

**INTEGRATED LIBRARY SYSTEM USING KOHA FOR ILOCOS
SUR POLYTECHNIC STATE COLLEGE (ISPSC)**

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Chapter I

INTRODUCTION

Project Context

In our society's current generation, technology is the most important advancement. It is a necessity that brings progress as we move along in this computerized world. Technology makes our life easier and more convenient.

Library is regarded as the brain of any institute. It provides a wide range of sources that aids its students. Whether it is for a class, a job, or a research it has the materials they need to for their academic work. As time passed by, library and computer constantly changes the use of technology and computer contributes to learning process and the communication of people. Since library does not differ from any institution, considering to the perform task using computer will be more efficient. Traditionally, library uses a manual type of recording in any transactions.

An Integrated Library System (ILS), also known as library management system (LMS) is an enterprise resource planning system for a library. It is also used to track items owned, orders made, bills paid, and patrons. It also comprises a relational database, software to interact with that database, and two graphical user interface (one for patrons, one for



staff). It is a program used by some institutions to develop and handle transactional functions of the library.

Library management system is a system which realizes information storage and query. Through the system it requires preliminary design, detailed design, coding and testing, the developer could get a good experience of coordination and hands-on development capabilities. The book search and lending management system which were developed are an important part of the whole library management system, mainly for the retrievals, query, and lending of the books in the library. This system deals on keeping and retrieving of book records in a better and organized way. It offers faster accessing of book records than the manual way as the researchers. It is really hard to manage a library using a manual system. This is the reason why the researchers are proposing for the implementation of the computerization of the system.

Through system, the students, librarians and also the instructors can be more efficient because it provides information for their interlibrary loan transactions, such as monitoring claims, putting hold on materials being borrowed and other related functions.

Koha is an open source Integrated Library System (ILS), used worldwide by public, school and special libraries. The name coed from a Maori term for a gift or donation.



As the researchers observed, the process is very slow and it takes a lot of time and effort to finish the task. The librarian wastes a lot of time looking for a book records. If the current system will continue, greater time and effort will be wasted.

Purpose and Description

The following will bring significant to focus in the conduct of this study:

Ilocos Sur Polytechnic State College. The creation of this system offers great contribution for easier and faster way to monitor the books in the library.

Students. Through a computerized system, students could easily find the books that they are looking without doing the traditional way of searching the books and other library materials. Convenience is more visible for it is not time-consuming, resulting to a number of accomplished works.

Librarian. The computerized library system would improve the monitoring capacities of those who maintain the library. It would be easier for them to determine whether a particular book is on-shelf or not. In addition, this system cannot uphold the due date. Besides, the librarian be guided when it comes to recognizing new inventory books, letting them arrange it promptly and accordingly.



Researchers. This serves as a way for the developers to see the usability of the system. Apart from enhancing their skills about the system, it can also relate concepts involving their course.

Objectives of the Study

This study aimed to test the usability of an Integrated Library System using Koha;

1. to determine the existing processes involved in the current system;
2. to identify the features of the developed system; and
3. to test the usability of the system..

Scope and Limitation

The study focused on the testing of the usability of the Integrated Library System using Koha for ISPSC-Main Campus. The features of the system tests the effectiveness of inputting records and transaction in a more organized and convenient way.

As the researchers explored the system further, they encountered some errors that may lead as the limitation of the study. The user can not view the content of a certain book. One of the ongoing problem of KOHA is check in. The researchers cannot figure out how to upload KOHA system into world wide web.



Chapter II

REVIEW OF LITERATURE

Library Management System provides power and productivity to small, medium and huge library centers. With this feature-rich Online LMS, there is never a need to worry on valuable data. All of your data, including archival data, remains instantly accessible all the time—with no system slowdown. Up-to-date information on books, members and status reports is just a click away. Broadcasting feature is added in information dissemination. Security of data is never a question with multiple implementation procedures, from associating username to links the user is authorized to visit, access level rights, to recording of every transaction that the system is handling. LMS is user-friendly and valuable in giving much needed information, anytime, anywhere.

The features of the system are first, ALL in ONE System. Administration, Cataloging, Circulation, Online Public Access Catalog (OPAC), Online Students Status Query (OSTQ), Bulletin Board, and Feedback System, all integrated in one system. An OPAC is designed to give the user bibliographic details of holdings in the collection of a particular library. Many OPACs also let the users search the OPACs of a number of other libraries simultaneously, using the Z39.50 protocol. Z39.50 is an international standard for communication between computer systems,



primarily library-and information-related systems. Second, Online Student's Status Query (OSSQ). Allows students to check his/her borrowing status such as what book(s) are issued to him/her, overdue books, due dates, and updated fines. Third, Bulletin Board. A page which serves as bulletin or announcement board allowing the administrator and library staff to post announcement or reminders visible to librarians only, to students, or everybody using the system. Fourth, Feedback System. Let everybody (whether member or no and also recommend books which then member) post comments about the system, and also recommend books which the user deemed important to be made available in the library. (Online Library Management System, n.d.)

The rules of the library include Readers are requested not to bring their belongings in the library. Storage facility is provided at the entrance of the library to keep their belongings. Silence and Discipline must be maintained in the Library Premises. Use of eatables in the library is strictly prohibited. Utmost care shall be taken by all to keep the library clean. Students are required to handle the books and reading materials very carefully. Marking library books with pencil or ink. Tearing the pages or spoiling the same is strictly prohibited. Newspaper and Magazines will not issue and can only be consulted for reading within the library premises.



Reference material will not be issued for any reason. Maximum of 2 books will be issued to one reader for ten days only. Every student must possess his/her library card or ID while making use of the library facilities. Users have to take care of their belongings. The Library is not responsible for the loss or misplacement of their personal belongings. Users are requested not to be displaced the sitting arrangement.

The Ubuntu Community website in particular is truly amazing in that it is moderated by real users and not wholly by the company that controls Ubuntu and its iterations. There are also thousands of websites about Linux, Ubuntu and to a certain extent Koha as well. If you prefer, there are also many books available on Ubuntu-desktop and the server version though, again, this tutorial is designed for the desktop version of Ubuntu. The one purchased for this project was Ubuntu Unleashed by Helmke, Hudson and Hudson (new 2012 edition covering Ubuntu 12.04).

Open Source Software

Many research scholars has studied and stated history and growth of open source software, Krishna (2001) has written the book entitled "Technological Future of Library and Information Science" which is further divided into eleven chapters. Each chapter shows various new aspects derived in library and information science technology, costumer care, information education and evaluation are the major aspects discussed. Aim



of this book is to bring out the role of new technologies in libraries in present day information environment and their new challenges and promises for library and information sciences. According to author, library sciences have two categories, public and technical. Operations involving direct contact with the library users are considered as public services and all other operations are considered as technical services. Author says that 60% library staff is assigned to technical works.

