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“ONLINE SECONDHAND BOOK (BUYING AND RESELLING) SYSTEM”

TAN YONG KIT

A thesis submitted in fulfillment of the requirements
for the award of the Bachelor of Science (Computer Science)

FACULTY OF COMPUTER SCIENCE AND INFORMATION SYSTEMS
UNIVERSITI TEKNOLOGI MALAYSIA

2009/2010
“I declare that the content of this thesis is my original with the exclusion of references that has been appropriately acknowledged.”

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Also, I would like to express my greatest appreciation to my parents, who had always given me hope and confidence. Their confidence and trust in me had made it possible for me to believe in myself. Thank you for always being there for me when I need support.

Last but not least, I would like to extend my many thanks to my good friends who have helped me in the completion of this thesis. Your generosity and patience means a lot to me. I look forward to working with you in the near future.
E-commerce is growing steadily in this technology driven society, people keeps on searching for cheaper and faster business strategies. This is where internet comes in and provides a platform for people to do their business online. The co-operative shop in UTM has been providing the student of UTM in purchasing their books regardless of any types. Its services and collection development activities are geared towards fulfilling the need for students convenient in getting their books. But the co-op shop lacks of a system that provides a platform for students to sell and purchase secondhand books. In recent years, university students have been having problem finding cheap and affordable books to help them in their studies. So this system will display the available secondhand and new books in co-op. In addition, this system also provides a place for UTM members to buy and sell used secondhand books to provide a cheaper and affordable reading materials.
ABSTRAK

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CHAPTER 1

INTRODUCTION

1.1 Project Introduction

Online Book Donation (Second Hand Reselling) system was developed to manage and operate the process of collecting used books for UTM co-op. This system will provide a platform for the member of UTM to sell and buy used secondhand book and also new books online.

With today advancement in information technology, it is no wonder that user hopes for a services that may spread information on the books they would like to read or buy. That is why this system is specifically design to work online to increase the quality of services of UTM co-op.
The methodology used for developing this system is by using prototype methodology. The methodology chose was based on the suitability of the size, scope and duration of developing this system

1.2 Background Problems

In this technology driven society, UTM co-op did not fall behind in providing Information and Communication Technology (ICT) services based on online application for the purpose of convenience for UTM staff and students.

Currently UTM co-op does not have an online system that provides a platform for the member of UTM to buy and sell their used secondhand books. By developing this system it will provide the member of UTM to search for any used books by senior or lecturer in UTM.

In recent studies, it shows that students of UTM will tend to Photostat their textbook instead of buying a new one as a new textbooks cost a fortune, so they will find alternative way to get the books such as Photostat or get from their senior. This will breed a very bad habit as Photostat is an act of plagiarism.

Students also tend to read less book as a book is very costly so they would just download and read books from the internet. So by providing a cheaper alternatives for students to get their books, it will boost their interest in reading and thus promote a reading society.
1.3 Problem Statement

Based on the study done in background of the problem, a few problem statements had been identified. The following are the questions that have to be solved in this project:

i. Can this system provide the necessary platform to allow buying and selling of used secondhand books?
ii. Does the searching system works so that user can search the books easily?
iii. How the payment of the transaction is done through this system?

1.4 Goal of the Project

The main goal of this project is to build a one stop web-based system that can help the organization to provide a platform for buying and selling of used secondhand books.
1.5 Objectives of the Project

Based on the problem statement that had been identified and the goal of the project, the following are the objectives for the project:

i. To develop a platform for member of UTM to buy and sell second hand books.

ii. To develop a convenient book search function for the end user.

iii. To facilitate the process payment using online payment method.

iv. To study the second hand book business and to then develop as prototype system for the second hand book.

1.5 Scope of the Project

By identifying the scopes of the study, it provides a guideline in developing the system. The study concentrates on the scopes listed as below in order to achieve the objectives stated above.

i. This is system is an online web-based system that use by the administrator and the member of UTM on book selling system.

ii. This system can help the member of UTM to find cheap and affordable secondhand book.

iii. Online payment is not part of the scope.
1.7 Significance of the Project

For my part of the module, my system will allow the member of UTM to search for secondhand books that is cheap and affordable so that they won’t have to buy a new book as some of the textbooks require in certain course are very expensive. The system will become a platform for the member of UTM to view available secondhand book that is for purchase and student will be able to pay by using their bank account.

1.8 Conclusion

Overall, this chapter gives explanation on introduction about the project that is going to be developed. In early stage, there is explanation on the background of the problem that exists on the current system. This include the troublesome and inconveniences of using the current system as it take a lot of time and the customer has to come all along to the office just to fill up a form . When all the problems had been clarified, the next step is to construct a goal for the project to achieve together with its objectives of the project. And finally in this chapter is the significance of the project, which gives explanations on the importance of developing the project replacing the current system.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Literature review is an important part in developing a system. It is one of the techniques used in gathering data and information on the questionable area in the system. Literature review can be done through research and study of previous or similar system or by reading regarding materials that can be useful in developing the system. Research on the previous or similar system will help to generate new ideas in improving or create new innovative ideas in the functions of the system.

Through literature review, we can know the needs of the system that is proposed and also get to know more in depth on the problem arises in the system. It is normally done by studying on the background of the organization so that we can know the suitability of the system with the organization. Besides that, doing interview with the corresponding staff of the organization will let us be familiarizing with the flow of the organization.
2.2 The Internet and the Hypertext Transfer Protocol

2.2.1 The World Wide Web

The World Wide Web is a system of interlinked, hypertext documents accessed via the Internet. With a web browser, a user views web pages that may contain text, images, and other multimedia and navigates between them uses links.

