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

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.

Name: Mukesh Mandal

Date: 09/27/2021

Signature:

i

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.

Signature of Supervisor
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.

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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

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 Objectives of the study

The main objects of "Library Management System" is to achieve following requirement

- 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
- To build a web based app to keep record of students, book, batch, and faculty.

1.6Literature Review:

Due to the essential evolution in the technology that transforms every aspect of our lives, which in turn happens as a result of the evolution of the internet, and the libraries services massive developments, all of this results in development in the library market. (Simmons, 2017:1). The library market has developed in the past ten years, and the new generation of libraries depends on all of the integration instruments, which will help the librarians to use all of the modern tools such as, unified search indexes and Open URL resolvers. (Wilson, 2012,110). Behnert and Lewandowski, (2015:8) noted that the library provides entrance to the resources and attract the users of the library, and in order to accomplish this goal, the developer of the library should know all the library users are not in the same academic level. In addition to the library facilities services which is established to assist in writing researches, all university's libraries have the learning resources. In recent years, especially with the demanding information world, higher education institutions namely, universities should initiate an up to date profiles which depends on knowledge management and development of information technologies which should be simultaneous with the developments in learning and education (Mole et. al, 2013, 183). And, nowadays, with the increased use of the internet, which makes it easier for most of the individuals to have digital skills, and with the current state of societies to be information societies, twill encourage and increase the individuals learning and make them skillful in utilizing modern technologies. (Balina, 2014: 414) Digital libraries have appeared to make a combination between the libraries divergent assets and properties and the individuals who use the libraries resources, hence that digital libraries have been developed from uncomplicated user interfaces to libraries that depend on complex networks and communication that assist cooperation between the various utilizers around the world. (Barbuti et.al, 2014:128). As an example of this is the open sourced digital library system that is produced by Green Stone which is a software whose it's source code is protected by the General Public License, and any library user can utilize this software by downloading it then updating and changing the software according to their needs, and then spread the updated version. (Parichi and Nisha, 2015: 16). Academic libraries evolved through accelerated developments because most of the libraries have shelved their content in computers and this have saved a lot of space for the student to search, study andlearn and study (Heidi Simmons, 2018: 1) Cabrerizo et.al.(2015: 2) noted that academic libraries especially the digital ones assist their users by enabling them to search and examine the contents of the library and gain the specific type of information that satisfies their needs. (A.L Bushra, 2019)

As the economic growth increased the peoples are led to the higher aspiration to excel in education and work through better access to information and knowledge. Technologies for building user-centered digital library environments and making computer-user interactions more intelligent should be explored. Earnshaw

discussed in his article about the old libraries and its drawbacks to keeping records. A book provided an irreducible deposit of information that could be read, reviewed, criticized, as well as providing the basis for the development of its ideas into further volumes. Information is no longer exclusively library-centric but is also networkcentric. The center of gravity has moved from information provision to information access. Online search (via engines such as Google) is replacing physical search. Combining the best of both worlds i.e. the traditional library and the online search - to meet the developing requirements of users is a key challenge for the future. In this article, the author discussed the digital media consideration, the initial development in digital libraries and the long term preservation of digital data. As mentioned in this article digital library is a repository where a significant proportion of content is in the digital form. Which can be indexed and searchable via electronics means which is an advantage over the paper-based information. The difficulty and expense of preserving digital information is a potential impediment to digital library development. Preservation of traditional materials became more successful and systematic after libraries and archives integrated preservation into the overall planning and resource allocation. Digital preservation is largely

experimental and replete with the risks associated with untested methods. Digital preservation strategies are shaped by the needs and constraints of repositories with little consideration for the requirements of current and future users of digital scholarly resources. This article discusses the present state of digital preservation, articulates requirements of both users and custodians, and suggests research needs in storage media, migration, conversion, and overall management strategies. Additional research in these areas would help developers of digital libraries and other institutions with preservation responsibilities to integrate long-term preservation into program planning, administration, system architectures, and resource allocation. (Zunjar, Yadav, Markad and Patil, 2020)