Tamane (2011) in his study entitled "A study of library automation and library management softwares used in Sinhgad Technical Education Society Pune City" submitted for M.Phil. course. The research is basically presented in Marathi language. In this thesis research has focused on current situation of library automation in Sinhgad Institutes, Pune, as well as studied used library management softwares are working properly for providing the services, but researcher was not able to focus on their expenditure due to limitations of study.

Sudge (2012) in his research project submitted for Ph.D. degree course in Tilak Maharashtra Vidyapeeth Pune. In this research project entitled "Modernization of libraries attached to the defense training and education institutes in India: A study with reference to services and sources". Research has directed towards the present status in defense training and educational institutes in the light of information technology



and its applications. Researcher has suggested a model for defense education and training libraries for adopting benefits of electronic publications with the help of networking technology.

Randhawa (2013) in his research paper entitled, open source library management software, which was presented in e-Library Science Research Journal, researcher has discussed on advantages, limitations of open source softwares. Researcher has majorly focused open source softwares like, Koha, Evergreen, ABCD, SENAYEN, BiblioteQ. In the concluding remark of this paper researcher has suggested, library science professionals should always update at accept changing the scenarios in IT sector. Researcher has also focused on worldwide growth in using OSS technology as more economical and effective. Researcher suggested, librarians and programmers should work together in order to implement open source integrated library systems and at the same time, library professional are also required to acquire new skills for developing and managing the library by using open source LSM. For taking benefits from OSS additional training of advanced technology its education for the professionals is essentially required.

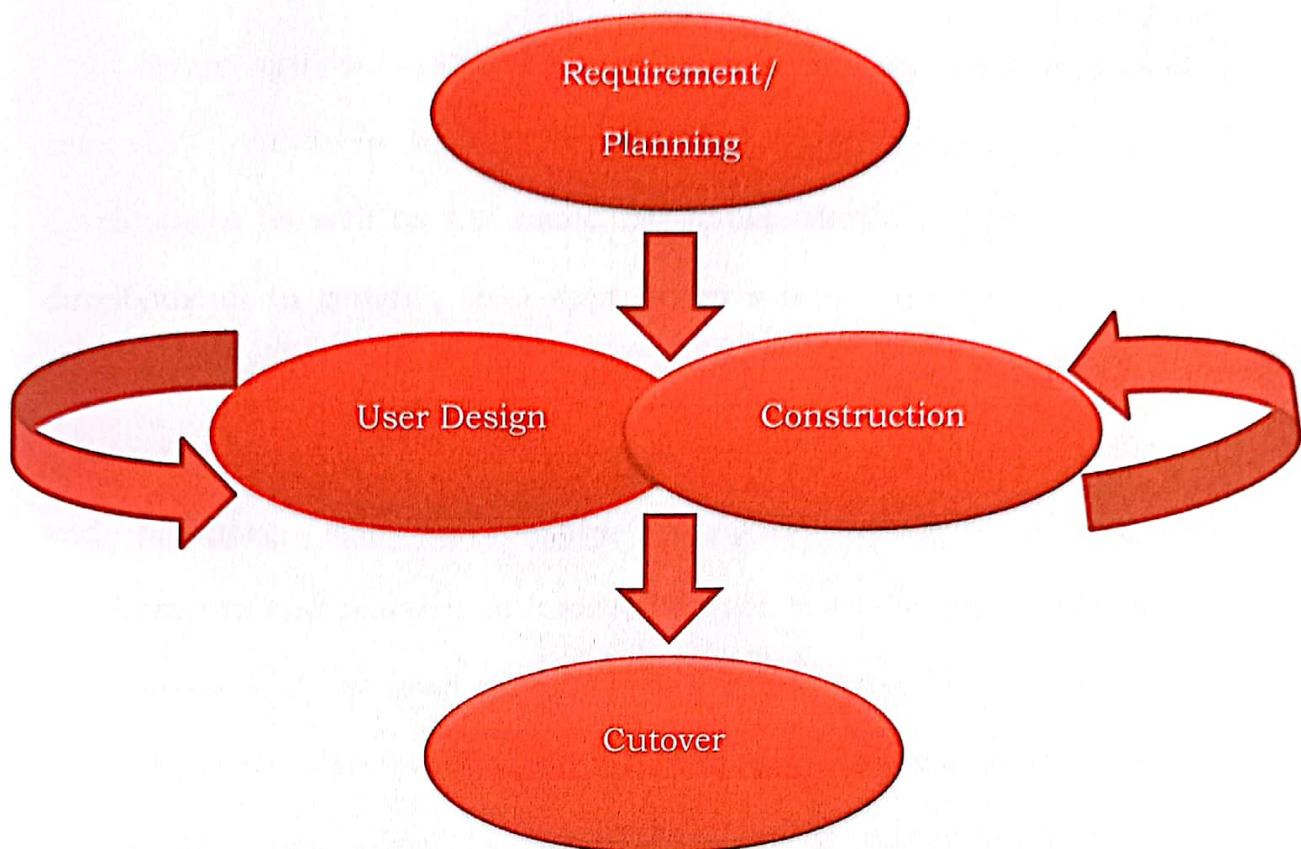


Figure 1. Rapid Application Development Model

RAD (Rapid Application Development) is a concept that products can be developed faster and of higher quality through gathering requirements using workshops of focus group prototyping and early, reiterative user testing design. The re-use of software components are rigidly paced scheduled that differs design improvements to the next product version. Less formality in reviews and other team communication Some companies offer products that provide some or all of the tools for RAD (Rapid Application Development) software developer.



Rapid Application Development

Rapid Application Development (RAD) is both a general term used to refer to alternatives to the conventional waterfall model of software development as well as the name for James Martin's approach to rapid development. In general, RAD approaches software development put less emphasis on planning tasks and more emphasis on development. In contrast to the waterfall model, which emphasizes rigorous specification and planning, RAD approaches emphasize necessity of adjusting requirements and reaction to knowledge gained as the project progresses. This causes RAD to use prototype in addition to or even sometimes instead of design specification. RAD approaches also emphasize a flexible process that can adapt as the project evolves rather than rigorously defining specification and plans correctly from the start. In addition to James Martin's RAD methodology, other approaches to rapid development include agile methods and the spiral model.

Requirements planning. In this phase, the development planning should be designed based on the information from different activities. Before the development, users, managers, and IT staff members must discuss and agree on business needs, project scope, constraints, and system requirements. It ends when the team agrees on the key issues and obtains management authorization to continue.



