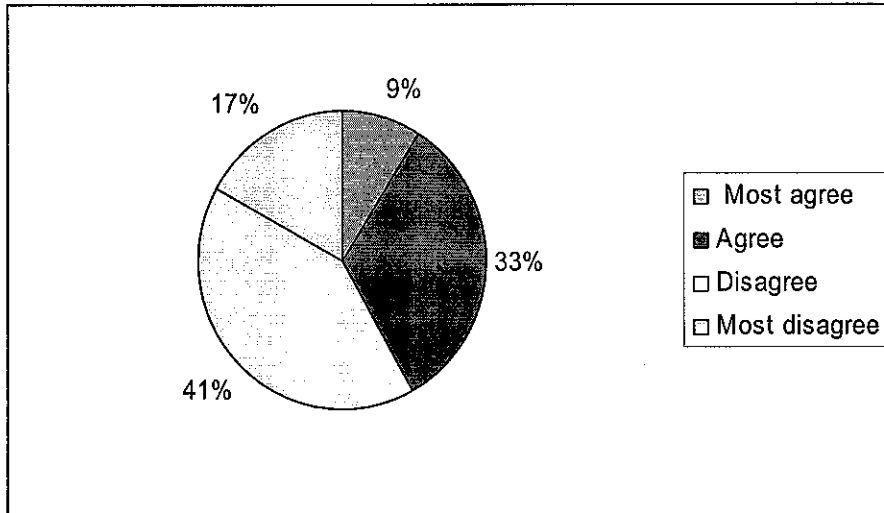


Figure 4.7: Easy to used of the traditional system.

Majority of the hoteliers believe that the existing traditional system was not relatively easy to use and about only 9% of the users strongly agree with the system. This shows a strong point to undertake the system development of ACMSS.

4.1.8 In which area do you think that the traditional hotel reservation system can be improved.

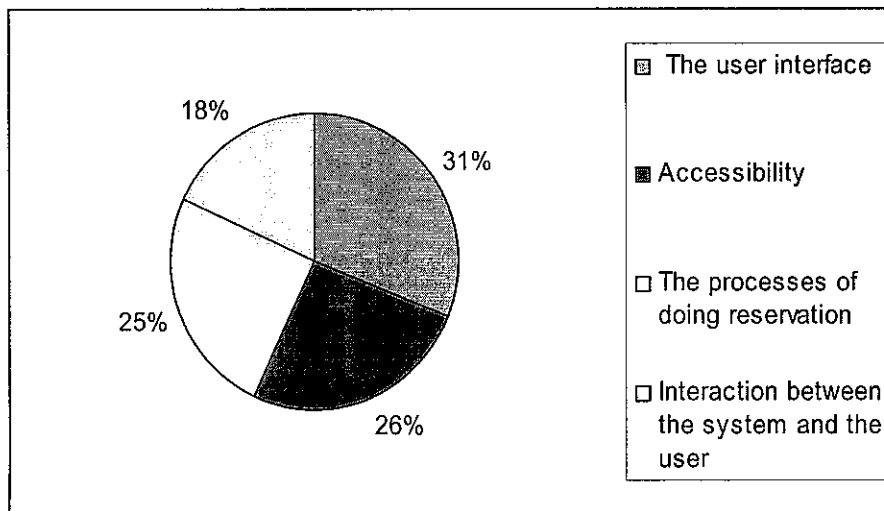


Figure 4.8: Users view on which area should be improved.

Referring to Figure 4.8, the user interface has become the main area needed to be improved, follows by accessibility, process of doing the reservation, and the interaction between the system and the user with having the percentage of 31%, 26%, 25%, and 18% respectively.

