

CHAPTER I

INTRODUCTION

1.1 Background of the Study

East West Colleges is located in the municipality of Banaybanay, the gateway to the province of Davao Oriental. With the existence of the school in the year 2005, the school's library was also established. Ever since it started its operation, different processes inside the library were done manually.

The fastest and easiest way of searching and borrowing book is what every students, faculty and staff of the school wanted. If they won't able to find the book of their choice, they have to spend a lot of time and effort in trying to find a particular book. Otherwise, they cannot borrow the book they needed.

The main purpose of this project is to provide a system that will help the librarian as well as the students in eliminating too much effort and time in dealing different library transactions. A system that makes tedious tasks as easiest and convenient as it can. A system that can ensure the security of the library records and data against possible factors that can cause damages to the important data.

This research study proposes a system that will manage all the processes inside the school's library. The system will be an added feature of the school's website where all the details of books inside the school's library are sited. It will keep records

of all the transactions inside the library and generates reports per month and per semester such as reports for unreturned books, borrowed books, most and rarely borrowed books, deactivated books and recently added books.

Students, guest, faculties and staffs of the school can view the details of books through browsing the school's website. Students can reserve books if and only when they are logged in.

1.2 Description of the Current System

East West Colleges Library is currently using a manual-based system in keeping and storing records for all the book transaction that happens inside the school library, transaction details are manually recorded in a log book where some human errors could possibly occur.

Every student who wants to search a book in the library will have to look for the catalogue of a particular book then go to its specific section or they will directly scan the bookshelves of the library. If they don't find the book of their choice, they will have to spend too much effort and time in finding a particular book.

With the current system of the school's library, making book inventory is really a laborious task for the librarian, because data records are just recorded in a log book and sometimes those needed data are lost, so they are having a hard time in retrieving the needed data in making book inventory.

All the processes inside are done manually, there is no computer involved in all the transaction that happens inside. Two librarians are in-charge to manage all the processes inside the school's library.

1.3 Problem Statement

1.3.1 General

Procedures inside the East West Colleges Library are tedious where the students as well as the librarian exerts too much effort and time in dealing different transactions. Keeping records for important data are not totally secured and due dates of borrowed books are less monitored. Library staffs are having a hard time in making book inventory and human errors causes unreliable records of transactions.

1.3.2 Specific

Specifically, this research project divides the main problem into several problems, to wit:

❖ ***Book searching and borrowing is tedious.***

Students who want to look for the book they want will have to go to the library personally. He will have to look for the catalogue of a specific book and manually scan the bookshelves of specific sections of the book. In relation to this, they have to exert more effort in searching for the desired books. If they didn't find the book they want, they have to spend more time in searching the book. When they already find the book they want, they will have to exert another effort in filling up the log book where all the details of borrowing book transaction can be found, and prior

to this; the school librarian will have to fill up the index card of the borrowed book. If many students will simultaneously borrow a book, some of the students will have to wait until they will be entertained by the librarian, thus, their time will be wasted in waiting for their turn.

❖ ***Less monitoring of borrowed book due dates and unreturned book.***

Librarian is not always aware for book due dates, she will be aware of this if the borrower will return the borrowed book and view it in the borrowed book records. Unreturned book is not also monitored every day, thus, if the wont return the book, they will not be aware of this unless they will have to check the borrowed book records or until they will conduct book inventory.

❖ ***Generating reports needed for book inventory is tedious and time consuming.***

Generating different reports needed for book inventory is a laborious task for the librarian wherein, they have to exert too much effort and time for retrieving the data needed for the process, because some data were stored in different places and some of the records are lost.

❖ ***Mishandling of important library records.***

Transaction records are just written in papers where it can be damaged by rodents. Anyone can possibly steal it or it can be a subject for

tampering where important records can be erased or replaced by anyone most especially, the records of penalty of unreturned books.

❖ ***Records of library transactions are unreliable due to human errors.***

Since the recording of transaction inside the school library is done manually, human errors can possibly occur and this can cause incorrect records of transactions as it is hand written. For example, wrong details of date in borrowing the book. Data duplication is also an effect of human errors that can cause unreliable records.

1.4 Project Objectives

1.4.1 General

With the existing problems of the East West Colleges Library, this project aims to develop and design a system that will eliminate and answer the mentioned problem statement.

The system will lessen the workload of the school's librarian for generating different reports and lessen the time and effort of the student in dealing with different library processes. It will also provide a proper and secured storage for all the records and keeps track for all the books located inside the library.

