

CYCLE RENTAL SYSTEM
(A WEB-BASED APPLICATION)
FOR
THE BIKE FARM NEPAL

BY
SATYAN RATNA SHAKYA (10109/19)
TU Registration No: 7-2-939-80-2019
Orchid International College

A Summer Project Report Submitted to
Faculty of Management, Tribhuvan University
In partial fulfillment of requirements for the degree of
Bachelor of Information Management

Kathmandu, Nepal

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STUDENT DECLARATION

This is to clarify that I have completed the Summer Project entitled “Cycle Rental System” under the guidance of “Er. Dhiraj Kumar Jha” in partial fulfillment of the requirement for the degree of Bachelor of Information Management at faculty of Management, TU. This is my original work and I have not submitted it elsewhere.

Date:

Name: Satyan Ratna Shakya

Roll No: 10109/19

Signature

CERTIFICATE FROM THE SUPERVISOR

This is to certify that the summer project entitled “Cycle Rental System” is an academic work done by “Satyan Ratna Shakya” submitted in the partial fulfilment of the requirement for the degree of **Bachelor of Information Management** at Faculty of Management, Tribhuvan University under my guidance and supervision.

Signature of the supervisor

Name: Dhiraj Kumar Jha

Designation: Project Coordinator

Date: March 2023

ACKNOWLEDGMENTS

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organization. I will like to extend my sincere thanks to all of them.

I am highly indebted to our college, our coordinator “Er. Dhiraj Kumar Jha” for their guidance and constant supervision as well as for providing necessary information regarding the project and for their support in completing the project. I would like express gratitude towards members of “TheBikeFarmNepal” for their kind co-operation and encouragement which help me in completion of the project. My thanks and appreciation also go to my college in developing the project and people who have willingly helped me out with my abilities.

EXECUTIVE SUMMARY

The title of this project is “Cycle Rental System”. The project is completed as a part of Bachelor of Information Management course syllabus at Tribhuvan University. The main motive of building this system is to record the information of cycles which is rented by the customers.

The system helps to make existing manual system into computerized system and to view the recorded information easily.

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Chapter I Introduction

1.1 Background

The project “Cycle Rental System” is designed to help the customers to take Cycles for rent for certain period. Using this system, people can register as user who wants to take cycles on rent.

1.2 Introduction of the Organization

The Bike Farm Nepal is a business firm located in Jhamsikhel, lalitpur. The Bike Farm Nepal sells branded Mountain Bikes and accessories for a price cheaper than any high street retailers. The Bike Farm Nepal is currently selling many branded MTBs and cycling accessories. The price quoted is much cheaper than any high street retailers. The Bike Farm Nepal aim to provide highest quality products and services at most reasonable price. The Mountain Bikes it is offering are perfect for city road and more challenging trails offering stable and comfortable ride.

1.3. Current Situation of the Organization

The organization is still based on the manual renting system for maintaining record of the customers. They store their renting data in a traditional way. This results in delay in the operation and errors while recording the data.

1.4. PROBLEM STATEMENT

The project, “Cycle Rental System” is developed to keep all the detailed records of total rented cycles. Sometimes there might be error while keeping record in a system if records are recorded manually. There may be human errors while recording so to prevent these problems, Cycle Rental System is developed. Sometimes same named customer may visit our company, so while recording manually, the records may be replaced.

Hence, to prevent and solve these circumstances and make work effective and easy for both customers and the company, “Cycle Rental System” is developed.

1.5. OBJECTIVES

- a) To develop a Cycle Rental System
- b) To make existing manual system into computerized system
- c) To record the information of cycles which are rented.
- d) To view the recorded information easily.
- e) To make it easy for customers to rent cycles.

1.6. Methodology

1.6.1. Data & Information

The data and information needed for this project are collected from two sources:

1.6.1.1. Primary Method

The primary method of data collection includes:

- **Questionnaire Method**

The set of questions had been asked among the different staff and managers to know the present situation and problems faced by them.

- **Personal interview**

Some of the information have been collected by taking interview with the staff of the organization.

- **Observation**

Some data are even collected by observing the business environment or real working environment of the organization through field visit.

1.6.1.2. Secondary Source:

The other data and information were collected from external sources like YouTube and other information is collected through books and various websites.

1.6.2. Framework

The project framework is the steps of initiating, planning, executing, controlling, and closing the work of the team or individual to achieve specific goal and meet specific success criteria.

