**LIBRARY MANAGEMENT SYSTEM**

**(A WEB-BASED APPLICATION)**

**BY**

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*A Summer Project Documentation Submitted to*

**Faculty of Management, Tribhuvan University**

in partial fulfillment of the requirements for the degree of

**Bachelor of Information Management**

**September, 2021**

# **STUDENT DECLARATION**

This is to certify that I have completed the Summer Project entitled “**Library Management System**” a web-based application, under the guidance of “Er. Dhiraj Kumar Jha” in partial fulfillment of the requirements for the degree of **Bachelor of Information Management** at Faculty of Management, Tribhuvan University. This is my Original Work and I have not submitted it earlier elsewhere.

Date:………………….

Name: Mukesh Mandal

Signature:…………………….

# **CERTIFICATE FROM THE SUPERVISOR**

This is to certify that the summer project entitled “**Library Management System**” a web-based application, is an academic work done by “Mukesh Mandal” submitted in the partial fulfillment of the required for the degree of **Bachelor of Information Management** at Faculty of Management, Tribhuvan University under my guidance and supervisor. To the best of my knowledge, the information presented by him in the summer project report has not been submitted earlier.

Name: Er. Dhiraj Kumar Jha

Designation: project Coordinator

Date:………………………

# **ACKNOWLEDGMENT**

The Summer Project has been constructed for the partial fulfillment of the required for the degree of Bachelor of Information Management at Faculty of Management. The completion of this summer project would not have been possible without the help of the administration of OIC. So, I would like to thank the entire administration of OIC as well as the faculty members of the BIM.

I am also thankful to teachers of OIC for their constant guidance and supervision regarding this project development. I would like to thank **Er. Dhiraj Kumar** **Jha** my supervisor for his contribution to this project development process.

Lastly, I would like to thank all the people who were directly and indirectly associated with this project.

Mukesh Mandal (8167/17)

BIM 6th Semester

Orchid International College

# **EXECUTIVE SUMMARY**

The project Library Management System is web-based application and controlling the transactions in a library. The project Library Management System is develop in Php, which mainly focuses on basic operations in a library like adding new members, new books and updating new information, Searching books and members and faculty to borrow and return books and all necessary requirements for the library to manage day to day operation. This is web-based software “Library Management System” which will help organization to keep the proper information about their library details like book information, issue book information, return book information etc.

# **ABBREVIATIONS**

BIM : Bachelor of Information Management

IT : Information Technology

MySQL: My Standard Query Language

OIC : Orchid International College

OS : Operation System

RAM : Random Access Memory

SP : Summer Project

TC : Test Case

TU : Tribhuvan University

UC : Use Case

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# **Chapter I: Introduction**

## **1.1 Background**

Library Management System is specifically developed to replace the pen & copy work, where student can saw their book issued information and admin can make all the operation related to library. The Traditional way of maintaining details of a students in a library was to much time consuming. Every time the students need to go to library to check the book issued by them but by the help of this system students can easily check their issued book information such as issued data, return data, book information issued to him/her. Due to the use of old, technique the organization has facing serious problem of maintaining the library related activities, I found that library management system is needed for the organization. The method of Library’s data maintenance is unsystematic so, I have decided to make web-based system “Library Management System” which will help organization to keep proper information about their library details.

**1.2 Introduction to Organization**

Global Educational Academy was established in 2053 BS by a team of eminent academicians and devoted teachers, it has been accredited for its quality education in the region .It is situated at the heart of Damak Municipality. The organization have it’s own library.

## **1.3 Current situation of the organization**

Global Educational lies at the heart of Damak which is one of the famous educational institutes. Many students from class Nursery to 12 studied here. And this educational institute provides their student library access where they can issue book for certain period of time.

## **1.4 problem statement**

As the organization is having traditional system of library management system which is based on copy and pen work, they are facing many problems in keeping record safely. All the necessary stuffs are being done in hard copy. So, it become much difficult for staffs to keep the records updated all the time. As the student need to renew the book it become difficult for them to find the student records on the register for updating it.

## **1.5** **Literature Review**

The main goal of this Library Management system is to manage all records of the students, book and issued book. This desktop-based application is very efficient tools for searching the books in the library. The traditional way of searching the book in the library is time consuming. But many difficulties were there in this by not knowing the presence of book in the library. In order to save the time and keeping the record this application will help.

## **1.6 Objective of the study**

The main purpose of “Library Management System” is to achieve following objectives:

* To make the existing system computerized
* To avoid the manual working in Library
* To make working procedure faster in Library
* To improve the searching the books faster

### **1.6.1 General objectives**

* To partial fulfillment of the requirement for the degree of Bachelor of Information management

### **1.6.2 Specific objectives**

* To provide the students and faculty a better service at the library in processing each transaction.