During this phase, the proponents gathered data and requirements that was needed.

User design phase. During this phase, users interact with systems analysts and develop models and prototypes that represent all system processes, inputs, and outputs. User Design is a continuous interactive process that allows users to understand, modify, and eventually approve a working model of the system that meets their needs.

The proponents gathered and explored the system. The layout and product are already in there. This prototyping step is done as many time as required to finalize all the functionalities of the product.

Construction phase. In this phase, users continue to participate and can still suggest changes or improvements as actual screens, or reports are developed. Its tasks are programming and application development, coding, unit-integration and system testing.

During this phase, the researcher confirmed the features and functions are finalized after the prototypes in the previous steps. The software that was used during the system was Debian, while Oracle Virtual Box is the operating system.

Cutover phase. This phase resembles the implementation, the system is already deployed and ready to use by the end users while it is also being evaluated for its functionality and how successful it is.



The proponents test the functions and usability to ensure that they are all work together.



Chapter III

Methodology

Project Plan

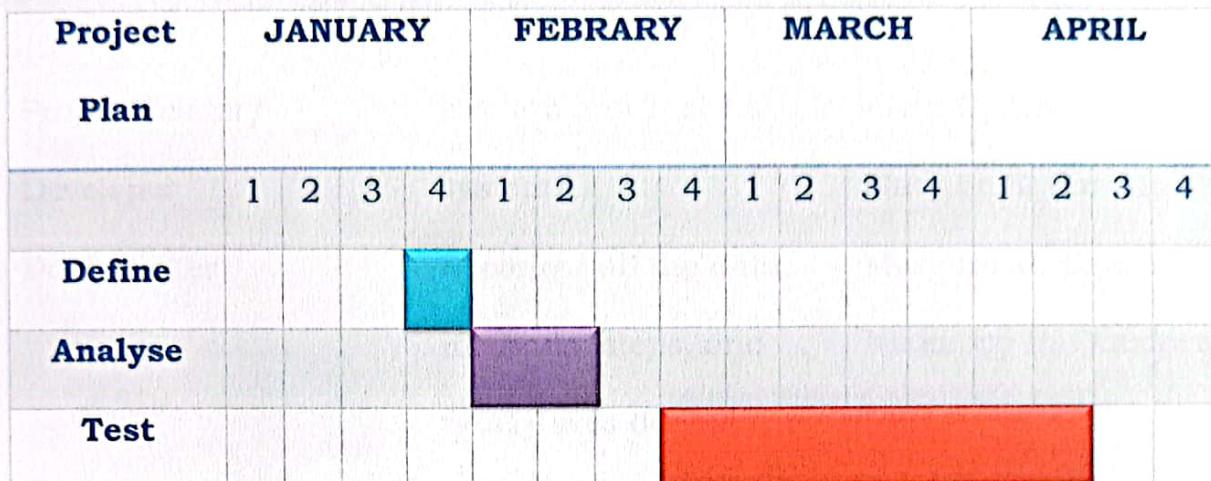


Figure 2: Gantt Chart of the Project Plan

Figure 2 presents the project plan and schedule. The proponents started the project on the fourth week of January. Next is the analysis that on the first and second week of February. The testing phase started the fourth week of February until the third week of April.

**Project Staff****Table 1. Project Team Assignment**

ROLE	Assignments	Lead Persons
Project Leader/ Developer	Explore and Test the system.	Alvin G. Almazan Mary Fe S. Carrido
Documenter	Recorded all the data, methods, steps, and procedures done during the conduct of the study.	Marjorie M. Calderon Nikki Joy R. Queddeng
System Analysts	Checked the system and developments in it. Noted the result of every test and validations applied in it.	Alvin G. Almazan Mary Fe S. Carrido Kristalyn Alyssa C. Garcia

Each member had his or her own contribution in the system project from the leader, the system analyst, system developer and researcher/documenter. Each member worked hard for the completion of the project.



Data Gathering Procedure

Interview. The researchers conducted an interview to gather information in the system development. The researcher will seek permission and an interview to the Instructors of the Institution to give the researchers the appropriate information about the institute.

Observation. The researchers conducted an observation as a way of examining, describing and interpreting the current situation in the institution.

Internet Research. The researchers also used the internet for relevant information for the study as well as new technologies that could help to be used in developing and implementing the proposed system

Instrumentation

Questionnaire. A structured survey question was executed to obtain the necessary information from the system. The questionnaire was used to gather and evaluate the system with 30 statement and a Likert-scale with a descriptive rating of five (5) as the Strongly Agree and one (1) as the Strongly Disagree. There were 7 students as respondents to test the system.

**Table 2. Statistical Rating**

POINT SCALE	RATING SCALE	DESCRIPTIVE EQUIVALENT
5	4.20-5.00	Strongly Agree
4	3.40-4.19	Moderately Agree
3	2.60-3.39	Agree
2	1.80-2.59	Moderately Disagree
1	1.0-1.79	Strongly Disagree

Sources of Data

The focus of the study is at the Ilocos Sur Polytechnic State College library. Data were gathered through internet and the interview was conducted to the school librarian.



Chapter IV

RESULTS AND DISCUSSION

Organizational Background

The Ilocos Sur Polytechnic State College (ISPSC) was created by virtue of RA 8547, authored by the 10th Congressman of the 2nd District of Ilocos Sur, Hon. Eric D. Singson converting the Ilocos Sur Polytechnic College (ISPC) into a State College. The main campus for the North Cluster is the Santa Maria Campus. The charter was signed into law by President Fidel V. Ramos on February 24, 1998. The main campus for the North Cluster is in the Sta. Maria Campus which has been identified as the Provincial Institute of Agriculture. (Online Events Planner with E-mail Notification for ISPSC Main Campus, May 2017)

In ISPSC – Sta. Maria campus have 13,695 books in library shelves. Like Mathematics, English, History, Physics, Agricultural Engineering, Information Technology and others. For the librarian and students to be easier to find books, the Campus needs improvement in inserting books to be process that would make students easier and more effectively.

In library –Sta. Maria Campus , Mrs. Mecedita A. Palacio, MAed, the College Librarian.



The transaction of borrowing books were was manual. Fill out the log book, then find what book that you will borrowed.

Current System

The proponents had determined that the current method in inputting books in library was done manually. Each detail of the books was written in a record book. This process took a lot of time and effort for the librarian.