The reason behind considering this methodology are as follows:

- Frequent feedback and faster delivery
- Lower cost of changes

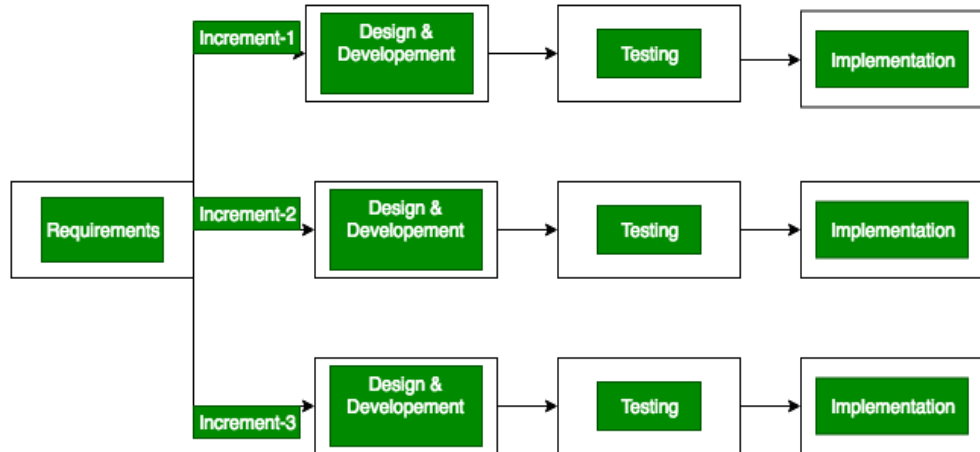


Fig: Incremental Model

1.6.3. Tools used

For the development it has used some of the front-end and back-end applications:

- Html, CSS
- PHP
- Java Script
- Visual Studio
- Xampp

1.6.4. Techniques of Project report analysis

Table 1.1. Gantt Chart of Cycle Rental System

Weeks	1	2	3	4	5	6	7	8	9	10	11	12
Works												
Planning												
Analysis												
Design												
Impementation												
Testing												
Documentation												

1.6.4.1. Feasibility Analysis

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

1.6.4.2. Technical Feasibility

This analysis helps to forecast the future movement. This software is made using HTML and PHP.

1.6.4.3. 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.

1.6.4.4. Schedule Feasibility

This analysis is needed action to identify faces, anomalies and issues that can exist through the project duration due to intentional or unintentional actions.

1.7. LITERATURE REVIEW

“Cycle Rental System” is a system that will help a company to record the information of cycles which are rented. To prevent errors in recording the data and information this system is developed. There may be multiple transactions in this company so there is a high chance of mistakes while recording. That’s why an effective cycle rental system is a must to overcome these mistakes and prevent any error.

Hence, the main motive of “Cycle Rental System” is to manage and keep all the detailed information of rented cycles.

Chapter II Task & Activities Performance

2.1. Analysis of Task, Activities and Problems

To analysis any problem or situation, the study of the organization is most. The organizational visit gives us the scenario of the organizational business activities and its process of operation by observation method. The interview method and questionnaire method are applied to know about the current situation of the organization.

2.2. Analysis of Problem Solutions

The only possible solution to get rid of all the problems for the organization is to develop a Cycle Rental System. The project analyzed by designing the system architecture. The architecture of the system of the project consists of different layers. The admin layer, where the admin uses the application as well as interacts with the database to perform different activities such as inserting, deleting, updating, and viewing.

2.2.1. Requirement Analysis

The main objectives of requirement analysis are to identify and evaluate the requirement of the proposed system. It helps to know about user requirements, system requirements, functional requirements, and non- functional requirements for ‘Cycle Rental System’ for The Bike Farm Nepal.

2.2.2. Functional Requirements

- Admin shall be able to login to the system.
- Admin shall be able to check rent history.
- Admin shall be able to manage the details of cycles.
- Admin shall be able to add, delete, update the cycles.

2.2.2.1. Use-Case Diagram

A use case diagram is used to represent the dynamic behavior of a system. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application.