4.1.9 What do you think about traditional hotel reservation system.

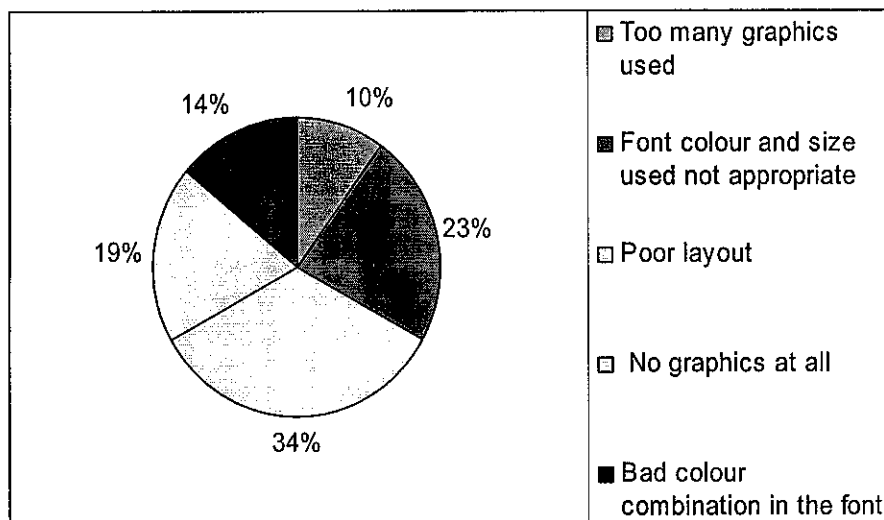


Figure 4.9: Users perception about traditional system.

Based on the chart above, it is clear that all users have their share of complaints on the current system. Out of 50 users comprises the hoteliers and hotel customer/guest, 14% say that the interface has a bad colour combination of layout and font, 19% of them state that the interface is too wordy where no graphics are included, 34% agree that the layout of the system is poor which is the highest percentage, 23% state that the font size and colour is not appropriate and 10% agree that there are too many graphic used. Based on this data, it is proven that majority of the end users which mainly consists of hotel front desk are not satisfied with the current system interface.

4.2 Implementation

Implementation is one of the last few phases in the development of a system. The implementation process is the transformation stage from the system design to the executable system. Besides the actual coding of the system, the selection of programming language and techniques employed, the use of the appropriate tools and the way implementation problems are handled play an important role in the success of the implementation process.

Implementation steps that were followed and included in the process of developing this system were:

- Writing computer software or coding: this is the task of actually writing code with emphasis on ensuring that programs meet design specifications.
- Testing the software: this involves the use of test data and scenarios to see how the system will function in normal and abnormal circumstances.

The author explains the core functions that were implemented in the system. Functions that the author faced problems with and how they were overcome are all explained in this chapter. Problems are discussed upon and solutions are stated.

4.2.1 Description of Implementation Plan and Method

It is always good to plan the implementation process like all the other processes involved in developing a project. The author planned out in advance how to actually develop the system step by step to ease and systematically follow the implementation process. The diagram below shows the overall implementation plan for the system and how each module was implemented is showcased in another diagram and is included for readers viewing and understanding, Figure 4.18.

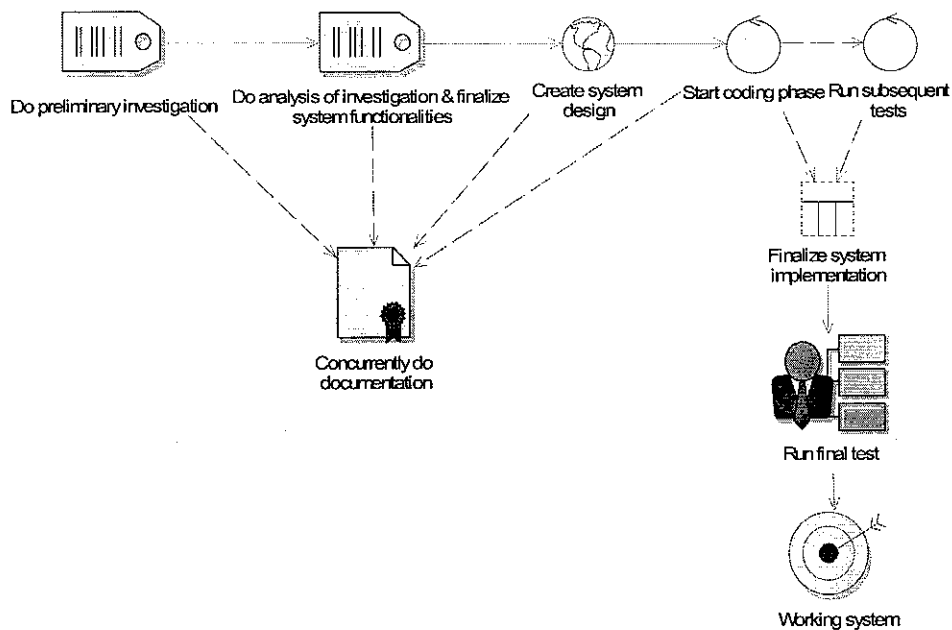


Figure 4.10: Overall Implementation Plan.