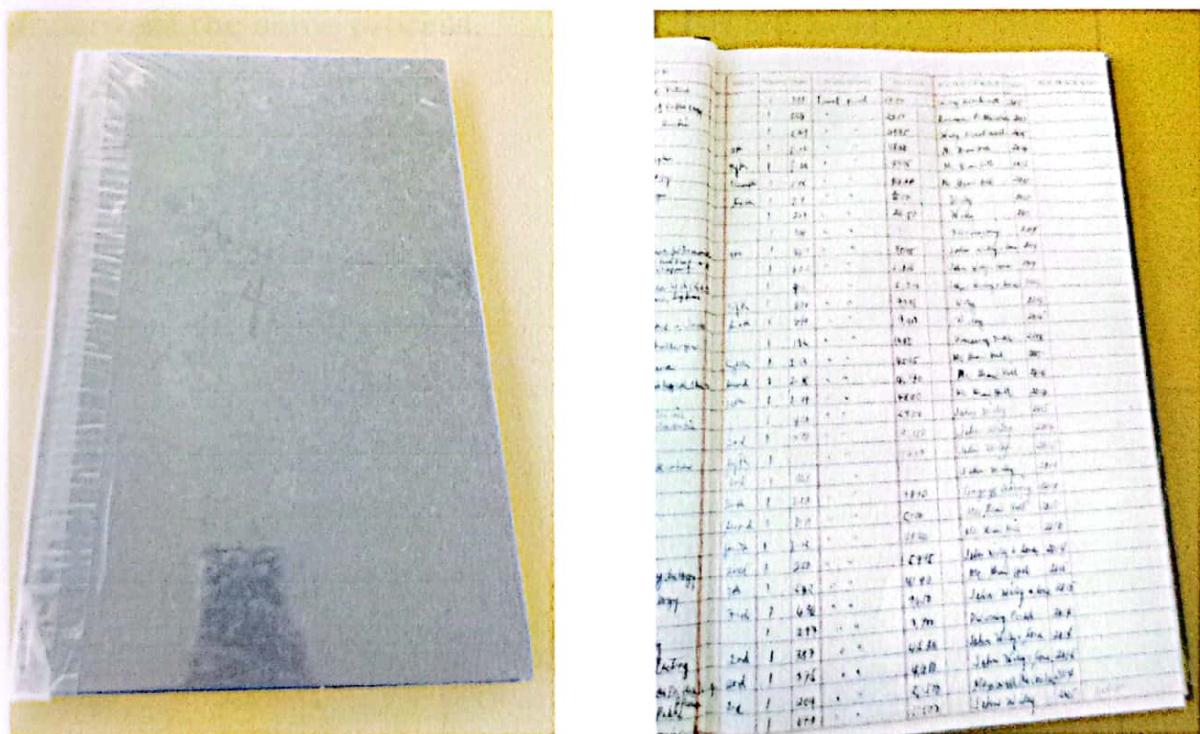


Figure 3: Current System



Problems Encountered in the Current System in the Library of Ilocos Sur Polytechnic State College

The proponents went to the library to observe and conduct an interview, the Part-time Librarian of Ilocos Sur Polytechnic State College, Mrs. Mercedita A. Palacio, stated the current situation of the library as inconvenient and time consuming because all the transactions are being done manually. This was evidently observed when the researchers underwent the same process.