## **1.7 Methodology**

The project has been preparing using php, phpstrom, xammp. There are many advantages offered by phpstrom it is fast, secure and easy to use. By programming in, I will be able to work quickly and efficiently and able to implement some of my proposed advanced functionality.

### **1.7.1 Data and Information**

The data and information play vital roles for the identification of possible threads and opportunities of any organization. Therefore, keeping records in mine library has the efficient portal for managing the information of library. All the data related to “Library Management System” query is collected during viewing site. Those data are kept safely in the database. Admin detail like, name, password is saved.

### **1.7.2 Project framework**

The increment development model is also known as interactive model and evolutionary model. This type of process model is based on the initial development of the software product, providing it for a review and comment to the users, and making the changes in it to finally product a stable version of software development approach where the software is develop mostly for e-commerce approach, personal and business based applications. The basic idea in the incremental development of the software includes following steps:

1. The developers produce on initial version of the software rapidly.
2. The customer uses the system and provides the feedback.
3. The developers modify the existing system based upon the customer feedback.
4. Repeat step (ii) and (iii) until the customers are satisfied.

### **1.7.3 Tools and technologies used**

For the development of this project frontend and backend application is used.

Frontend:

The programming has been done using HTML, CSS, Bootstrap in development of the project.

Backend:

PHP, MYSQL has been used for the backend development.

# **Chapter II Task and Activities Performed**

## **2.1 Analysis of task, activities, problem issues**

### **2.1.1 Analysis of task**

The summer project is one of the highlighted subjects which helps to make student be some part of the professional world. Among the various option provided, it used PHP based web system. Similarly, among the various organization it selects the library management System.

* **ER-Diagram**

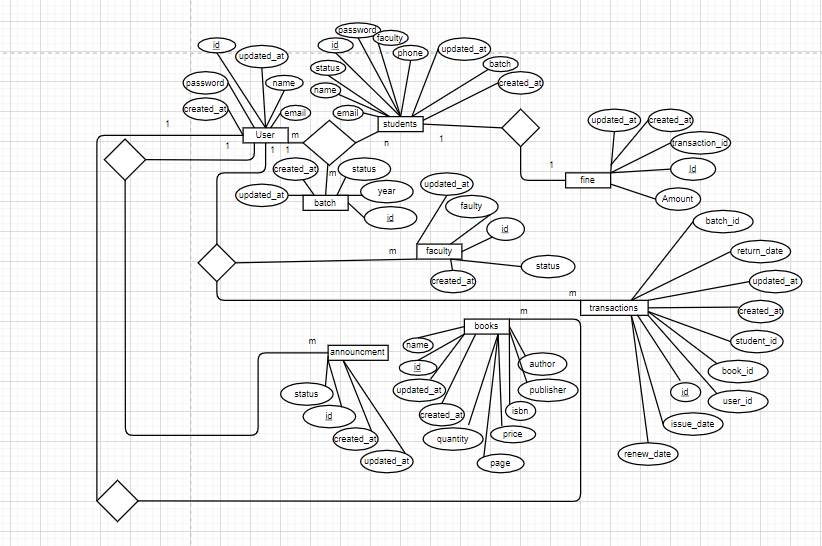


Figure 2.1 ER Diagram

**ER-Diagram Description**

An entity-relationship diagram (ERD) is a data modeling technique that graphically illustrate an information system’s entities and the relationship between those entities. An ERD is a conceptual and representational model of data to represent the entity framework infrastructure.

### **2.1.2 Problem and issues**

After the brief analysis of the task and environment, it finds that people are busy in their work through which they don’t have time to visit bank which results in low banking activities. So, for comfort of those who are busy in their tight schedule online banking system is being developed.

## **2.2 Analysis of possible solution**

### **2.2.1 Requirement Analysis**

The Requirement Analysis is also called Requirement Engineering which is the process of finding out analysis, document and checking the service and the constraints of the system. It also provides an appropriate mechanism for understanding what the customer wants, analysis the needs, accessing the feasibility, negotiating the reasonable solution, providing the solution verifying the specification and validating it for the operational system.

### **2.2.2 Functional Requirement**

* The system should allow admin to issue the book to the existing using.
* The system should allow admin to renew the book.
* The system should allow the user to saw their issue details.
* The system must update the library management system such as new book arrivals, fine for late submission.