2.2.2. The Hypertext Transfer Protocol (HTTP)

Hypertext Transfer Protocol or so-called HTTP is a communications protocol used to transfer or convey information on the World Wide Web.

HTTP is a request/response protocol between clients and servers. The originating client, such as a web browser, or other end-user tool, is referred to as the user agent. The destination server, which stores or creates resources such as HTML files and images, is called the origin server. In between the user agent and origin server may be several intermediaries, such as proxy gateways, and tunnels. It is useful to remember that HTTP does not need TCP/IP. Indeed HTTP can be implemented on top of any other protocol on the Internet, or on other networks. HTTP only presumes a reliable transport; any protocol that provides such guarantees can be used.
2.3 HTML

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display on a World Wide Web browser page. The markup tells the Web browser how to display a Web page's words and images for the user. Each individual markup code is referred to as an element (but many people also refer to it as a tag). Some elements come in pairs that indicate when some display effect is to begin and when it is to end.

HTML is a formal Recommendation by the World Wide Web Consortium (W3C) and is generally adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes. The current version of HTML is HTML 4.0. However, both Internet Explorer and Netscape implement some features differently and provide non-standard extensions. Web developers using the more advanced features of HTML 4 may have to design pages for both browsers and send out the appropriate version to a user. Significant features in HTML 4 are sometimes described in general as dynamic HTML. What is sometimes referred to as HTML 5 is an extensible form of HTML called Extensible Hypertext Markup Language (XHTML).

2.4 E-Commerce

E-commerce is the online transaction of business, featuring linked computer systems of the vendor, host, and buyer. Electronic transactions involve the transfer of ownership or rights to use a good or service. Most people are familiar with business-to-consumer electronic business (B2C). Common illustrations include Amazon.com, llbean.com, CompUSA.com, travelocity.com, and hotels.com.
E-commerce can be divided into:

i. E-tailing or "virtual storefronts" on Web sites with online catalogs, sometimes gathered into a "virtual mall"

ii. The gathering and use of demographic data through Web contacts

iii. Electronic Data Interchange (EDI), the business-to-business exchange of data e-mail and fax and their use as media for reaching prospects and established customers (for example, with newsletters)

iv. Business-to-business buying and selling (B2B)

2.5 Studies on Similar Website

2.5.1 www.abebooks.com

Figure 2.1 www.abebooks.com website interfaces
2.5.1.1 History and Background of Website

AbeBooks is an online marketplace for books. More than 110 million new, used, rare, and out-of-print books are offered for sale through the AbeBooks websites from thousands of booksellers around the world. Readers can find bestsellers, collectors can find rare books, students can find new and used textbooks, and treasure hunters can find long-lost books.

AbeBooks Inc. is a subsidiary of Amazon.com, Inc. AbeBooks, an online bookselling pioneer, was acquired in December 2008 and remains a stand-alone operation with headquarters in Victoria, British Columbia, Canada, and a European office in Dusseldorf, Germany. Our mission is to help people find and buy any book from any bookseller anywhere and our business stretches around the world with six international sites - AbeBooks.com, AbeBooks.co.uk, AbeBooks.de, AbeBooks.fr, AbeBooks.it, and IberLibro.com.

Founded in 1995 by two couples from Victoria, AbeBooks.com went live in 1996 and immediately began to transform the world’s used book business by making hard-to-find books easy to locate and purchase. In 2002, the New York Times described the company as “an actual Internet success story.” By 2003, the United Nations acclaimed AbeBooks as one of the world’s leading ecommerce companies at its World Summit.

The unique inventory of books for sale from booksellers includes the world’s finest antiquarian books dating back to the 15th century, countless out-of-print gems, millions of signed books, millions of used copies, a vast selection of college textbooks and new books too.
2.5.1.2 Studies on Current Website

In this topic I would like to list out the pros and cons of the website to the buyer and also seller. Below are the list of the pros and cons:

For Buyers: Pros

i. Possibly the largest database. AbeBooks now states that it has over 100 million listings from over 13,500 dealers.

ii. A “keyword” search which is in reality an “almost any word” search (searches title, author, description, publisher information and actual keywords).

iii. Simple “all in one” search results, easily modifiable.

iv. Ability to save search preferences. While this is rather limited, you can save the default order for results (highest price, lowest, newest listing, alpha by author or title), Boolean search on or off, etc.

v. Easy contact with booksellers. Friendly in terms of direct contact, either through the AbeBooks system (which retains a copy, and sends you a copy of your inquiry) or by bypassing the system and emailing them directly. The “ask a bookseller a question” link is displayed with each book on the “first” results page, and if a buyer clicks on that, the email address is open and available.

For Buyers: Cons

i. Possibly the largest database. Unfortunately, among the 100 million listings are many repetitive listings, “re-listings” of books not actually in the
possession of the seller, listings of photocopies, print-on-demand books and
e-books with sometimes inaccurate information, books inadequately
described (“unknown binding”) or with little or no condition descriptions.

or uses “autograph” to mean that the previous owner wrote his/her name in
the book, then these books will be included in the search results for “first
edition” or “signed” books respectively. AbeBooks takes a “hands-off”
approach when it comes to dealers’ pricing and descriptions, which means
that the buyer must exercise due diligence, read descriptions carefully and
asks questions before purchasing.

iii. No ratings or other indication of the reliability of a bookseller.

iv. Inaccurate search results, when modifying factors are selected.

v. Inaccurate help fields.