*Note: The dotted lines represent concurrently done activities

The preliminary investigation that took place lead the author to analyzing and studying the findings, from the findings the author came up with the system design taking into account meeting the user requirements. The coding phase is then carried out and concurrently the tests are also done as the methodology used is Prototype Model which allows for tests to be conducted while the system is still in the development phase. These tests were conducted by the author as to find out if the codes generated were working.

Once the system was working and was coded module by module, the developer finalizes the system so that it could be tested finally by the users of the system. After which the tests were run and recorded, the author could finally state that the system developed is working. Concurrently whatever that was done and recorded was also being documented as the means for the reader to find out what was done and this was prepared so that the author himself would not forget to put

in whatever that was completed as a proof. After the overall implementation plan was lined out, the next was to line out what were the modules that were to be implemented by stages.

After highlighting the modules that were to be implemented first, what were the functions that were to be implemented first in each module were then affirmed this was so that the author would not face any confusion during development as to which function should be implemented first and so on. This particular implementation plan was also highlighted since there were functions that were shared by the modules, if the function was finalized in one module; it can then be implemented in the other modules easily, resulting in a shorter time spent on implementation.

4.2.2 Explanation on Functions Implemented

Whatever functions that were the core of the system are explained in this particular section. How these functions work and what was needed is also discussed for the readers understanding.

4.2.2.1 Check Availability Function

The check availability function will allow the system user to check whether requested room according to information given by the user such as check-in date, check-out date, and room type is available or not in the system before a reservation can take place.

4.2.2.2 Reservation Notification Function

This function is trigger out once the user reservation has been successful. This function will let the user know their reservation which is a unique ID. Prior to that, the user will have to fill in all their personal details such as name, address, IC/passport number, email address and others.

4.2.2.3 Login Function

Login function will only allow the authenticated user such as front desk admin to login into the system to perform their tasks.

4.2.2.4 Desk Clerk Function

Desk clerk function will allow the front desk admin/people to monitor the whole room status available in the hotel. It will show the room info such as room number, room floor, and the room status whether it is vacant, occupied, cleaned, blocked, and reserved. Thus, it enables the front desk people to do their task easily.

4.2.2.5 Reservation Function

The reservation function will make the process of check-in easier. It provides a section that requires the front desk people to key in the user reservation ID. A valid reservation ID will result all information about the hotel customer/guest such as personal detail, staying information and billing information being displayed accordingly in designated area within the system. This reduces the work load of the front desk whereby they do not have to re-enter again all relevance information into the system.

4.2.2.6 Guest Info Function

This function enables the front desk to monitor a list of the hotel customers/guests on particular time. It will display all the details information of the customers regarding their reservation made and the front desk can change or update their booking/reservation status.

4.2.2.7 Check-Out Function

In this function, its focus on dealing with the customer who wants to check-out from the hotel once their staying period was over. The function will provide the front desk with information regarding the customer,

staying duration, and the billing. There are a few other sub-functions within this function such as Print, Check-Out, and Update that give more option to the front desk to take according to their necessities.

4.2.3 Problems Encountered During Implementations and Solutions

There were a number of problems encountered during the implementation phase of the system. The problems mentioned here concern the coding phase. Each major problem faced is explained here in detail and how it was encountered.

The first problems face by the author is the calendar that enables a user to click on the calendar image to select the desired date for check-in and check-out date during the reservation process. At first nothing takes affect when a user clicks on the calendar icon. After some time taken to check the code, the author manages to find out the problem which is indifferent name used in the form and in the calendar code itself. After made same correction, the desired output by clicking the calendar image and select the date for check-in and check-out can be performed.

Next problem that the author encounters was unable to perform the check availability function. Supposedly the check availability function will allow the system user to check whether requested room according to information given by the user such as check-in date, check-out date, and room type is available or not in the system before a reservation can take place. The difficulty that the author had is to querying the check-in and check-out date that later will determine which date is available for receiving the new reservation thus make the rooms available to the requested customer. From the time being, the author still not able solve this problem even a few techniques or approaches has be taken.