#### **2.2.2.1 Use Case Diagram**

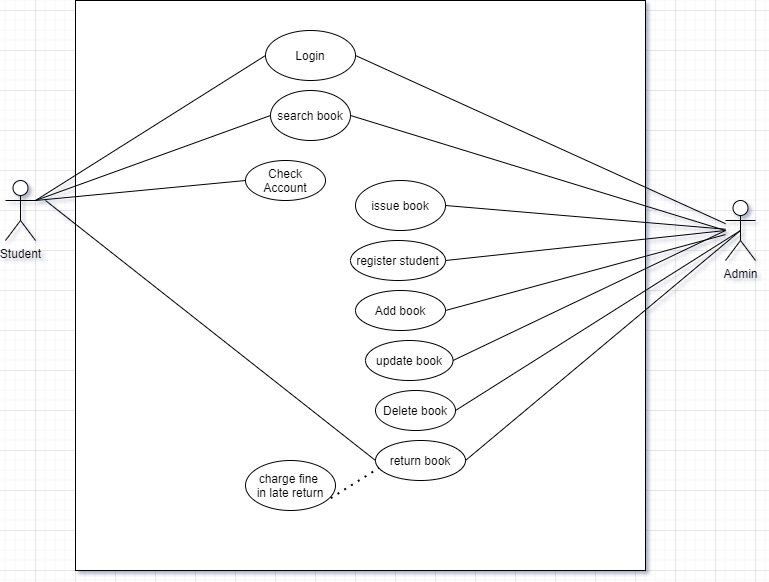


Figure 2.2 Use case diagram

Table 2.1: Login

|  |  |
| --- | --- |
| Use-case Identifier | UC1: Login |
| Primary Actor | Admin |
| Secondary Actor | Student |
| Description | The Admin and Student must be able to login into the system using the id and password provided to them. |
| Pre-condition | Both admin and student should know their id and password provided to them. |
| Post-condition | Admin will be able to login into the system. |
| Success Scenario | After a successful login they must be redirected to their respective dashboard. |
| Failure Scenario | “Sorry Login Failed” message should be displayed. |

Table 2.2: Search Book

|  |  |
| --- | --- |
| Use-case Identifier | UC2: Search Book |
| Primary Actor | Admin |
| Secondary Actor | Student |
| Description | The Admin and Student must be able to search book they wish for. |
| Pre-condition | There must be an authentic login. |
| Post-condition | The user or admin should know the name of the book. |
| Success Scenario | List of the book they searched for should be displayed. |
| Failure Scenario | “Sorry Book Not Found” message should be displayed. |

|  |  |
| --- | --- |
| 0Use-case Identifier | UC3: Renew Book |
| Primary Actor | Admin |
| Secondary Actor | None. |
| Description | Admin can renew the book after the renew request from student. |
| Pre-condition | The date of the book to be returned should have not crossed. |
| Post-condition | Submit date will be extended. |
| Success Scenario | Book should be renewed and new date of return must be assigned. |
| Failure Scenario | “Sorry this book cannot be renewed to you” message should be displayed. |

Table 2.3: Renew book

### **2.2.3 Non-Functional Requirement**

Non-functional requirement are the constraints on the services or functions offered by the system such as timing constraints, constraints on the development process, standards, etc. Non-functional requirement are additional requirements, which describes additional requirement needed to meet the functional requirement of the user. Non-functional requirements may be more critical than functional requirement. If these are not met, the system is useless. Major non-functional requirement is:

* Software should act in less possible response time.
* Book searching without intervention.
* Independent to the any platform.
* Should disclose the personal information to unauthorized user.
* Confidentiality and security.

### **2.2.4 System Requirement**

1. OS: Windows, Mac, Linux
2. MySQL
3. Browser

### **2.2.5 Solution Design**

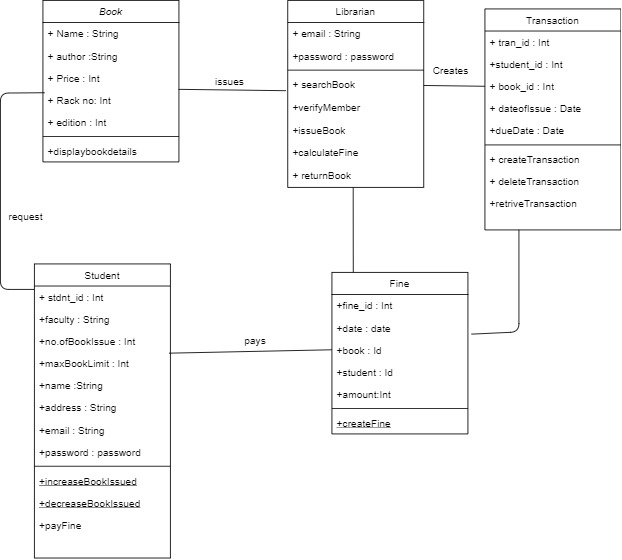


Figure 2.3 Class Diagram of Library Management system

#### **2.2.5.1 Class Diagram Description**

A class Diagram is a UML diagram that represents a static view of the system. It is composition of different classes that are linked to each other through association. For the class diagram of fund transfer, there must be user who had valid account and the receiver should also have valid account through which he/she can receive the amount.