1.4.2 Specific

The research objective of this study is divided into several specific objectives, to wit;

- ***To design and develop a system that enables the users to have an effortless access of all the library resources.***

The system has a module that will be an added feature to the school's website that will provide an easy access with the school library for all the users. Students, staffs and librarian can view and search for available books in the website anytime and anywhere without personally visiting the physical library. Students can also reserve a book through this module in the website if and only if they are logged-in. In addition to this, the reserved book is ready to be borrowed. The borrower can easily get the book in the physical library since the necessary forms that needs to be filled up is already done by the automated system. By this situation, borrowers will no longer wait and saves time in waiting for their turn.

- ***To create a system that will monitor borrowed book due dates and monitor the unreturned borrowed books.***

The system has a process that will keep track for book due dates daily and automatically compute the penalty for those who has lapses on due dates. It will also monitor and generates report

for those borrowed books that was not yet returned after the due dates.

- ***To develop a system that will generates report needed for the inventory of the book.***

This project creates a system that will automatically provide reports needed by the librarian based on the data that's being recorded in the database. With this, librarian will not spend too much effort and time in generating reports.

- ***To develop a system that will provide secured storage of record.***

By means of this capstone project, all the records of all the transactions inside the school's library will be stored in a safe storage which we called "Database" wherein important data can't be tampered nor erased by anyone and it can't be damage by rodents.

- ***To develop a system that will produce an efficient, accurate and reliable transaction records.***

The system will record the details of each transaction that happens inside the school library and all the details will be recorded correctly. It will also automatically calculate penalties on

lapses on borrowed book due date and produce a correct and efficient result.

1.5 Significance of the Study

Automated systems are intentionally developed to eliminate several problems that a manual-based system has encountered. It has an important influence on how companies, schools and any institutions perform their own processes wherein workloads are lessened and performance become more productive and efficient.

This research project finds its significance in the contributions and influences it has extended to the following:

- ***To the students of East West Colleges***

With this web-based library system, students time in dealing different library transactions will be lessen. There is no need to spend extra effort and money in coming to and from school for some library transaction purposes because it can be easily access anytime, anywhere and for as long as there is Internet connection.

- ***To the library staffs of East West Colleges***

The system decreases the difficulty of the workload of the librarian, especially in generating reports for the inventory of books, keeping records for every book transaction and for calculating penalties every day for the lapses on book due dates.

This system is also a tool for the librarian in keeping track for every book owned by the East West Colleges library. Librarian can immediately be updated with matters concerning library transactions.

- ***To the project researchers***

This capstone project has widened the knowledge of each member of this group in the field of Information Technology. It has developed the analytical and technical skills, as well as their skills in interacting not just with their co-members but also in dealing with different people. Their determination, hard work, faith and perseverance have been their tools in order to complete this project.

- ***To other researcher***

This study will be helpful to other researcher in the area of information gathering. It will also serve as a future reference for the students who will conduct related research on the subject of case study and capstone project in the near future.

- ***To other schools***

This study will be helpful to the other schools, where they can use this capstone study as their reference in the field of information technology. Their students can also use this project as their related study in their capstone project in the near future.

1.6 Scope and Limitations of the Study

1.6.1 Scope

A. System Features and Functionality

This Web-based Library Management System is composed three major modules such as the **Admin Librarian Module**, **Librarian Module** and **Student Module**.

A.1 Librarian Module

A.1.1 Librarian Management Page

- ***Account Information*** – allows admin librarian to edit personal information such as first name, middle name, last name, gender, username and password.
- ***View Due Reserved Book*** – allows the admin librarian to monitor reserved books that due every day.
- ***View Due Borrowed Book*** – allows the admin librarian to monitor borrowed books that due every day. It will also allow the admin librarian to return and renew borrowed books.
- ***Log-out*** – allows the admin librarian to sign-out of the admin librarian module.
- ***Total Book Count*** – displays the total number of books inside the library for the present day.
- ***Total Unreturned Book*** – displays the total number of book that was not yet returned for the present day.

- ***Calendar*** – allows the admin librarian to view the previous, current and the next day.
- ***Animated logo*** – the moving logo is for aesthetics purpose only.

A.1.2 Book

- ***Book Information*** – enables the admin librarian to display and edit the information of the books including fields such as title of the book, author, subject, publisher, category, book edition and status of the book. It also enables the admin librarian to activate/deactivate a book.
- ***Search Book*** – enables the admin librarian to search for books as well as searching for the author of the book. Also this module provides a drop-down selection for search filters that includes, search by book title, search by author, search by edition and search by category.
- ***Borrow Book*** – enables the admin librarian to display and borrow a book requested by the students, faculty and staffs of the school.
- ***Reserve book*** – enables the admin librarian to reserve a book that is requested by the students, faculty and staff of the school.
- ***View Borrowed Book*** – enables the admin librarian to display the information of the books that is currently borrowed. It also enables the admin librarian to **return** and **renew** a book.