Another problem that the author ever experienced is the Apache Web server was not able identified the PHP code due to differences in PHP tag used is the code and the one that being used or declared in the server configuration. PHP

tag used in the code is `<?>` for opening and `?>` for closing. Meanwhile, in the configuration file it used and only allow such tag `<?php` for opening and `?>` for closing. To solve the problem, the author has change the opening and closing PHP tag used in the code and follow the one that being used/declared in the configuration file.

The following problems encounter by the author is to do the summation of billing or rate charge towards the hotel customer on their check-out. In normal practise, the customer will have to pay some amount of money for the deposit on their staying in the hotel. So, this amount need to be captured or keep in the system database and later on it will be deducted from the total rate or charge applied. Furthermore, a calculation must be done if there is a discount applied in the billing. Currently the problem is still there and the author has a strong believe that towards the end of this system development, the mention problem could be solved.

One problem that can be considered a major one that the author faced was in creating the help desk module. The author faces the difficulty in terms of how to manage all the rooms that separated by floor and room number together with the information regarding the room status and to determine who the current customer in that particular room is. The room statuses is vary such as vacant, occupied, blocked, cleaned, reserved, and check-out. The front desk should be able to know the room status at the eye glance by providing different indicator such as colour and it should tally with the system database in overall pertaining the check-in and check-out activities, and the reservation made.

As a conclusion, some of the problems encountered were able to be overcome by thoroughly debugging the system and some were not. Once the error was pointed out, it was changed and run again; from there the system started functioning well. There were a few other problems faced but they are not stated here, only the main ones are.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

The whole purpose to having goals and objectives and achieving them are to satisfy the users' needs and requirements. When developing a system, users' needs and requirements are and always should be looked into. If in any case they are not kept track of, then the developed system might not serve a purpose to the targeted end users. To conclude if the system is beneficial to the targeted users, users' must be mostly if not wholly satisfied with the developed project.

Testes were conducted; observations were made in order to find out if the system is of any benefits to the users'. From the results received, it can be concluded that the system is advantageous to users since they were purely pleased with it when using it.

The system designed is easy to use. In other words, it is a fairly user friendly system. Not only does it cater for users' who are computer literate, it also does not to forget the users' who are somewhat new to the computer world. The functions available for each targeted group of users serve a significant purpose for that particular group. Let us analyze each and every enhanced function available and what are the benefits to the targeted end users by looking at each core function separately.

- **Provide new reservation opportunity through internet that is accessible anytime anywhere.**

The developed system has bringing in the new opportunity in doing hotel reservation through internet that is accessible anytime anywhere without any constraint. Beside that, the user would be able to get the notification about room availability in real time.

- **Able to reduce processing errors**

Processing errors are able to be reduced due level of human intervention found in manual reservation system or in traditional automated reservation system.

- **An interactive online system to increase efficiency of hotel management.**

By using such system, the hoteliers will be able to effectively and efficiently manage their room reservation or handle check-in and check-out of their customers/guests.

- **User-friendly interface for the customers and the users.**

A good user interface that meets the objectives of human-computer interaction, definitely very important in developing Web-base system and to ensure the smooth operation of the user and the system as well.

5.1 Limitations and Errors

Like any other system designed, there are bound to be some sort of limitations that will exist in the implementation. This system, like those other systems is not excluded but future enhancements can be made in order to overcome certain limitations existing.

One of the many limitations of the system is, not all users can access the current system since the system only caters the functional two levels of users. Users without having a valid reservation ID are not able to make usage of the system. A legitimate system user with having these valid reservation ID are also just limited to very few functions, not able to make changes and so on since they are mostly able to just viewing the functions allocated for them.

Another quite interesting limitation is that the system does not incorporate other groupware features at the moment. It would have been better if the system was able to incorporate such features.

Finally, the security features of the system are not all that thorough. The system would have been much more secure if more security measures were implemented.

5.2 Problems Encountered

As with any software development, problems occur throughout the implementation process. There is no exception to this system. A number of problems surfaced during the testing and the implementation stage. Different ways and alternative methods were used to counter back or overcome the problems.