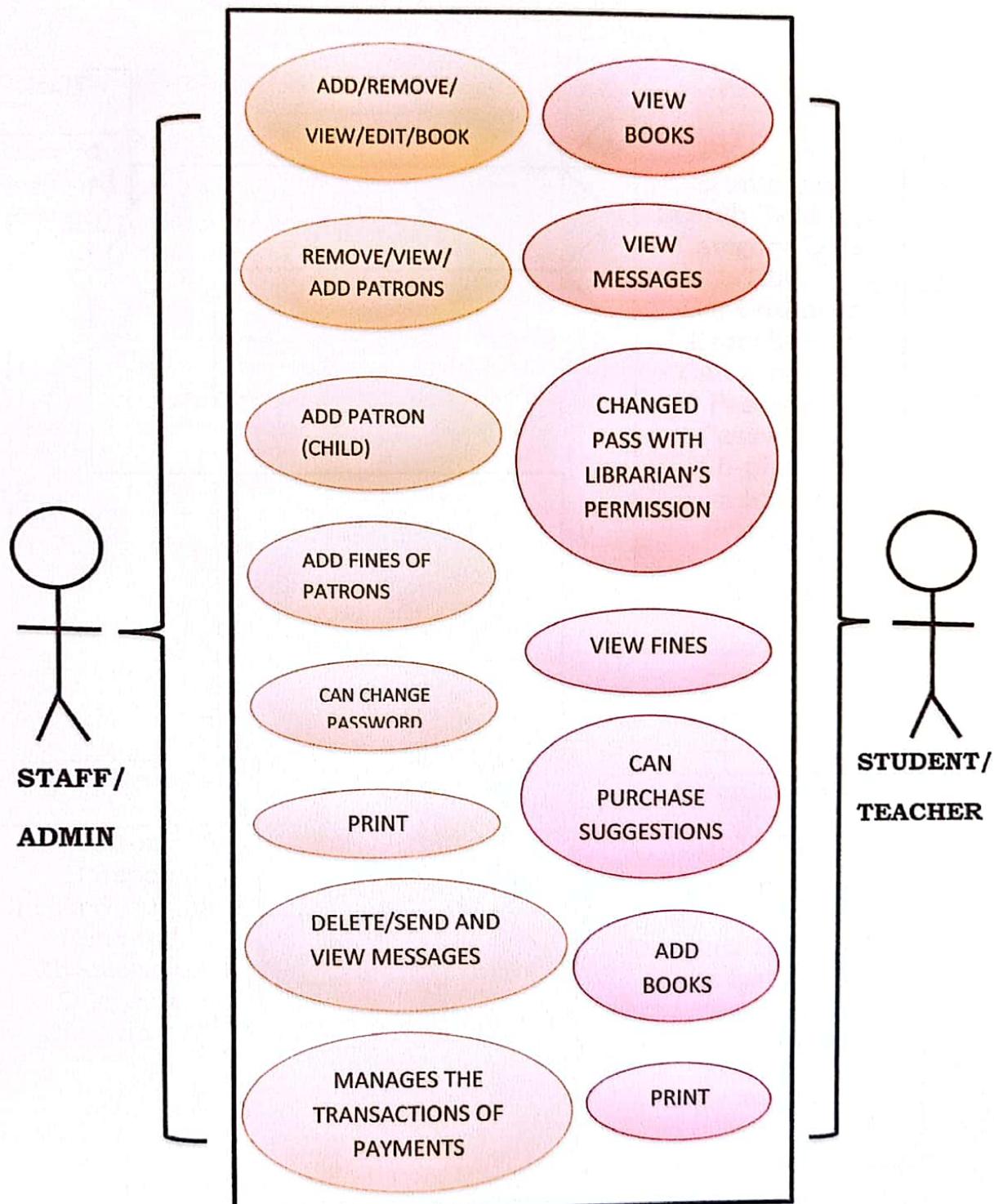


Figure 3: Use Case

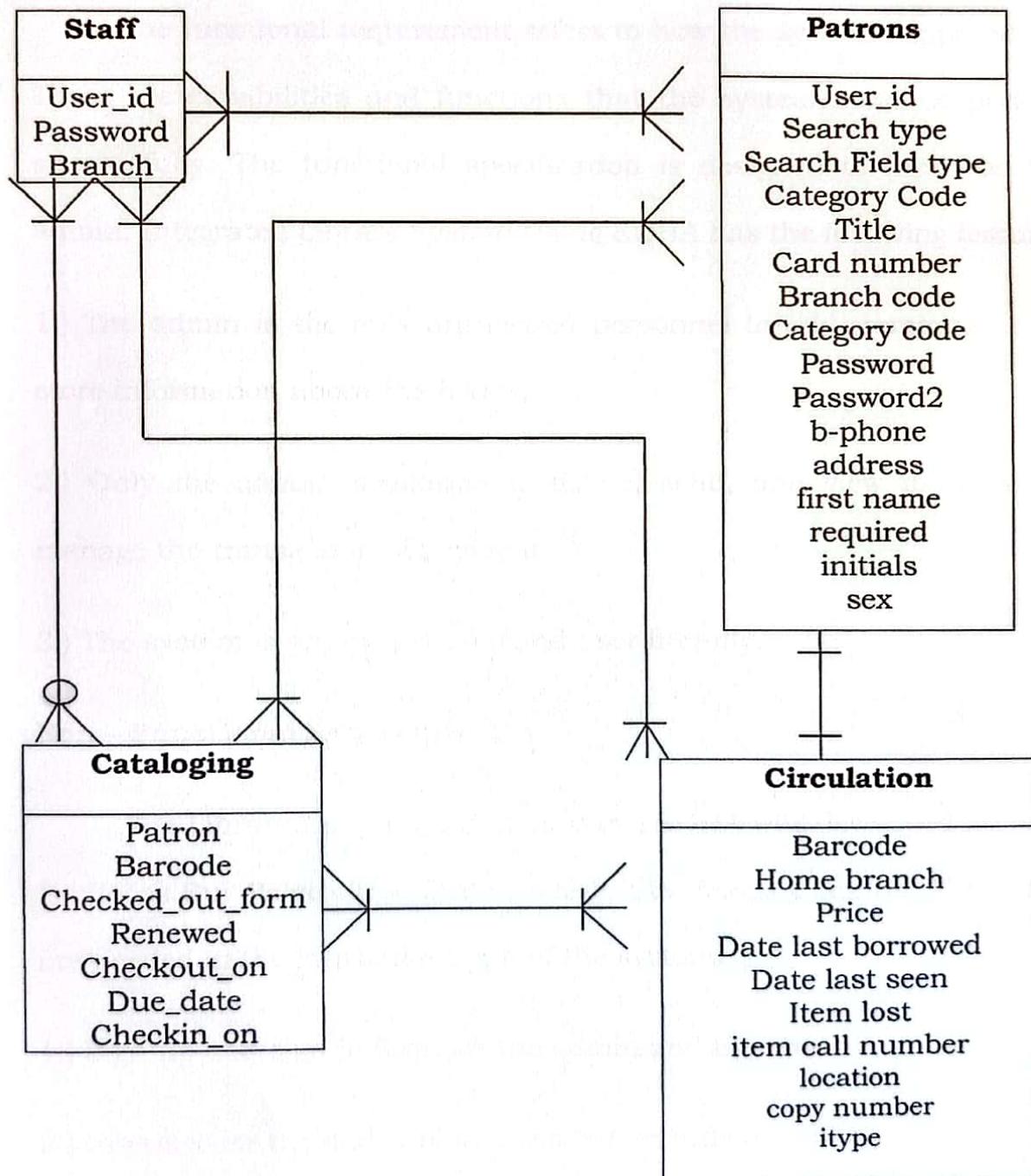


Figure 5: Entity Relationship Diagram



Functional Requirement

The functional requirement refers to how the system supposed to do. There are capabilities and functions that the system must be performed successfully. The functional specification is designed to input books by admin. Integrated Library System Using KOHA has the following features:

- 1.) The admin is the only authorized personnel to add, remove, view and store information about the books.
- 2.) Only the admin is allowed to delete, send, and view messages, and manage the transaction of payment.
- 3.) The system is an open source and user friendly.

Non – Functional Requirement

The Library Integrated System using KOHA was developed exclusively for Ilocos Sur Polytechnic State College, Sta. Maria Campus. The following are needed in the implementation of the system:

- 1.) Sign up and sign in form for the admin and the student.
- 2.) Interface for the add, edit and remove records of books.
- 3.) Database serves to store the data in the system.



Unit Testing

The researchers conducted a unit testing to test the functionality of the system. The security, accessibility, and the usability were tested.

In the security testing, the system will not accept the user if he or she does not register. The user must sign up first to access the system. In the system accessibility, the researcher found out that the system is working in any cellphone as long as it is connected in one wifi connection.

**Table 3. Unit Testing**

Test Case Description	Input Data	Expected Result	Actual Result	Pass /Fail
Admin log-in	Username Password	Go to admin home	View admin home	Pass
Patron log-in	Username Password	Go to patron home	View patron home	Pass
	Title, author, ISBN, barcode, call number, bookshelves, No. of pages, price, author number, name of publisher, address of publication, books copy and classification number.	View inputted record of books	View the inputted record of book	Pass
Check out	Name of patron Barcode(book) Duedate	View the check out record of patron	View the check out record of patron	Pass
Check in	Name of patron Barcode (book) Duedate	View the check in record of patron	Cannot check in the borrowed book	Fail

**Table 4. Usability of the system along Usefulness**

Item	Mean	Descriptive Rating
1. It helps me to be more effective.	4.71	SA
2. it helps me be more productive.	4.57	SA
3. it is useful.	4.57	SA
4. it gives me more control over the activities in my life.	4.14	MA
5. it makes the things I want to accomplish easier to get done.	4.42	SA
6. it saves me time when I use it.	4.42	SA
7. it meets my needs	4.28	SA
8. It does everything I would expect it to do.	4.42	SA
Grand Mean	4.44	SA

LEGEND: SA – Strongly Agree MA – Moderately Agree

The table, shows the usability of the system along the usefulness received a grand mean of 4.44 with a descriptive rating of “Strongly Agree”.