- ***View Accession*** – enables the admin librarian to view the details of the accession of the books.
- ***Publisher Information*** – enables the admin librarian to view the information of the book's publisher. It also enables the admin librarian to activate or deactivate and edit a publisher.
- ***Edition*** – enables the admin librarian to view the information of the book edition. It also enables the admin librarian to edit an edition.

A.1.3 Reference

- ***Website Information*** – enables the admin librarian to view, edit and activate or deactivate the details of the website's url.
- ***Cd/Dvd Information*** - enables the admin librarian to view, edit and activate or deactivate the details of the cd/dvd.

A.1.4 Author

- ***Author Information*** – enables the admin librarian to view, edit and activate or deactivate the information of the author.

A.1.5 Subject

- ***Subject Information*** - enables the admin librarian to view, edit and activate or deactivate the information of the subject.

A.1.6 Category

- ***Category Information*** – enables the admin librarian to view, edit and activate or deactivate the information of the category.

A.1.7 Student

- Student Information*** – enables the admin librarian to display the information of registered students of EWC.

A.1.8 Reports

- Borrowed Books Report*** – enables the admin librarian to download the information of the books that is currently borrowed. The admin librarian can choose the year and month from the drop-down box provided. This displays different fields like borrower's name, book title, date borrowed, date returned, accession number, number of days from due date and the details of penalty. The report can be downloaded as a Microsoft Word document (.docx file format extension).
- Reserved Books Report*** – enables the admin librarian to download the information of the reserved books. Displays fields like borrower's name, title, author, subject, publisher, edition and the date that the book was being reserved. The reports can be downloaded as a Microsoft Word document (.docx file format extension).
- Recently Added Books Report*** – enables the admin librarian to download the information of the recently added books. Books that are added in less than thirty (30) days are considered as recently added. Displays fields like title, author, subject, publisher, category and edition. The reports can be downloaded as a Microsoft Word document (.docx file format extension).

- ***Deactivated Books Report*** – enables the admin librarian to display the information of the books that are deactivated. This displays different fields like title, author, subject, publisher, category and edition. Also the reports can be downloaded as a Microsoft Excel document (.docx file format extension).

A.1.9 Add

- ***Add new book*** – enables the librarian to add a new book with complete details. All the information of the book will be added to the affected fields like book title, book author, book subject, book category, book ISBN, book publisher, book edition and book accession.
- ***Add new website url*** – enables the librarian to add a new url of a website.
- ***Add new cd/dvd*** – enables the librarian to add a new cd/dvd.
- ***Adds new category*** – enables the librarian to add a new category and the information will be added to the field category.
- ***Add new subject*** – enables the librarian to add a new subject.
- ***Adds new accession*** – enables the librarian to add a new accession.
- ***Add publishers*** – enables the librarian to add new publisher.
- ***Add edition*** – enables the librarian to add new edition.

A.2 Admin Librarian Module

A.2.1 Admin Librarian Management Page

- ***Account Information*** – allows admin librarian to edit personal information such as first name, middle name, last name, gender, username and password.
- ***View Due Reserved Book*** – allows the admin librarian to monitor reserved books that due every day.
- ***View Due Borrowed Book*** – allows the admin librarian to monitor borrowed books that due every day. It will also allow the admin librarian to return and renew borrowed books.
- ***Open/close student reservation*** – enables the admin librarian to close or open the book reservation in the student module.
- ***View Statistics*** – allows the admin librarian to view the statistics of borrowed book every month per school year using a bar graph.
- ***Log-out*** – allows the admin librarian to sign-out of the admin librarian module.
- ***Total Book Count*** – displays the total number of books inside the library for the present day.
- ***Total Unreturned Book*** – displays the total number of book that was not yet returned for the present day.
- ***Calendar*** – allows the admin librarian to view the previous, current and the next day.
- ***Animated logo*** – the moving logo is for aesthetics purpose only.