For Sellers: Pros

i. Permits the most direct contact between buyers and sellers.

ii. Gives sellers the most freedom to set their own shipping rates and policies,
to describe books briefly or at length, and to price books as they wish. Other
than the credit card processing fee, all of the shipping fees go to the seller.

iii. Accepts seller databases in virtually any format, and will customize the
upload. Also provides a free database program called HomeBase for
booksellers to use.

iv. Permits other forms of payment in addition to the MasterCard and Visa,
which AbeBooks processes.

v. Telephone customer support, including a toll free number.
vi. A relatively short holding period on AbeBooks e-commerce sales where they processed the payments, paid weekly with a holding period of from 8 days to 15 days for most booksellers.

vii. An active and often informative bookseller forum.

For Sellers: Cons

i. The cost of listing and selling are quite expensive, the addition of 5.5% on shipping, the higher flat monthly fees and the minimum fees on inexpensive books can push the total monthly bill higher.

ii. The “clutter” and “junk” in the database and the lack of quality control both in terms of sellers and inventory.

iii. Mandatory use of AbeBooks’ credit card processing facilities at a high fee.

iv. Sellers must be pro-active on AbeBooks.

2.5.2 www.amazon.com

![Amazon.com Website Interfaces](image)

Figure 2.2 www.amazon.com Website Interfaces
2.5.2.1 History and Background of Website

Amazon.com, Inc. (NASDAQ: AMZN) is an American-based multinational electronic commerce company. Headquartered in Seattle, Washington, it is America's largest online retailer, with nearly three times the Internet sales revenue of the runner up, Staples, Inc.

Jeff Bezos founded amazon.com, Inc. in 1994 and launched it online in 1995. It started as an online bookstore but soon diversified to product lines of VHS, DVD, music CDs and MP3s, Computer software, video games, electronics, apparel, furniture, food, toys and etc.

2.5.2.2 Studies on Current Website

For this second studies, I am also going to list out the pros and cons of the website. Below are the list of pros and cons:

Pros:

i. Have one of the largest database and listings of books. Make searching for any books in the market easy.

ii. Keyword search functions are really good with hits of similar keywords.

iii. Provides a variety of book type from children to adults’ books.

iv. All the books are categorized neatly into their own genre.

v. Good add to cart system where we can add several books to purchase at a later time.
Cons:

i. There is too much information in website which makes it difficult to process the content in the webpage.

ii. Some of the pages have too many advertisements.

iii. Too little information when listing the books on the pages such as authors and publisher are not stated.

iv. Repetitive listing of books.

2.6 Conclusion

In conclusion, this chapter discusses the study of current web technologies that will be used in the project and also research on website that have similarities with the project that is about to be develop.
3.1 Introduction

A system development methodology refers to the framework that is used to structure, plan, and control the process of developing an information system. A wide variety of such frameworks have evolved over the years, each with its own recognized strengths and weaknesses. One system development methodology is not necessarily suitable for use by all projects. Each of the available methodologies is best suited to specific kinds of projects, based on various technical, organizational, project and team considerations. CMS has considered each of the major prescribed methodologies in context with CMS’ business, applications, organization, and technical environments. As a result, CMS requires the use of any of the following linear and iterative methodologies for CMS systems development, as appropriate.
3.2 Projects Methodology - Prototyping

![Prototype Methodology Phases](image)

**Figure 3.1** Prototype Methodology Phases

**Framework Type: Iterative**

**Basic Principles:**

i. Not a standalone, complete development methodology, but rather an approach to handling selected portions of a larger, more traditional development methodology (i.e. Incremental, Spiral, or Rapid Application Development (RAD)).

ii. Attempts to reduce inherent project risk by breaking a project into smaller segments and providing more ease-of-change during the development process.

iii. User is involved throughout the process, which increases the likelihood of user acceptance of the final implementation.

iv. Small-scale mock-ups of the system are developed following an iterative modification process until the prototype evolves to meet the users’ requirements.
v. While most prototypes are developed with the expectation that they will be discarded, it is possible in some cases to evolve from prototype to working system.

vi. A basic understanding of the fundamental business is necessary to avoid solving the wrong problem.

Strengths:

i. “Addresses the inability of many users to specify their information needs, and the difficulty of systems analysts to understand the user’s environment, by providing the user with a tentative system for experimental purposes at the earliest possible time.” (Janson and Smith, 1985)

ii. “can be used to realistically model the important aspects of a system during each phase of the traditional life cycle.” (Huffaker, 1986)

iii. Improves both user participation in system development and communication among project stakeholders.

iv. Especially useful for resolving unclear objectives; developing and validating user requirements; experimenting with or comparing various design solutions; or investigating both performance and the human computer interface.

v. Potential exists for exploiting knowledge gained in an early iteration as later iterations are developed.

vi. Helps to easily identify confusing or difficult functions and missing functionality.

vii. May generate specifications for a production application

viii. Encourages innovation and flexible designs.

ix. Provides quick implementation of an incomplete. But functional, application.
Weaknesses:

1. Approval process and control is not strict.
2. Incomplete or inadequate problem analysis may occur whereby only the most obvious and superficial needs will be addresses, resulting in current inefficient practices being easily built into the new system.
3. Requirements may frequently change significantly.
4. Identification of non-functional elements is difficult to document.
5. Designers may prototype too quickly, without sufficient up-front user needs analysis, resulting in an inflexible design with narrow focus that limits future system potential.
6. Designers may neglect documentation, resulting in insufficient justification for the final product and inadequate records for the future.
7. Can lead to poorly designed systems. Unskilled designers may substitute prototyping for sound design, which can lead to a “quick and dirty system” without global consideration of the integration of all other components. While initial software development is often built to be a “throwaway”, attempting to retroactively produce a solid system design can sometimes be problematic.
8. Can lead to false expectations, where the customer mistakenly believes that the system is “finished” when in fact it is not; the system looks good and has adequate user interfaces, but is not truly functional.
9. Iterations add to project budgets and schedules, thus the added costs must be weighed against the potential benefits. Very small projects may not be able to justify the added time and money, while only the high-risk portions of very large, complex projects may gain benefit from the prototyping.
10. Prototype may not have sufficient checks and balances incorporated.
Situations where most appropriate:

i. Project is for development of an online system requiring extensive user dialog, or for a less well-defined expert and decision support system.