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

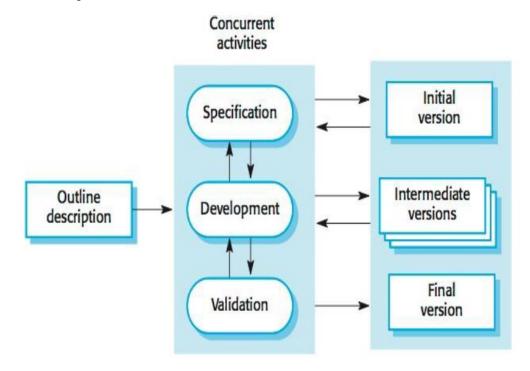


Figure 1.1 Incremental Model (Somerville, I. 2011)

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:

- I. The developers produce on initial version of the software rapidly.
- II. The customer uses the system and provides the feedback.
- III. The developers modify the existing system based upon the customer feedback.
- IV. Repeat step (ii) and (iii) until the customers are satisfied.

1.7.3 Tools used

The tools used in the system development includes:

PhpStorm

PhpStorm is a proprietary, cross-platform IDE for PHP, built by the Czech Republic-based company JetBrains. PhpStorm provides an editor for PHP, HTML and JavaScript

with on-the-fly code analysis, error prevention and automated refactoring's for PHP and JavaScript code

XAMPP

XAMPP is one of the widely used cross-platform web servers, which helps developers to create and test their programs on a local webserver. It was developed by the Apache Friends, and its native source code can be revised or modified by the audience. It consists of Apache HTTP Server, MariaDB, and interpreter for the different programming languages like PHP and Perl. It is available in 11 languages and supported by different platforms such as the IA-32 package of Windows & x64 package of macOS and Linux.

Draw.io

Draw.io is proprietary software for making diagrams and charts. The software allows you to choose from an automatic layout function, or create a custom layout. They have a large selection of shapes and hundreds of visual elements to make your diagram or chart one-of-a-kind. The drag-and-drop feature makes it simple to create a great looking diagram or chart.

1.7.4 Techniques of the project Report:

1.7.4.1 Problem Analysis:

The main problem which can be solved by this project is that the traditional way of record keeping can be replaced.

1.7.4.2 Feasibility Analysis

The analysis of the project has led to conclusion that the project is feasible with time and cost. The tools used for the development is almost Open Source involved less cost and maintenance.

1.7.4.3 Technical Feasibility

This analysis helps to forecast the future movement. This system is build using PhpStorm, MySQL which are well familiar and stable to us.

1.7.4.4 Operational Feasibility

In this analysis the system is analyzed on how well the proposed system solves the problem and works in the real environment and how it satisfies the requirement analysis phase of the system 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.

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

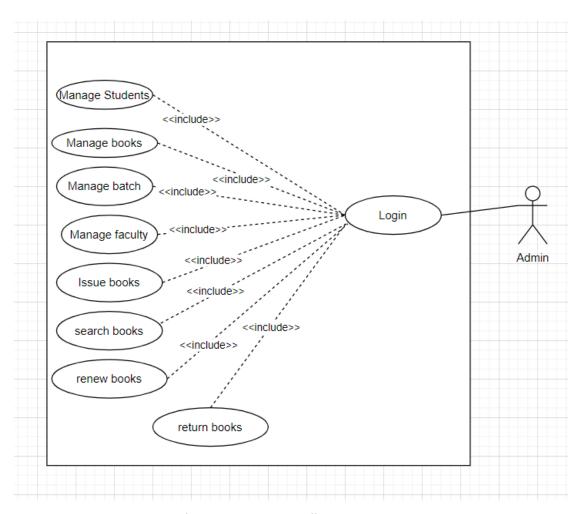


Figure 2.1 Use case diagram

Table 2.1: Login

Use-case	UC1: Login
Identifier	
Primary Actor	Admin
Secondary Actor	None
Description	The Admin must be able to login into the system using the id and
	password.
Pre-condition	Admin should know their id and password.
Post-condition	Admin will be able to login into the system.
Success Scenario	After a successful login admin 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	None
Description	The Admin must be able to search book.
Pre-condition	There must be an authentic login.
Post-condition	The user or admin should know the name of the book.
Success Scenario	Name of the book they searched for should be displayed.
Failure Scenario	"Sorry Book Not Found" message should be displayed.