It indicates that the system is useful to the user.

Table 5. Usability of the System Along Ease of Learning

Item	Mean	Descriptive Rating
1. I learned to use it quickly.	4.85	SA
2. I easily remember how to use it.	4.42	SA
3. It is easy to learn to use it.	4.42	SA
4. I quickly became skilful with it.	4.57	SA
Grand Mean	4.57	SA

LEGEND: SA – Strongly Agree

The table shows that the usability of the system along ease of learning received a grand mean of 4.57 with a descriptive rating of “Strongly Agree”. It interprets that the system is easy to understand for the user.

**Table 6. Usability of the system along Ease of Use**

Item	Mean	Descriptive Rating
1. It is easy to use.	4.85	SA
2. It is simple to use.	4.85	SA
3. it is friendly user.	4.85	SA
4. it requires the fewest steps possible to accomplish what I want to do	4.71	SA
5. it is flexible.	4.71	SA
6. Using it is effortless.	4.14	MA
7. I can use it without written instructions.	4.42	SA
8. I don't notice any inconsistencies as I use it.	4.71	SA
9. Both occasional and regular users would like it.	4.71	SA
10. I can recover from mistakes quickly and easily.	4.57	SA
11. I can use it successfully everytime.	4.71	SA
Grand Mean	4.65	SA

LEGEND: SA – Strongly Agree MA – Moderately Agree

As implementation, it shows that the usability of the system along ease of use received a grand mean of 4.65 with a descriptive rating of "Strongly Agree". It interprets that the system is easy to use to the user due to the quick response of the system.

**Table 7. Usability of the System Along Satisfaction**

Item	Mean	Descriptive Rating
1. I am satisfied with it.	4.85	SA
2. I would recommend it to a friend.	4.42	SA
3. It is fun to use.	4.85	SA
4. It works the way I want it to work.	4.71	SA
5. It is wonderful.	4.42	SA
6. I feel I need to have it.	4.71	SA
7. It is pleasant to use.	4.85	SA
Grand Mean	4.69	SA

LEGEND: SA – Strongly Agree

As reflected in the table, it shows that the usability of the system along satisfaction received a grand mean of 4.69 with a descriptive rating of "Strongly Agree". It indicates that the features of the system satisfies the users.

Table 8. Summary Table

Item	Mean	Descriptive Rating
Usefulness	4.44	SA
Ease of Learning	4.57	SA
Ease of Use	4.65	SA
Satisfaction	4.69	SA
Grand Mean	4.59	SA

As illustrated in the table, it shows the grand mean and descriptive rating of the usability of the system. The grand total of the usability of the system was 4.59 and the descriptive rating was strongly agreed.

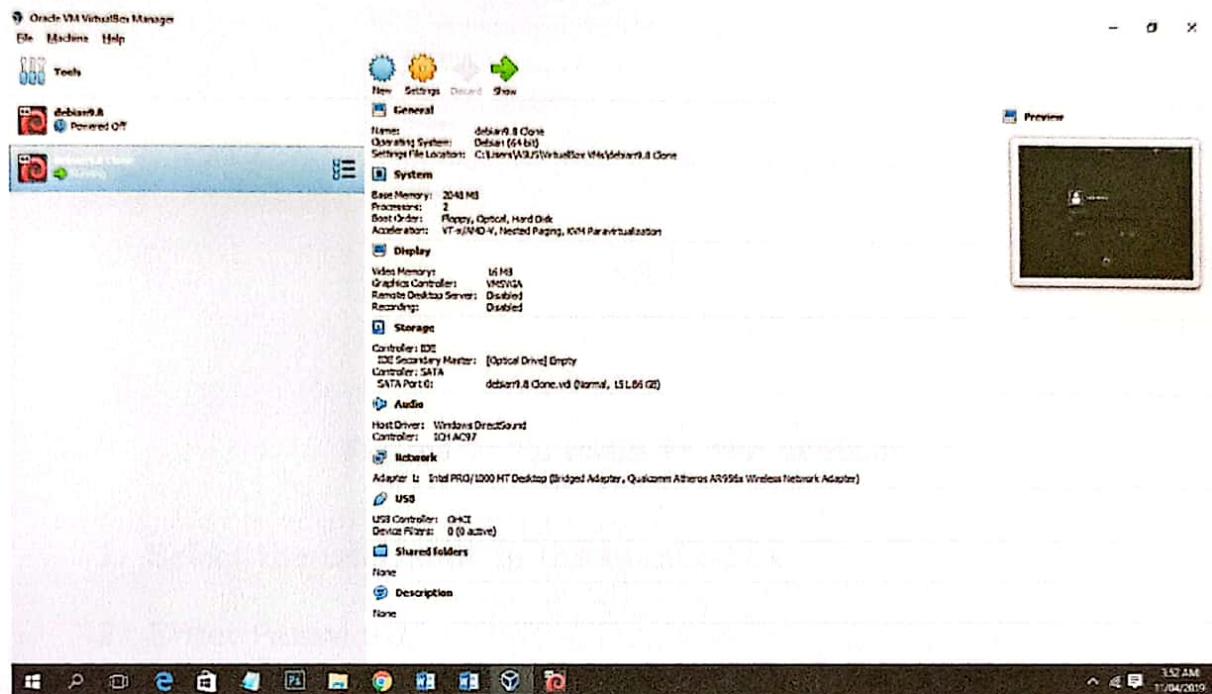


Figure 6: Launching the System

To launch the system, first open the Virtual Machine in the computer and click to show the Debian 9.8 Operating System.