ii. Project is large with many users, interrelationships, and functions, where project risk relating to requirements definition needs to be reduced.

iii. Project objectives are unclear.

iv. Pressure exists for immediate implementation of something.

v. Functional requirements may change frequently and significantly.

vi. User is not fully knowledgeable.

vii. Team members are experienced (particularly if the prototype is not a throw-away).

viii. Team composition is stable.

ix. Project manager is experienced.

x. No need exists the absolutely minimize resource consumption.

xi. No strict requirement exists for approvals at designated milestones.

xii. Analysts/users appreciate the business problems involved, before they begin the project.

xiii. Innovative, flexible designs that will accommodate future changes are not critical.

Situations where least appropriate:

i. Mainframe-based or transaction-oriented batch systems.

ii. Web-enabled e-business systems.

iii. Project team composition is unstable.
iv. Future scalability of design is critical.

v. Project objectives are very unclear, project risk regarding the requirements definition is low.

3.3 Justification of Methodology

Prototype methodology was chose for the development of this project because it has fulfill several specifications below:

i. Suitable with the short duration of project development.

ii. Prototyping method is a good approach for developing a website.

iii. Information of the user needed for the system that is to be develop can be gather in a short duration and the information gather will be precise.

iv. Errors validated in the early stages during the system developments will reduce the risks of system failures.

3.4 Project’s Hardware and Software

The choosing of suitable hardware and software for the system is an important process in order to make sure the execution of the system is smooth and working. This objective of this evaluation is also to identify the set of hardware and software that can support the system that is going to be developed.
3.4.1 Specification of Hardware and its Justification

The specification of hardware that is proposed for the system development is shown in the table 3.1 below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Hardware</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operating System (OS)</td>
<td>Windows 98 and higher version</td>
</tr>
<tr>
<td>2</td>
<td>Microprocessor</td>
<td>Pentium 4 and above</td>
</tr>
<tr>
<td>3</td>
<td>Processor Speed</td>
<td>1000 Mhz and above</td>
</tr>
<tr>
<td>4</td>
<td>RAM Speed</td>
<td>64 MB and above</td>
</tr>
<tr>
<td>5</td>
<td>Hard Disk Capacity</td>
<td>1.7MB and above</td>
</tr>
<tr>
<td>6</td>
<td>Modem</td>
<td>56 Kbps and above</td>
</tr>
</tbody>
</table>

Table 3.1: Hardware needed for the system

3.4.2 Specification of Software and its Justification

The specification of software that is proposed for the system development is shown in the table 3.2 below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Hardware</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ASP.net</td>
<td>Support the interaction between web user and server</td>
</tr>
<tr>
<td>2</td>
<td>MySQL</td>
<td>Database</td>
</tr>
<tr>
<td>3</td>
<td>Microsoft Office</td>
<td>Documentation, and interface design</td>
</tr>
<tr>
<td>4</td>
<td>Microsoft internet explorer</td>
<td>Web server</td>
</tr>
</tbody>
</table>

Table 3.2: Software needed for the system
3.5 Project Planning

We were given a duration of one year or equivalent to two semester to develop a complete system for Projek Sarjana Muda (PSM). The objective in planning for the system is discipline ourselves in executing the phases in the project. This can ensure that the modules in the project can be completed within the time span that is set. The PSM are divided into two parts that is PSM 1 and PSM2.

3.5.1 Planning of PSM 1

PSM 1 is executed in the first semester of third year. Activities that have to be completed in PSM 1 are as follows:

i. Proposal of project title
ii. Choose an organization for research purposes
iii. Set objective and scope of project
iv. Find and gather data about the organization
v. Choose suitable methodology and techniques for developing the system
vi. Plan the project
vii. Complete a draft of the project
viii. Presentation of project

Gant chart are prepared for the time schedule of the activities in PSM 1 in appendix A.
3.5.2 Planning of PSM 2

PSM 2 is executed in the second semester of third year. Activities that have to be completed in PSM 2 are as follows:

i. Re-evaluate the system planned in PSM 1
ii. Ensure the specification for the system chose is suitable
iii. Build and complete the programming of the system
iv. Validate and debug the system build.
v. Complete the system so that it can be used online.

Gant chart are prepared for the time schedule of the activities in PSM 2.

3.6 Conclusion

This chapter discusses about the planning of the project which includes specifying the methodology and strategy used in developing the overall system so that it is suitable. The choosing of the methodology is based on the suitability of the time and resources spent in developing the system. The planning of the project is important to ensure that the system will run smoothly after it is completed in the given time span.
4.1 Introduction

In this section, a brief analysis of the system is done by identifying the system objectives, processes, and the involvement of the users of the system. The system analysis is done using the object-oriented analysis approach to describe the system in a graphical manner. Further description of the work flow is represented using Unified Modeling Language (UML) diagrams.

4.2 System Analysis

A thorough analysis of the system is important in simplifying the task of implementing the steps necessary in building the system. Some points covered during the analysis process would involve analysis of the organization as well as the current
system, the process design, module design, database design, input design as well as the output design.