Table 2.3: Renew book

Use-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.

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

Table 2.4 Software Requirement

Software	Purpose
PhpStorm:	In order to design layouts and to write
	code.
MYSQL:	In order to establish communication
	between data and database.
Microsoft-word:	To write documentation of project.
Draw.io:	In order to draw the diagram of ER-
	diagram, Use-case, Sequence diagram,
	Class-diagram and so on.

2.2.5 Entity Relationship diagram

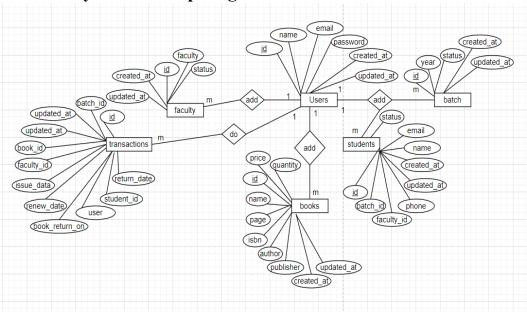


Figure 2.2: Entity Relationship Diagram of Library Management System

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.

2.2.6 Relational Model

Relational Model is conceptual basis of relational database (Somerville, I. 2011). It is UML diagram that shows static view of a system. Relational Model is described in the figure which is shown below:

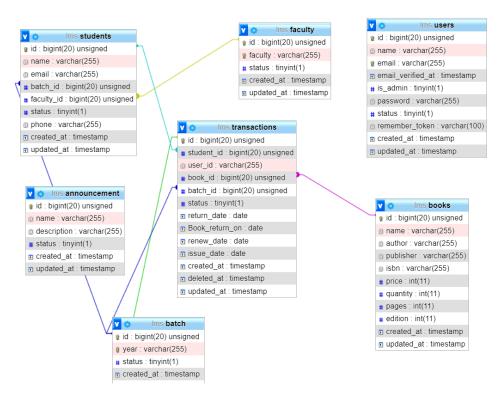


Figure 2.3: Relational Model of Library Management System

2.2.7 Class Diagram

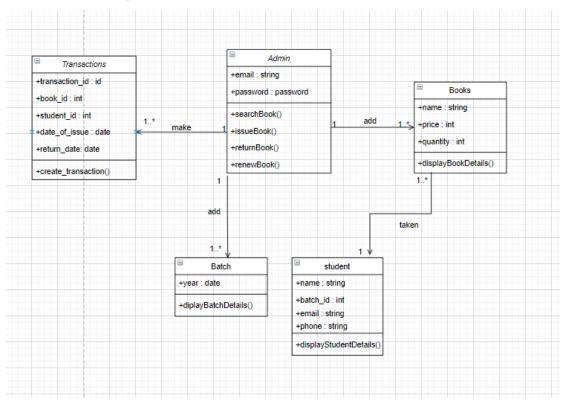


Figure 2.4 Class Diagram of Library Management system

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.