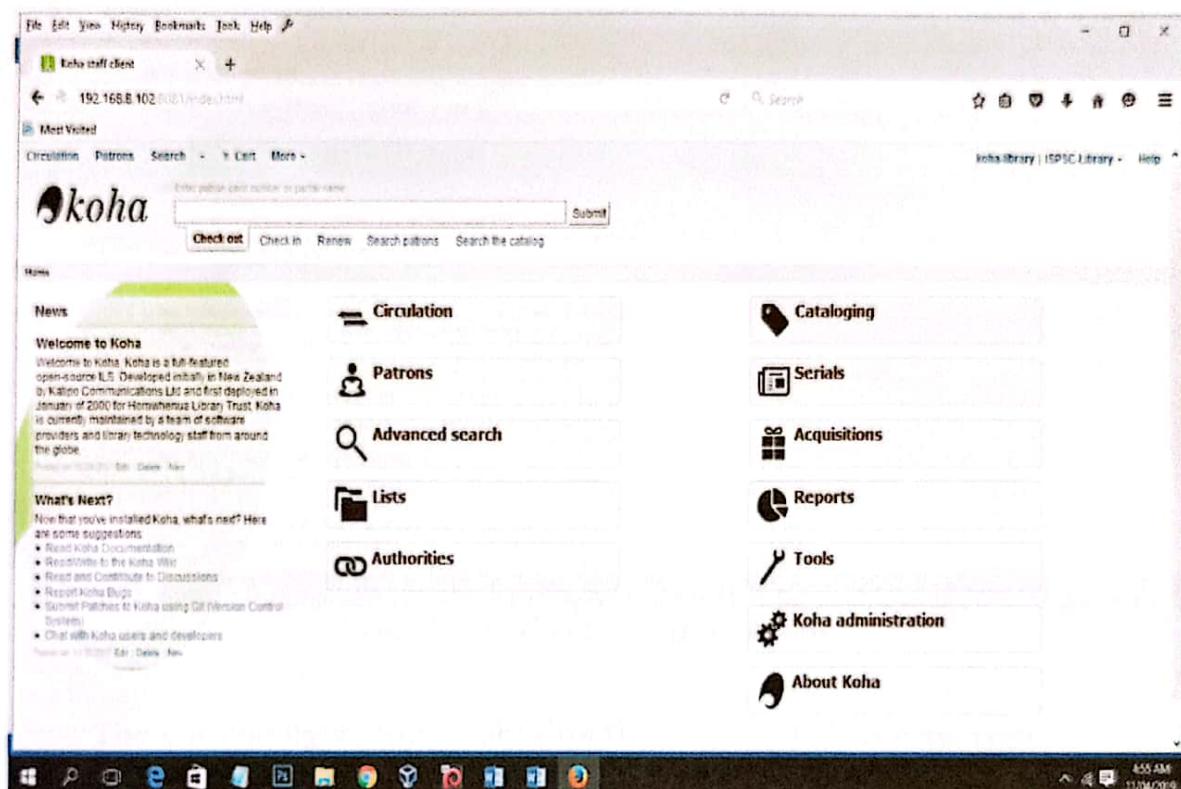
Note: If you are not going to launch the Virtual Machine in the computer, you cannot launch the Koha system because it is very important and fully required.



Figure 7: To login to the system

1. Select the username in the Combo box.
2. Enter Password.
3. Pick the name of your Library.
4. Click the Login button.

Note: If you are going to open the KOHA system you must enter the Mac Address of your connected WIFI and adding the mandatory number of the system.

**Main Window** Show the Main Windowof the Koha System**Figure 8: Main Window**

The Main Window contains (12) menus: Circulation, Patrons, Advances search, List, Authorities, Cataloging, Serials, Acquisitions, Reports, Tools, Koha administration, About Koha.

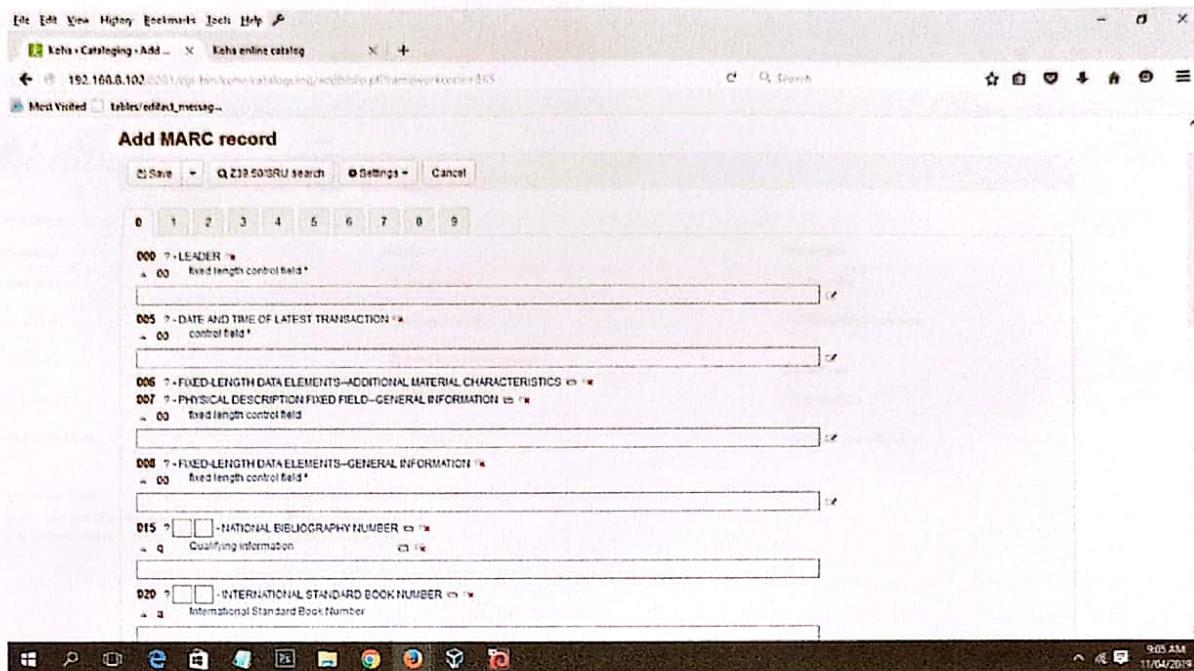


Figure 9: Cataloging window

The cataloging window contains the Add MARC record. There is a step by step process in inputting books. The process starts in zero (0) and ends in nine (9). Fill out all the requirements that are needed. The steps is to fill out the transcribing agency, the title statement, title, remainder of the title, place of distribution, name of publisher, date of publication, click the source of classification into Dewey decimal classification, Koha item type into books then save.