4.2.1 Organization Background

UTM co-op has been providing the service of selling books and stationery to the students of UTM for many years. It is located behind the Dewan Sultan Iskandar, beside the post office. It is a one stop shop for student to get their supplies on their studies. They sell books that are useful to the students.

4.2.2 Current System

UTM co-op is currently using Microsoft Excel in keeping data of the books. They do not have an existing websites in displaying their books and products. They do not have an online website to promote their books that they sell.

4.3 User Needs

User holds an important role in a system. This is because the system build are mainly for the use of the user. Therefore, the needs of the user in the system are very important for developing a system.

The following are the needs of the user in the system developed:
i. Provide a place for the user to find and buy cheap and affordable books.
ii. Provide a place for member of UTM to sell used books.
iii. Electronic catalogue to browse through the books.
iv. Searching functions that can easily find the books they want.
v. Provide a place for the user to search for their course related books.

4.4 System Design

This section attempts to discuss the process designs, module designs, database designs, input designs and output designs. In layman’s terms, the term ‘design’ refers to the process of translating the requirements specification on paper into a physical system that can function to meet the demands of the client. The designs that I’m referring to concerns identifying and documenting suitable development standards, such as interface designs, coding standards, and all those pertaining to the remainder of the project. System design refers to the design of the overall architecture of the project.

4.4.1 Process Design

In the process design phase, discussion in detail about the modeling process will be done. It will be included with use case diagram and also sequence diagram with further explanation on the diagram.
4.4.2 Use Case Diagram

Use case diagram is used to showcase the system, system environment and relationship between the system and environment. In addition, it can also be used to display the process in executing this system. For this system, the use cases included are mainly consisting of three actor which are Administrator, Buyer and Seller.

4.4.3 Description of the Use Case

There are three actors that have been identified in this system which are administrator, buyer and seller. Each actor has their own roles in the system.

The following table will explain the use case of each actor in the system:

<table>
<thead>
<tr>
<th>Actor</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>- Store the books information into the system</td>
</tr>
<tr>
<td></td>
<td>- Manage and updates all aspect of the system.</td>
</tr>
<tr>
<td>Buyer</td>
<td>- Browse and Search through the website to find for the books that he wants to buy</td>
</tr>
<tr>
<td></td>
<td>- Purchase secondhand books</td>
</tr>
<tr>
<td></td>
<td>- Update personal information</td>
</tr>
<tr>
<td>Seller</td>
<td>- Upload image of used books that he</td>
</tr>
<tr>
<td>wants to sell</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td>- Input information of the used books</td>
<td></td>
</tr>
<tr>
<td>- Update personal information</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.1 Activities of the actor in the use case**

Administrators have the job of maintaining the website so that the website will run smoothly and the data that is inputted in the website are correct. In addition, the administrators also have to store the data of the books that were donated into the database of the system. The administrator will also have to monitor the transactions that are going on in the system so that the user will not abuse the system. Besides that administrator also have to updates the sites from time to time with every new input of used secondhand books.

Buyer can browse through the system to search for desire available secondhand books that he may want to purchase or window shopping the available books. Once they have found the books that they want, they can purchase the books by paying online through online banking or pay by cash by booking the books first. User may register themselves so that their preference in buying books or books that match their course subject can be found in the favorites.

Seller can sell their used books through the system website. In order to do this, first they have let the used secondhand books to be evaluated before it can be display in the website to be selling. Seller needs to register beforehand so that the seller identity can be certain to reduce abused of the user. Seller will have to upload images and input descriptions of the used secondhand books through the website and let the administrator evaluate if the books can be sell in the system website.
4.4.4 Class Diagram

Class diagrams are the mainstay of object-oriented analysis and design. Class
diagrams show the classes of the system, their interrelationships (including inheritance, aggregation, and association), and the operations and attributes of the classes. Class diagrams are used for a wide variety of purposes, including both conceptual/domain modeling and detailed design modeling.

4.4.5 Sequence Diagram

Sequence diagrams model the flow of logic within the system in a visual manner, enabling both to document and validate logic, and are commonly used for both analysis and design purposes. Sequence diagrams are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within the system.

All of the sequence diagram of the system can be refer to in appendix B.

4.5 Hierarchical Module Design

In module design, we will see in detail the hierarchy of the module that is develops in the system. There are three categories in this system which is administrator, buyer, and seller. The modules included are shown below:
Figure 4.3 Hierarchical Charts of Modules in the System
4.6 Interface Design

User interface (UI) prototyping is an iterative analysis technique in which users are actively involved in the mocking-up of the UI for a system. UI prototypes have several purposes:

- As an analysis artifact that enables you to explore the problem space.
- As a requirements artifact to initially envision the system.
- As a design artifact that enables you to explore the solution space of the system.
- A vehicle to communicate the possible UI design(s) of the system.
- A potential foundation from which to continue developing the system.

4.7 Database Design

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

The following table displays the data library of the databases that will be created:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Data Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>image</td>
<td>varchar</td>
<td>200</td>
</tr>
<tr>
<td>title</td>
<td>varchar</td>
<td>200</td>
</tr>
<tr>
<td>Attribute</td>
<td>Data Type</td>
<td>Size</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>------</td>
</tr>
<tr>
<td>author</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>publisher</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>isbn</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>price_before</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>price_after</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>binding</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>condition</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>comments</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>category</td>
<td>varchar</td>
<td>200</td>
</tr>
<tr>
<td>date</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>review</td>
<td>nvarchar</td>
<td>max</td>
</tr>
<tr>
<td>status</td>
<td>varchar</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 4.3 Data library of the class diagram

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Data Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>fullname</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>hp_no</td>
<td>varchar</td>
<td>50</td>
</tr>
<tr>
<td>email</td>
<td>varchar</td>
<td>100</td>
</tr>
<tr>
<td>address</td>
<td>nvarchar</td>
<td>max</td>
</tr>
<tr>
<td>favourite</td>
<td>nvarchar</td>
<td>max</td>
</tr>
</tbody>
</table>

Table 4.4 Data library of seller profile
4.8 Input Design

In this topic, we will see the input specification that will be store in the system. Input is the information or data that is stored by the administrator, user, buyer or seller so that it will be stored into the databases or results generated.