2.2.8 Activity Diagram

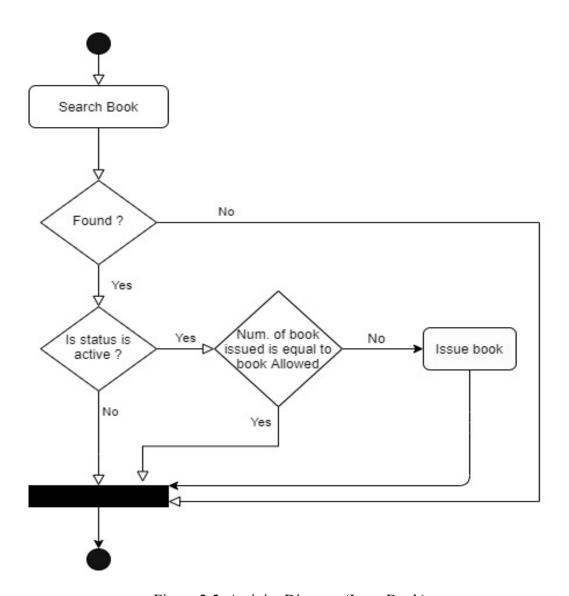


Figure 2.5: Activity Diagram (Issue Book)

Description

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

2.2.9 Sequence Diagram

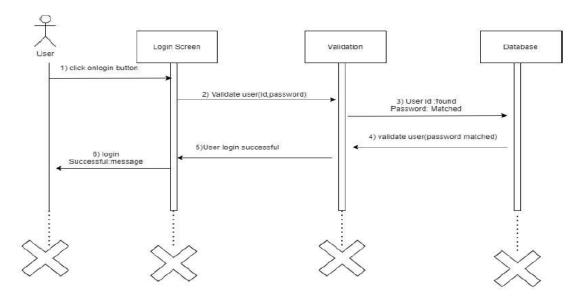


Figure 2.6: Sequence Diagram

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, direct 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.

Table: Testing TC1: Admin Login

Project Name: Library Management System					
Test Case					
Test Case ID: TC-001		Тє	Test Designed by: Mukesh Mandal		
Test	Priority (Low/Medium/High): mediu	ım Te	Cest Designed date: 2021-03-03		
Mod	ule Name: Admin Login	Тє	Test Executed by: Mukesh Mandal		
Test	Title: Admin Login	Тє	est Ex	xecution date: 2021-03	-03
Description: Admin Login to Dashboard Pre-conditions: Delete Student information Dependencies:					
S.N	Input Value	Actual Result	t	Expected Result	Remark
1	Email: admin@admin.com Password: admin123	Must be logged	in	Able to logged in	Test pass
2	Email: admin321@admin.com Password: admin	Must be logged	in	Unable to logged in	Test fail

Table: Testing TC2 Add student

Project Name: Library Management System				
Test Case				
Test Case ID: TC-002	Test Designed by: Mukesh Mandal			
Test Priority (Low/Medium/High): n	nedium 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	Notes
					(Pass/Fail)	
1	Navigate to		Login page should	As expected,	pass	
	login page		open	user is navigated		
				to login page of		
				LMS		
2	Provide	email=ad	User is able to login	As expected,	pass	
	valid email	min@gm	with valid username			
	and	ail.com	and password			
	password	Password				
		=admin1				
		23				
3	Select		User is able to select	As expected,	pass	
	Student		Student			
	module					
4	Add student		User is able to add	As expected,	pass	
	information		student information			

Table 2.7: Testing TC3 Delete student

		Project Name: L	Library Manageme	ent System			
			Test Case				
Test C	Case ID: TC-003		Test Desig	Test Designed by: Mukesh Mandal			
Test P	Priority (Low/Mo	edium/High): mediu	m Test Desig	Test Designed date: 2021-03-03			
Modu	le Name: Delete	Student	Test Execu	Test Executed by: Mukesh Mandal			
Test T	Title: Deleting st	udent	Test Execu	Test Execution date: 2021-03-03			
Descr	iption: Delete St	tudent information					
Pre-co	onditions: Delete	e Student information	n				
Post-Co	ondition: email a	and password is valid	so Admin is able	to go to main screen	n and delete	studen	
Depen	ndencies:						
step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fa il)	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.c om 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		

2.3. Findings

After analyzing the problems, it was found that using the old techniques may increase overall cost as well as may be difficult to handle. If this software is used for recording and managing, it will help to maintain record effectively and efficiently with reduction in cost.

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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APPEDDICES