As with any web programming, the coding needs to be first tested using a Web server. The scripts were then tested on Apache Web server. The system started to hang each time the developer tried to run the scripts. After several attempts and repeated restarts, the author managed to make it work.

The author also joined the mailing list to several programming sites, which offered tips on a weekly basis. Help was also sought from colleagues. All these efforts did contribute a lot towards the author's understanding of the language. Nevertheless, the developer was still unable to successfully test the coding. Finally, as one last tries, the author modified the codes a little, tested it, and finally got it running. The same problem was faced during the implementation of the core functions.

5.3 Possible Future Enhancements and Recommendation

Drawbacks in the system implemented leads to possible future enhancement ideas. The many enhancements that can take place are explained in detail.

- **More interactive user interfaces**

In the future, animation technology will be included in this project to make the project more interactive. Animation and other additional multimedia elements will slow down the loading time of the page; therefore, it should be designed when it

is necessary. For example, animation can be included in a help function where it guides the user on how to engage themselves with ACMSS.

- **Enhance the entire system**

The system will be a large system and will comprise various functions for different levels of users. By incorporating Groupware features, the system not only is large, but also one that is able to fit in and function in almost any hotel industry.

- **Enhance certain functions**

Time did not permit the author to emphasize on certain functions that could be enhanced. One of the many is the reminder function. In the future, users would be able to choose between being reminded about their reservation made by email or SMS, allowing more interaction with wireless and mobile devices. Another enhancement would be to allow the whole system to be accessed via wireless mobile devices.

- **Version control**

Features of the system can be modified, added, or removed and it is better to a version control on the page. This way, from the version number, the user can know that monitoring system has been changed. This will encourage the user to use latest version. This is the developer's contribution to version 1.0.

- **Improve the security features**

Security plays a crucial role in any system. A better and more secure system would be implemented in the future. For example, the customer should be able to set and change their own password or reservation ID and not only use the one given to them. This can help others access their account easily by random guessing of passwords.

- **Include aspects of latest technology**

Include aspects of wireless technology in the system where it can be accessed through mobile phone using Bluetooth.

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APPENDICES

APPENDIX A Gantt Chart

APPENDIX B Questionnaires survey on Traditional / Hotel Reservation System

APPENDIX B

Survey on Traditional / Hotel Reservation System

Instructions:

- i. Please tick your answer. If your answer is 'Others', please fill in the blanks provided.
- ii. Hotel guest/customer/user please answer question 1 – 5 only. Hoteliers/ front desk please answer question 6 – 9 only.

1. What is the prime resource that you used to obtain information and doing the hotel reservation?

- a. Website / Online system
- b. Newspaper / magazine
- c. Telephone
- d. Hotel brochure

Others: _____

2. Do you think that the ACMSS is full of information and helpful?

- a. Yes
- b. No

3. Did you find out that it is relatively easy to use the current system?

- a. Most agree
- b. Agree
- c. Disagree
- d. Most disagree

4. In which area do you think that the traditional hotel reservation system can be improved?

- a. The user interface
- b. Information given to the hotel guest

- c. The processes of doing reservation which is involving a few steps and troublesome
- d. Interaction between the system and the user

Others: _____

5. What are the features that you think the most wanted in any online hotel reservation system?

- a. Easy to use
- b. Fast data processing
- c. A few instead of many processes that involve in doing the reservation
- d. Complete information regarding the reservation such as hotel rate, facilities provided, panoramic view of the hotel or rooms and others.

Others: _____

Note: You may tick more than one answer for question number 5 above.

6. Do you think that the existing traditional hotel reservation system is full of information and helpful?

- a. Yes
- b. No

7. Did you find out that it is relatively easy to use the traditional hotel reservation system?

- a. Most agree
- b. Agree
- c. Disagree
- d. Most disagree

8. In which area do you think that the traditional hotel reservation system can be improved?

- a. The user interface
- b. Accessibility

- c. The processes of doing reservation which is involving a few steps and troublesome
- d. Interaction between the system and the user

Others: _____

Note: You may tick more than one answer for question number 8 above.

9. What do you think about traditional hotel reservation system?

- a. Too many graphics used
- b. Font colour and size used not appropriate
- c. Poor layout
- d. No graphics at all
- e. Bad colour combination in the font and layout

Others: _____

Note: You may tick more than one answer for question number 9 above.