The following describe the input specification of the system:

<table>
<thead>
<tr>
<th>Module</th>
<th>Input Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>Input for new member registration</td>
</tr>
<tr>
<td>Login</td>
<td>Input of Username and Password</td>
</tr>
<tr>
<td>Books Catalogue</td>
<td>Input for new updates of secondhand books</td>
</tr>
<tr>
<td>Account updates</td>
<td>Input for new updates of member information</td>
</tr>
<tr>
<td>Books Information</td>
<td>Input for books records</td>
</tr>
<tr>
<td>Upload Images</td>
<td>Input for images</td>
</tr>
<tr>
<td>User Information</td>
<td>Input for seller information</td>
</tr>
</tbody>
</table>

Table 4.5 Input Specifications

4.9 Output Design

This is almost the same as the input specification but the difference is, output specification is the results of response that is display in the system from the inputted data by the user.
The following describe the output specification of the system:

<table>
<thead>
<tr>
<th>Module</th>
<th>Output Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Catalogue</td>
<td>Displays the various books available in the website</td>
</tr>
<tr>
<td>User Account</td>
<td>Display user information</td>
</tr>
<tr>
<td>Images</td>
<td>Display images of the books</td>
</tr>
<tr>
<td>Search Results</td>
<td>Output the search results</td>
</tr>
<tr>
<td>Book Description</td>
<td>Display the information regarding the books</td>
</tr>
<tr>
<td>Wall</td>
<td>Output all updated information of the system.</td>
</tr>
</tbody>
</table>

**Table 4.6 Output Specification**

4.10 Conclusion

This chapter discusses the draft of the system in detail after the analysis and research done in the previous chapter. The topic discussed in this chapter includes module design, interface design, databases, input and output, UML diagrams and etc. System design can be helpful in building a systematic and give a more general understanding on the process of the system. It will also increase the quality of the system that is built in the end.
CHAPTER 5

SYSTEM IMPLEMENTATION

5.1 Introduction

This chapter will describe the system implementation phase for Online Secondhand Book System in detail and the process required to develop the system. This phase includes installation of the software, hardware and the development of database, programming code, system interface that implemented by ASP.NET and Microsoft SQL Server 2005. Besides that, others programming language that is used to develop the system are JavaScript, html, and css.
5.2 Software Installation

To develop the system, installation of the software and hardware are required in order for the system to function smoothly. The installation process included Microsoft Visual Studio 2008 software. Other specification software and hardware is as below:

1. Window Vista
3. Microsoft SQL Server 2005
4. Mouse
5. Keyboard
6. RAM
7. Modem
8. Processor
9. Printer
10. CD Room

5.2.1 Installation of Microsoft Visual Studio 2008

1. Click setup.exe.
2. Click Install Visual Studio 2008 when the setup window appears.
3. Click *Next* button after the *Microsoft Visual Studio 2008* is installed completely.

4. Choose *I have read and accept the license terms* in the start page window. Key in name and click *Next* button.
5. At the **Options Page** window, choose **Default** and the install path, then click **Install** button

6. After complete copying of *Microsoft Visual Studio 2008* files, then click **Finish** button.
7. Restart the computer after finish the installing Microsoft Visual Studio 2008. After restart complete, **Setup** window will appear. Click **Install Product Documentation**.

Figure 5.6 Screen for Visual Studio 2008 Setup

8. Click **Next** button when the **MSDN Library** is installed completely.
9. At the **Start Page** window, choose *I have read and accept the license terms*. Type in the name and then click **Next**.

10. When the copying of *Microsoft MSDN Library for Visual Studio 2008* is done, click **Finish** button.
11. Finally, Microsoft Visual Studio 2008 is installed successfully.

5.3 Database Development

Several processes are required in Secondhand Book System to ensure the system functions well. The processes involved are shown below:

5.3.1 Database Connection

Microsoft SQL Server 2005 is an effective database management system used in the development of Secondhand Book System. Below is part of the program code that shows how the system connects to the database.
Figure 5.10 Program codes that connect the system with database.

```
'Connecting the system to the database
Dim constring As String = "ConnectionString"
Using myConnection As New
SqlConnection(ConfigurationManager.ConnectionStrings(constring).ConnectionString)
```

The figure shown below is the database of Secondhand Book System.