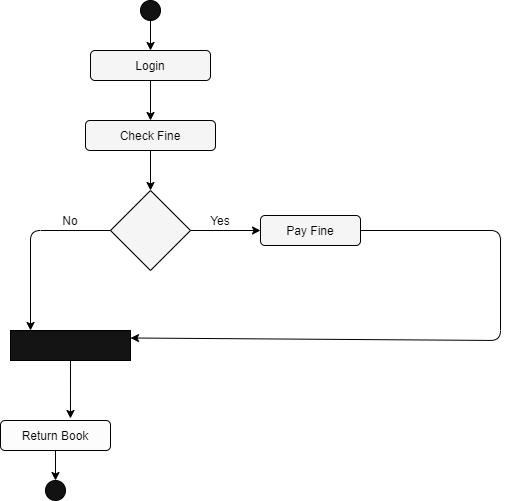


Figure 2.4: Activity Diagram(login)

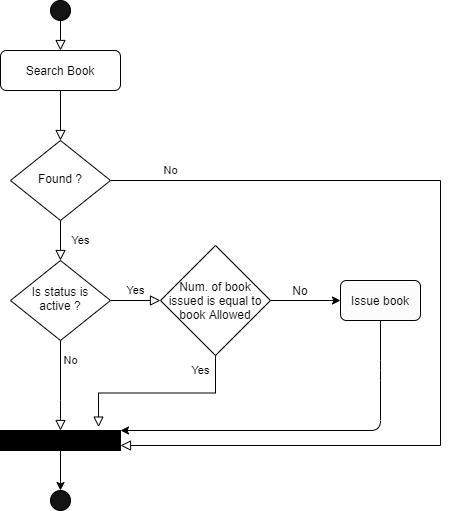


Figure 2.5: Activity Diagram (Issue Book)

#### **2.2.5.2 Activity Diagram**

Activity diagrams are graphical representations of workflow of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified model language activity diagrams are intended to model both computational and organizational processes (i.e., workflows), as well as the data flows intersecting with the related activities. Although activity diagrams primarily show the overall flow of control, they can also include elements showing the flow of data between activities through one or more data stores

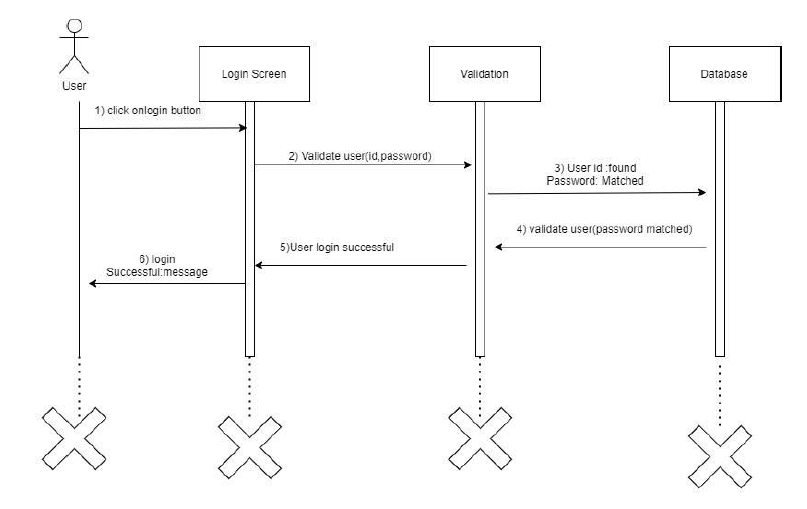


Figure 2.6: Sequence Diagram

#### **2..2.5.3 Sequence Diagram Description**

Sequence Diagrams are interactive diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interactive visually by using the vertical axis of the diagram to represent time what message are sent and when. the Fund Transfer sequence diagrams can explain the login to the system and transfer the fund to the targeted account that can explain in the figure.