A.2.2 Book

- **Book Information** – enables the admin librarian to display and edit the information of the. It also enables the admin librarian to activate/ deactivate a book.
- **Search Book** – enables the admin librarian to search for books as well as searching for the author of the book. Provides search filters that includes, search by book title, search by author, search by edition and search by category.
- **Borrow Book** – enables the admin librarian to display and borrow a book requested by the students, faculty and staffs of the school.
- **Reserve book** – enables the admin librarian to reserve a book that is requested by the students, faculty and staff of the school.
- **View Borrowed Book** – enables the admin librarian to display the information of the books that is currently borrowed. It also enables the admin librarian to **return** and **renew** a book.
- **View Accession** – enables the admin librarian to view the details of the accession of the books.
- **Publisher Information** – enables the admin librarian to view the information of the book's publisher. It also enables the admin librarian to activate or deactivate and edit a publisher.

- ***Edition*** – enables the admin librarian to view the information of the book edition. It also enables the admin librarian to edit an edition.

A.2.3 Reference

- ***Website Information*** – enables the admin librarian to view, edit and activate or deactivate the details of the website's url.
- ***Cd/Dvd Information*** - enables the admin librarian to view, edit and activate or deactivate the details of the cd/dvd.

A.2.4 Author

- ***Author Information*** – enables the admin librarian to view, edit and activate or deactivate the information of the author.

A.2.5 Subject

- ***Subject Information*** - enables the admin librarian to view, edit and activate or deactivate the information of the subject.

A.2.6 Category

- ***Category Information*** – enables the admin librarian to view, edit and activate or deactivate the information of the category.

A.2.7 Student

- ***Student Information*** – enables the admin librarian to display the information of registered students of EWC.

A.2.8 Librarian

- ***Librarian Information*** – enables the admin librarian to display the information of the registered librarian and can activate or deactivate a librarian.

A.2.9 Reports

- ***Borrowed Books Report (per month and semester)*** – enables the admin librarian to download the information of the books that is currently borrowed. The admin librarian can choose the year and month from the drop-down box provided. This displays different fields like borrower's name, book title, date borrowed, date returned, accession number, number of days from due date and the details of penalty. The report can be downloaded as a Microsoft Word document (.docx file format extension).
- ***Mostly Borrowed Books Report*** – enables the admin librarian to download the information of the books that is borrowed the most. This displays different fields like book title, author, subject, publisher, edition and count. The reports can be downloaded as a Microsoft Word Document (.docx file format extension).
- ***Rarely Borrowed Books Report*** – enables the admin librarian to download the information of the books that is rarely borrowed. Books that are borrowed with less than ten (10) times in a school year are considered as rarely borrowed. Displays fields like title, author, subject and publisher. The reports can be downloaded as a Microsoft Word document (.docx file format extension).

•***Average Borrowed Books Report (per semester)*** – enables the admin librarian to download the information of the books that is averagely borrowed. Displays fields like title, author, subject and publisher. The reports can be downloaded as a Microsoft Word document (.docx file format extension).

•***Reserved Books Report (per school year)*** – enables the admin librarian to download the information of the reserved books. Displays fields like borrower's name, title, author, subject, publisher, edition and the date that the book was being reserved. The reports can be downloaded as a Microsoft Word document (.docx file format extension).

•***Recently Added Books Report (per school year)*** – enables the admin librarian to download the information of the recently added books. Books that are added in less than thirty (30) days are considered as recently added. Displays fields like title, author, subject, publisher, category and edition. The reports can be downloaded as a Microsoft Word document (.docx file format extension).

•***Deactivated Books Report (per school year)*** – enables the admin librarian to display the information of the books that are deactivated. This displays different fields like title, author, subject, publisher, category and edition. Also the reports can be downloaded as a Microsoft Excel document (.docx file format extension).

- **Weeding Books** – enables the admin librarian to display the information of the books that are ready for de-shelving. This displays different fields like title, author, subject, publisher, category and edition. Also the reports can be downloaded as a Microsoft Excel document (.docx file format extension).
- **Book Summary** – enables the admin librarian to download the summary of report for the following:
 - Total Book
 - Total Available Book
 - Total Recently Added Book
 - Total Deactivated Book
 - Total Borrowed Book
 - Total Returned Borrowed Book
 - Total Unreturned Borrowed Book
 - Total Reserved Book
 - Total Claimed Reserved Book
 - Total Unclaimed Reserved Book
 - Total Denied Reserved Book
 - Percentage of off-hand book
 - Percentage of on-hand book
 - Percentage of book to be de-shelved

A.2.10 Add

- **Add new librarian** – enables the admin librarian to add a new librarian.
- **Add new book** – enables the admin librarian to add a new book with complete details. All the information of the book will be added to the affected fields like book title, book author, book subject, book category, book ISBN, book publisher, book edition and book accession.