![Database Image]

Figure 5.11 Tables in Secondhand Book System

5.4 Program Development

Program development is the most important and hardest part that requires a long time to finish. Secondhand Book System is developed with VB.Net.
5.4.1 Insert Data into Database

Figure 5.12 shows the coding on how to insert the new application information into the database.

```vbscript
'Insert data into database

Protected Sub Button1_Click(ByVal sender As Object, ByVal e As System.EventArgs) Handles Button1.Click
    Try
        SqlDataSource1.InsertParameters("title").DefaultValue = TextBox1.Text
        SqlDataSource1.InsertParameters("author").DefaultValue = TextBox2.Text
        SqlDataSource1.InsertParameters("price_before").DefaultValue = TextBox3.Text
        SqlDataSource1.InsertParameters("price_after").DefaultValue = TextBox4.Text
        SqlDataSource1.InsertParameters("publisher").DefaultValue = TextBox5.Text
        SqlDataSource1.InsertParameters("binding").DefaultValue = DropDownList1.SelectedItem.Value
        SqlDataSource1.InsertParameters("condition").DefaultValue = DropDownList2.SelectedItem.Value
        SqlDataSource1.InsertParameters("comments").DefaultValue = TextBox6.Text
        SqlDataSource1.InsertParameters("category").DefaultValue = DropDownList3.SelectedItem.Value
        SqlDataSource1.InsertParameters("review").DefaultValue = TextBox7.Text
        SqlDataSource1.InsertParameters("isbn").DefaultValue = TextBox8.Text
    End Try
End Sub
```

Figure 5.12 Coding to insert data into database
5.4.2 Update Data in Database

Figure 5.13 Coding to update data in database
5.4.3 Read Data from Database

![Coding to read data from database]

**Figure 5.14** Coding to read data from database

5.5 Summary

In conclusion, this chapter described the activity that is done in the system implementation phase. The activities that involved are software installation, database development and program development.
CHAPTER 6

TESTING

6.1 Introduction

This chapter attempts to put robustness of the system to the test by performing a series of the tests to demonstrate reliability of the system. Tests include black box testing and exploratory testing.

6.2 Black Box Testing

Input testing covers all aspect of testing during which the user inserts values into the system. This kind testing attempts to uncover any problems that may occur during the process of submitting data to the system.
6.2.1 Test Cases

The following are some test cases to determine how the system handles errors during data entry.

6.2.1.1 Login

This is the test that involves the process of logging into the system. Entering the wrong combination of username and password results in the message as shown below.

![Error message during login](image1)

Figure 6.1: Error message during login.

6.2.1.2 Signing Up as New User

![Create user wizard](image2)

Figure 6.2: The create user wizard.
This test is conducted when a new user wants to create an account. In the case that the user forgot to fill in any of the form an error message will be prompted to the user asking the user to check back their form and submit the correct value. In the as the above figure, if the user wrongly inputted the username or password the error message will be shown.

6.3 Exploratory Testing

The exploratory testing method seeks to learn how the system actually works, to ask the questions and observe how the system performs against a series of test cases. Testing is done primarily to evaluate the function of the site agent.

6.3.1 Test Cases

<table>
<thead>
<tr>
<th>Username</th>
<th>Description</th>
<th>Expected Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kweiyunn</td>
<td>This user is one of the members in the system. The user has selected its preferences in favourite books that he like (Art, History).</td>
<td>This user will be recommended books according to his preferences.</td>
</tr>
<tr>
<td>Yuhjye</td>
<td>This user also selected his preferred books category (Nature&amp; Pets, History).</td>
<td>This user will be recommended books according to his preference.</td>
</tr>
<tr>
<td>jasper</td>
<td>This user favourite genre of books is Art and science.</td>
<td>This user will be recommended books according to his preference.</td>
</tr>
<tr>
<td>All user</td>
<td>Able to add to cart and display total price.</td>
<td>Calculate the total price of books in the shopping cart.</td>
</tr>
</tbody>
</table>

Table 6.1: Test Cases
Below are the results for the expected outcomes:

Figure 6.3: Product recommended for user (yuhjye)
Figure 6.3: Product recommended for user (jasper)

Figure 6.4: Recommendation for user (kweiyunn)
6.4 Conclusion

As a conclusion, this chapter discusses the tests that are performed on the system, such as the black box testing and exploratory testing methods, which are aimed at making sure that the system works as intended, with minimal errors.
CHAPTER 7

Conclusion

7.1 Introduction

This is the last chapter on this thesis, I will now summarize everything that has been discussed in this thesis chapter by chapter so that we can see the progression of the chapters as well as the expected project outcomes.

7.2. Progress of Chapters

In this segment, I will touch all the topics discussed in this thesis as a whole; a summary of each chapter in this thesis will be mentioned.
7.2.1 Chapter 1: Introduction

In this chapter, reader will be introduced to the system that will be discussed in this thesis, user will be able to view this thesis from my perspective. The purpose of this chapter is to provide a ‘first view’ of the entire thesis, therefore allowing the user to gain some knowledge on how the system is done.

7.2.2 Chapter 2: Literature Review

The literature review is where reader will be able to get additional knowledge on the reading material that I have provided so as to know why this system is developed. In attempt to review critical points of knowledge that may recur throughout the thesis.

7.2.3 Chapter 3: Methodology

This chapter will tell the user about the methodology that is used to develop and design the system that I have done so that they will fully understand what I am about to do in the system. The main point in this chapter will convey extra information such as the nature of requirements described by the client.

7.2.4 Chapter 4: Analysis and Design

In this segment, a brief analysis of the system is done by identifying the system objectives, processes and the involvement of the users of the system and then representing the systems diagrammatically using UML (Unified Modeling Language).
7.2.5 Chapter 5: Implementation

This chapter attempts to give the readers an idea of how the system is implemented, from some brief summary of how to deploy Microsoft SQL Server to the testing and running of the system on the development server.

7.2.6 Chapter 6: Testing

This chapter focuses on testing the robustness of the system, in that the system is able to run with as little as bugs or errors as possible, in any possible given scenario. There are several testing scenarios to pass first before the system is worthy of being labeled as ‘reliable’.