**2.2.6 Testing**

In this phase, tests will be conducted in accordance with the Software Requirement specification to meet the standards. The prime focus remains on the empty field’s submission, direst passing the query string. The test will be performed for each module for its proper functionality.

Testing is the process where the code along with system is tested during the software development phase. Similarly, it is the process of findings the faults in the software development process. The test result may be negative. The positive test result shows that there is error free in the system where as the negative test result indicates the error in the system. The testing also continues after the user uses the product.

|  |  |
| --- | --- |
| Project Name: Library Management System | |
| Test Case | |
| Test Case ID: TC-001 | Test Designed by: Mukesh Mandal |
| Test Priority (Low/Medium/High): medium | Test Designed date: 2021-03-03 |
| Module Name: Admin Login | Test Executed by: Mukesh Mandal |
| Test Title: Admin Login | Test Execution date: 2021-03-03 |
| Description: Admin Login to Dashboard | |
| Pre-conditions: Delete Student information | |
| Dependencies: | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| .N | Input Value | Actual Result | Expected Result | Remark |
| 1 | Email: [admin@admin.com](mailto:admin@admin.com)  Password: admin123 | Must be logged in | Able to logged in | Test pass |
| 2 | Email: [admin321@admin.com](mailto:admin321@admin.com)  Password: admin | Must be logged in | Unable to logged in | Test fail |

Table 2.4 (Testing TC1: Admin Login)

|  |  |
| --- | --- |
| Project Name: Library Management System | |
| Test Case | |
| Test Case ID: TC-002 | Test Designed by: Mukesh Mandal |
| Test Priority (Low/Medium/High): medium | Test Designed date: 2021-03-03 |
| Module Name: Add Student | Test Executed by: Mukesh Mandal |
| Test Title: Add student | Test Execution date: 2021-03-03 |
| Description: Add Student information | |
| Pre-conditions: Add Student information | |
| Post-condition: Email and password should be valid so admin can add the new student. | |
| Dependencies: | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Navigate to login page |  | Login page should open | As expected, user is navigated to login page of PPMS | pass |  |
| 2 | Provide valid email and password | email=admin@gmail.com  Password=admin123 | User is able to login with valid username and password | As expected, | pass |  |
| 3 | Select Student module |  | User is able to select Student | As expected, | pass |  |
| 4 | Add student information |  | User is able to add student information | As expected, | pass |  |

Table 2.5: Testing TC2 (Add student)

Table 2.5: Testing TC3 (Delete student)

|  |  |
| --- | --- |
| Project Name: Library Management System | |
| Test Case | |
| Test Case ID: TC-003 | Test Designed by: Mukesh Mandal |
| Test Priority (Low/Medium/High): medium | Test Designed date: 2021-03-03 |
| Module Name: Delete Student | Test Executed by: Mukesh Mandal |
| Test Title: Deleting student | Test Execution date: 2021-03-03 |
| Description: Delete Student information | |
| Pre-conditions: Delete Student information | |
| Post-Condition: email and password is valid so Admin is able to go to main screen and delete student | |
| Dependencies: | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Navigate to login page |  | Login page should open | As expected, user is navigated to login page of LMS | pass |  |
| 2 | Provide valid Email and password | Email=admin@gmail.com  Password=admin123 | User is able to login with valid email and password | As expected, | pass |  |
| 3 | Navigate to main page |  | User is navigated to main page | As expected, | pass |  |
| 4 | Select student module |  | User is able to select student | As expected, | pass |  |
| 5 | Delete student information |  | User is able to delete student information | As expected, | pass |  |

# **Chapter III: Discussion and Conclusion**

## **3.1 Discussion**

During the entire project development, we need various methods to collect the data i.e. through secondary sources such as website, article. the problem that was identified, that people are busy in their work through which they don’t have time to visit bank which results in low banking activities. So, for comfort of those who are busy in their tight schedule online banking system is being developed.

## **3.2 Conclusion**

The summer project was a greater opportunity for the student to learn about the environment and observing the culture of the organization. It was a great opportunity to use my knowledge in practice. This system is helpful to those who have been in their tight schedule and save their time.

The knowledge of the practical environment of the organization. The summer project has increased my skills and knowledge. I had successfully implemented the idea that I learned so that I can create a web-based system.

I would like to thank Tribhuvan University, Orchid International College and Mr. Dhiraj Kumar Jha for providing me this wonderful opportunity to showcase our skills. This will help increase my knowledge and understanding for future. This will surely help to develop my skill in this sector. And also request the department to give this type of work often for the skill enhancement of students and for the future preparations.

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<https://laravel.com/docs> where Developer can learn to use Laravel.

**Appendices**