- *Add new website url* – enables the admin librarian to add a new url of a website.
- *Add new cd/dvd* – enables the admin librarian to add a new cd/dvd.
- *Adds new category* – enables the librarian to add a new category and the information will be added to the field category.
- *Add new subject* – enables the admin librarian to add a new subject.
- *Add new accession* – enables the admin librarian to add a new accession.
- *Add publishers* – enables the admin librarian to add new publisher.
- *Add edition* – enables the admin librarian to add new edition.

A.3 Student Module

- *Search book by title* – enables the students to search for the book by its title.
- *Search book by author* – enables the students to search for the book by its author.
- *Search book by subject* – enables the students to search for the book by its subject.
- *Search book by category* – enables the students to search for the book by its category.
- *Search website url by subject* – enables the students to search for the url of a website by its subject.

- ***Search cd/dvd by subject*** – enables the students to search for the cd/dvd by its subject.
- ***Reserve Book*** – enables the students to make a book reservation. Students can only perform this process only if he or she is logged-in in the schools website.
- ***View reserved book*** – enables the students to view all the books that was being reserved.
- ***View borrowed book*** – enables the students to view all the borrowed books.

A.4 E-mail Notifications

- The system will automatically send a message to students' valid email address about the status of the book reservation he made.
- The system will automatically send a notification to students' valid email address to inform them about the approaching borrowed book due date.
- The system will automatically compute the penalty of the unreturned borrowed book every day after its due date and automatically send the result to students' valid email address.

A.5 Software Development Tools

The software development tools used for this project were as follows:

- Web Hosting features and Local Host Web Server

- PHP and MySQL
- JavaScript
- HTML and CSS
- Windows XP Operating System

1.6.2 Limitations

Due to the limited time given in the development of this project, some features are excluded in this system.

Limitation of the system will be discussed below.

A.1 Librarians Module

- Calendar displayed in this module is not interactive and it is just for viewing purpose only.

A.2 Admin Librarians Module

- Calendar displayed in this module is not interactive and it is just for viewing purpose only.
- Statistics graph is for display only, this can't be downloaded.

A.3 Student Module

- Book reservation is only for the students. Instructors, faculties and staffs of the school has no access to make book reservation, they can only search for books in this module.
- Book contents are not visible in this module; only the details of the books are available and can be viewed inside such as the author, title, subject, category, publisher and edition of the book.

A.4 No SMS Notifications

- No *SMS* notification to students about the status of the book reservation they made.
- No SMS notification to students for the approaching due date of the book they borrowed.
- No *SMS* notification to students about the penalty of the unreturned book.

1.7 Definition of Terms

- **Automated** - To control or operate by automation.
- **Web-based** - is an application that is accessed by users over a network such as the Internet or an intranet.
- **Inventory** - In a business accounting context, the word **inventory** is commonly used in American English to describe the goods and materials that a business holds for the ultimate purpose of resale. In the rest of the English speaking world **stock** is more commonly used, although the word **inventory** is recognized as a synonym.
- **Reports** - to make or present an often official, formal, or regular account of transactions.
- **Activate** - to make (something) active or more active: such as to cause (a device) to start working.
- **Deactivate** - to make (something) no longer active or effective.

- **SMS - Short Message Service (SMS)** is a text messaging service component of phone, web, or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices.
- **Email - Electronic mail**, commonly referred to as **email** or **e-mail**, is a method of exchanging digital messages from an author to one or more recipients. Modern email operates across the Internet or other computer networks.
- **System** - is a software system which has components as its structure and observable Inter-process communications as its behavior. System can also be used referring to a framework, be it software or hardware, designed to allow software programs to run.
- **Data** - are values of qualitative or quantitative variables, belonging to a set of items. Data in computing (or data processing) are represented in a structure, often tabular (represented by rows and columns), a tree (a set of nodes with parent-children relationship) or a graph structure (a set of interconnected nodes).
- **Record** - In database management systems, a complete set of information. Records are composed of *fields*, each of which contains one item of information. A set of records constitutes a *file*.
- **Transaction** - In computer programming, a transaction usually means a sequence of information exchange and related work (such as database updating) that is treated as a unit for the purposes of satisfying a request and for ensuring database integrity. For a transaction to be completed and database changes to make permanent, a transaction has to be completed in its entirety.

- **Reserve** – To keep or to secure a copy of book.
- **Internet** - is a global system of interconnected computer networks that use the standard Internet protocol suite (*TCP/IP*) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries an extensive range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support email.
- URL - also known as web address; is a specific character string that constitutes a reference to a resource. In most web browsers, the URL of a web page is displayed on top inside an address bar.