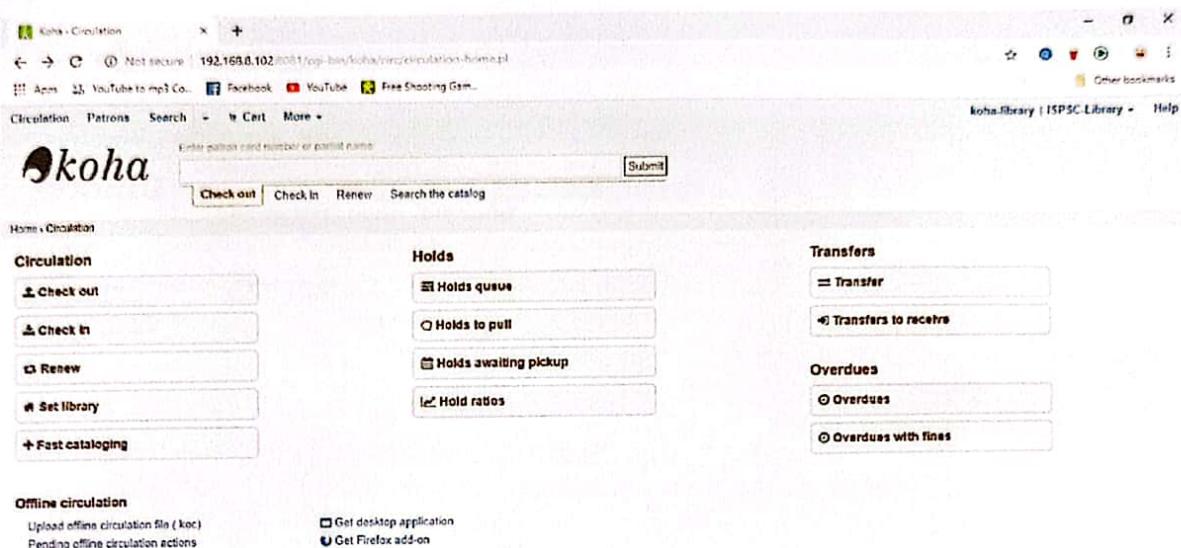


Figure 10: Circulation Window

The circulation window contains five (5) menus : Check out, Check in, renew, set library and fast cataloging.

The holds menu contains holds queue, holds to pull, holds a waiting pick up and hold ratios. The transfer menu contains transfers and transfers to receive and the overdue menu contains overdues and overdues with fines.

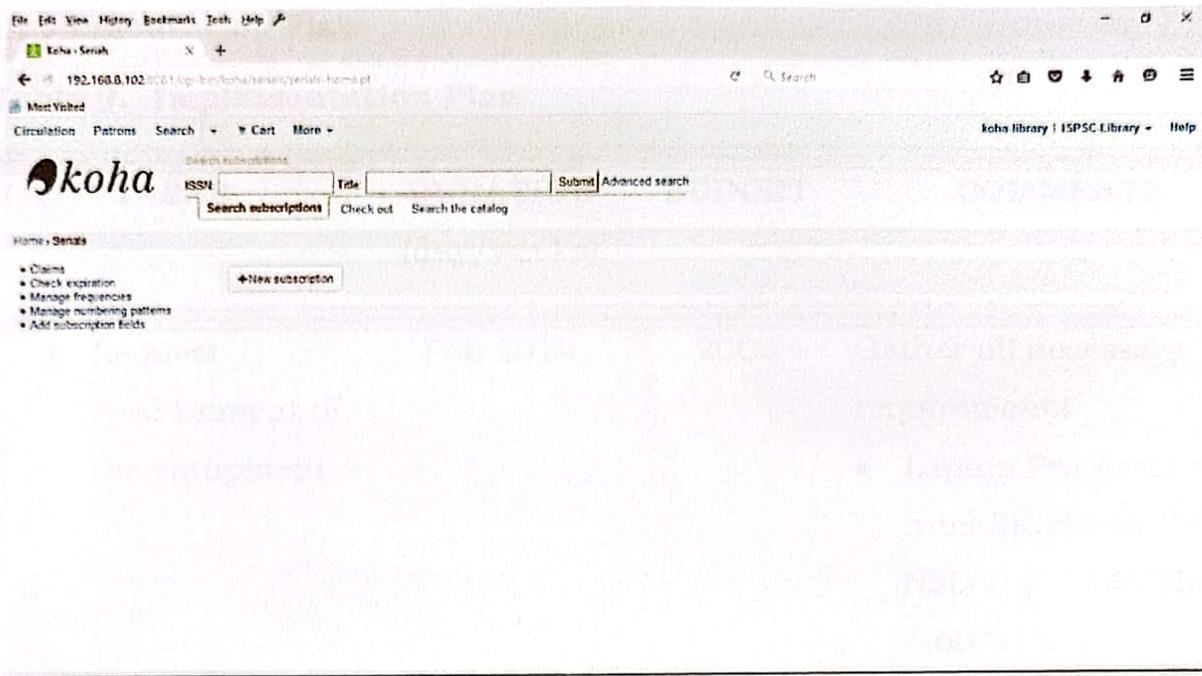


Figure 11: Cataloging Search Window

This window contains new subscriptions., check out and search the catalog. The cataloguing search contains two (2) menus: New record and New from Z39.50/SRU.

**Implementation Plan****Table 9. Implementation Plan**

TASKS	DURATION	BUDGET	COMMENTS
		(day/weeks)	
1. Request Procurement of the equipment	Feb 2019	2000	Gather all necessary requirements <ul style="list-style-type: none">• Laptop Processor : Intel(R)Celeron R CPU N3060 @ 1.60GHz 1.60 GHz• RAM: 4.00GB• Mobile Phones: (Ori operating system) OPPO A3s
2. Searching in Google Chrome for the appropriate application device.	Feb 2019	0	Searching for the Operating system needed for the installation of Koha.
3. Installation of Virtual box, Debian 9.8 and Koha System	Feb 2019	500	Installation of the operating systems.
4. Exploration of the system	March 2019	300	Exploring the features of the system
5. Inputting of	March 2019	300	Encoding the title,



books in Koha			author, ISBN, and number of pages of books
6. Uploading files in Koha	April 2019	200	Uploading of files
7. Testing the system	April 2019	200	Testing the usability of features, functionality, and effectiveness of the system.
8. Maintenance of the system	April 2019	300	Visitation of the system after a week or a year of the deployment.



Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The capstone project aimed to test the usability of Integrated Library System Using KOHA. Specifically, the study aimed; determine the existing processes involved in the current system; identify the features of the developed system; and test the usability of the system.

The proponents asked permission from the librarian of ISPSC, Sta. Maria Main Campus for the lists of books they need to test for the usability of the system. The proponents gathered data through questionnaires.

The system include: a homepage, an administrator log in, users, add and edits books as its features.

The researcher conducted a unit testing to test the functionality of the system. The security, accessibility, and the usability were tested.

Conclusion

Based on the findings, the following conclusions were drawn:

1. The current method in inputting books in the library is manual and hand written process.



2. The Open Source Integrated Library System using KOHA for ISPSC Main Campus can provide faster and easier way to find the books in the library.
3. The system has a high usability rating in terms of use, easy to find the books that needed, useful and satisfaction.

Recommendation

From the findings and conclusions drawn, the following recommendations are offered:

1. The developed system will help the librarian in minimizing time used to find books.
2. The librarian should consider implementing the system so that they can see if that books were available in the library.
3. The developed system must be continually developed and updated regularly to maximize its usability.



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