7.3 Expected Outcomes

At the end of the system development, some of the primary expectation of this project includes:

1. The system fulfills the objectives as described in Chapter 1.
2. The system is reliable and user friendly.
3. The system meets the client’s requirement.
7.4 Project Constraint and Challenges

Several constraints had been identified while doing this project. Few of the constraint are as below:

i.  Time given to complete this project is limited. As a result research and studies done on the subject are limited and detail problems on the system are neglected. The interface produced is sloppy and not interesting.

ii. Inexperience in the project that is developing resulting in incomplete system being produced. There is the possibility that the methodology and interface chose are not suitable.

iii. Insufficient of data collection through interview and websites as the staff of UTM co-op are busy with their daily work. There are also data that need to be add to have better understanding of the system

7.5 Pros and Cons of the system.

This system can help the student of UTM greatly by allowing them to search for cheaper book references for studies as well as leisure reading which will be able to cultivate their passion on reading. In another way it also helps the UTM co-op to generate better sales revenue.

The cons of this system is that because of time constraint, the system develop are still lacking in some aspect and may not be able to gain a better browsing experience for user. But there a re still room for improvement in this system.
7.6 Conclusion

This thesis clearly stated the scope and boundaries all together with the requirements that have been set in chapter 1. This system will provide a template for the students to buy and sell their used books.

In conclusion I hope that by developing this system it will benefit to the co-op in term of sales as well as the member of UTM to raise their awareness on second hand book issues and cultivate their reading habit.
REFERENCE


APPENDIX A

Project Schedule
## Figure A1: Project Gantt Chart
APPENDIX B

UML DIAGRAMS
Figure B1: Sequence Diagram of Registration
Figure B2: Sequence Diagram of Login

Figure B3: Sequence Diagram of Store Book Information
Figure B4: Sequence Diagram of Upload Book Image

Figure B5: Sequence Diagram of Purchase Book
The following is the user manual for the standard operations for this system.

The system is a web-based electronic store that is used for selling secondhand book. This system is composed primarily of two parts, namely the front end and the back end.

1. System Front-end

The front-end of this system is the part which ordinary users, both members and non-members, will see the first thing they enter into the web page.

![Figure C1: Home page](image)

Upon entering the page, the user will have the option to browse the site without registering. In the home page, the user has the option to log into the system, or register
as a new member if the user does not currently have an account. Before we delve further into the details, here are some things that will need to know in order to familiarize with the functions of the system. Shown below are the main navigational buttons of the site.

a. **Home**

This returns the user to the home page.

b. **New Books.**

This brings the user to the latest book page where all the latest books on sale are displayed.

c. **Review.**

This page shows the books that the seller have reviewed.

d. **Contact Us**

This page shows the contact information for UTM co-op.

e. **Login**

Registered user can login via the login button on the home page.

f. **New member Registration**

Guest that wish to buy or sell books can register through the link.
The figure above shows the latest book that is on sale in the system. If the user wants to buy the book, he or she have to register as a member first so that he can fully enjoy the benefit as a member.

Figure C2: Latest Book on Sale.

Figure C3: Books review page
Figure above shows the example of the review on the books that is on sale on the system. User can read through them before they decides on buying which of the books.

![SecondHandBook System](image)

**Figure C4: Login menu**

Figure above shows the login menu for the registered user that wish to login to the system and fully utilized the functions in the system.

![Login menu](image)

**Figure C5: New User Registration**

User who wishes to become member can use the link as shown in figure above to sign up to a new account.
Figure C6: Registration

User will be able to create an account by inserting the appropriate information in the form as shown above the figure.

Figure C7: User profiling menu.

After an account is created, user is required to fill in their particular to be save into the database as their information will be useful in providing the user with better services.
Figure C8: Edit user profile menu.

After filling in their particular user will be redirected to edit user profile menu where user can edit and change their personal information.

When user are login as member, they can see a few changes in the main menu:

a. **Manage books.**

   User can insert, edit and delete the books that they uploaded into the system.

b. **Personal Information.**

   Edit and make changes to their personal information.

c. **Browse for books.**

   User can browse for latest books and purchase the books that they are interested in.

d. **View Cart.**

   User can view the books that they added into the shopping cart.

e. **Recommended Books.**

   User can view the books that are recommended according to their preference so that they can browse through the books much easier.
In the above figure, user can insert a new book that they want to be on sale in the system. After the books is inserted, it will be displayed in the second tab called ‘Books’ where they can view the books that they have submitted and make changes accordingly.

Figure C9: Insert Books menu.

Figure C10: Browse for books.
User can browse for the latest books in the ‘Browse for Books’ page where they can see the information on the books for sale in the system. As shown in the above figure, user can view the seller information and also add the books to cart in the case that they want to purchase the books. The date when the books are posted is displayed on bottom right of the books.

![Items In My Cart](image1)

**Figure C11: Shopping Cart**

In this page the user will be able to view all the books that they have added into the cart. After confirming the books that they wish to buy, they may proceed to the payment.

![Billing information](image2)

**Figure C12: Submit Payment**
After confirming their details and books in the list, user can submit their payment through the system.

![Success Payment](image)

**Figure C13: Successful payment**

After successfully purchase the books, user will be prompted to go to the page they would like to go next.

2. **System Back-end**

The system’s back-end can be accessed from the home page and only if the administrator is signed into the system. The system’s back end consists of the following:

a. **Manage Books**

   Manage all the books that are on sale in the system.

b. **Manage Books Review**

   Manage all the Books Review in the system.

c. **Manage Seller**

   Manage the entire seller in the system.
Figure C14: Manage Books in the system.

Administrator can access all the books in the databases and edit and make changes according to his preference. Besides that, administrator also can insert the books that they want also.
Figure C15: Manage books Review

Administrator can manage all the reviews that have been posted in the system.
Figure C16: Manage the entire user.

Administrator can manage the entire user in the system according to his preferences.