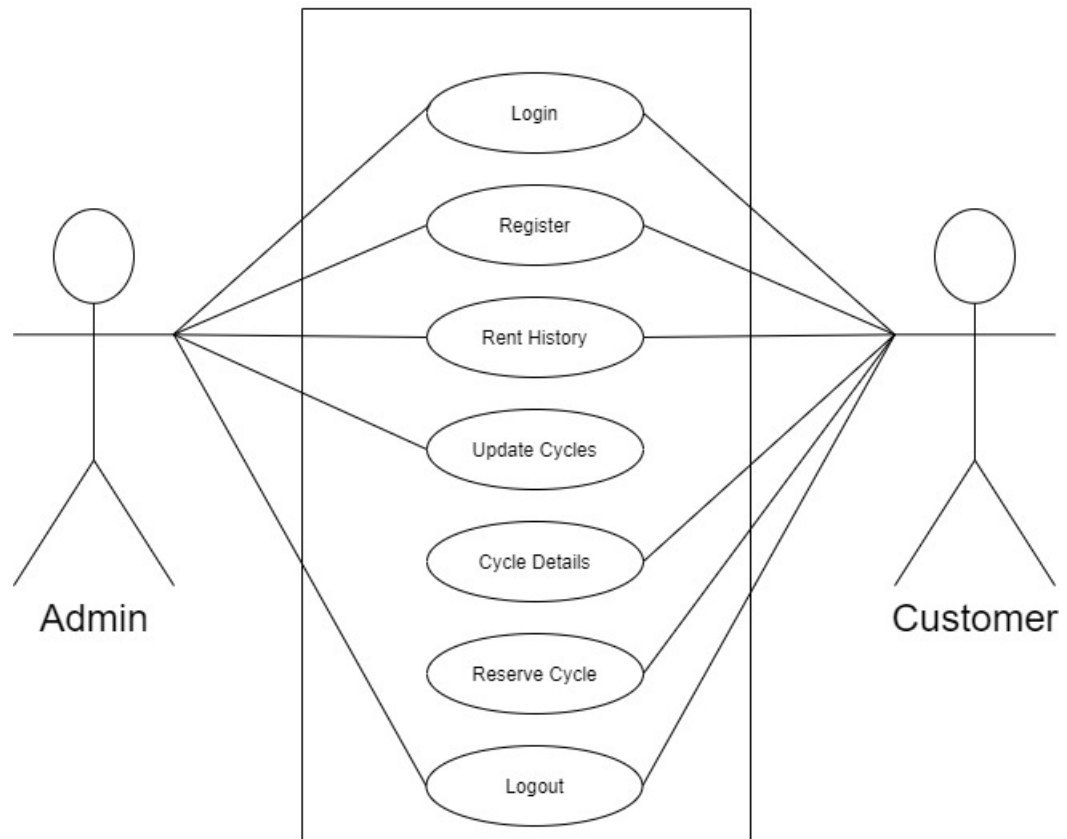


Fig: Use-Case Diagram

The above figure describes the high-level function and scope of a system. These diagrams also show how the system's actors interact with one another. In the use-case diagram, the use case and actors define what the system does and how the players utilize it, but not how the system itself functions. It explains the roles that Actors (Admin, Customer) play in the system.

2.2.2.2. Use-Case Description

Table 2.1: Use-Case Description (Login)

Use Case Identifier	UC01: Login
Actors	Admin, Customers
Description	Admin and customers can login to the system through a login form for security.
Pre-condition	The admin and customer must get their username and password correct.
Post-condition	The customer can perform required action in the system.
Success Scenario	Login success message should be displayed.
Failure Scenario	Login failure message should be displayed.

Table 2.2: Use-Case Description (Register)

Use Case Identifier	UC02: Register
Actors	Customers
Description	Customers can register to the system.
Pre-condition	The customer must open website.
Post-condition	The user can be registered as valid customer in the system.
Success Scenario	Register success message should be displayed.
Failure Scenario	Register failure message should be displayed.

Table 2.3: Use-Case Description (Rent History)

Use Case Identifier	UC03: Rent History
Actors	Admin, Customers
Description	Admin and customers can see/check the rents.
Pre-condition	The admin and customer must login to the system.
Post-condition	Both can see the details of the rent.
Success Scenario	The system should allow users to view their rent history.
Failure Scenario	Error message should be displayed.

Table 2.4: Use-Case Description (Update Cycles)

Use Case Identifier	UC04: Update Cycle
Actors	Admin
Description	Admin can update the details, availability information of the cycles.
Pre-condition	The admin must login to the system.
Post-condition	The updated cycles are recorded in database.
Success Scenario	The system should be able to update the cycle.
Failure Scenario	Error message should be displayed.

Table 2.5: Use-Case Description (Cycle Details)

Use Case Identifier	UC05: Cycle Details
Actors	Admin, Customers
Description	Admin and customers can see all the details of the cycles.
Pre-condition	The admin and customer must login to the system.
Post-condition	Both can see the details of the cycle.
Success Scenario	The system should allow users to view the cycles and their availability.
Failure Scenario	Error message should be displayed.

Table 2.6: Use-Case Description (Reserve Cycle)

Use Case Identifier	UC06: Reserve Cycle
Actors	Customers
Description	Customers can reserve the cycle according to their need with the start date and end date.
Pre-condition	Customer must login to the system and the cycle must be available.
Post-condition	The reserve cycle is recorded in the database.
Success Scenario	Reserve success message should be displayed.
Failure Scenario	Error message should be displayed.

2.2.3. Non-Functional Requirement

Non-functional requirements for a cycle rental system can include the following:

- **Performance:** The system should be able to handle a high volume of concurrent users, ensuring fast response times and minimal downtime.
- **Scalability:** The system should be scalable to accommodate increasing demand. It should be able to handle a growing number of users, transactions, and cycles without significant degradation in performance.
- **Reliability:** The system should be highly reliable, with minimal downtime or system failures. It should be able to recover quickly from any failures or errors and ensure the availability of cycles for rent at all times.
- **Availability:** The system should be available to users 24/7, allowing them to rent cycles at any time. Scheduled maintenance and downtime should be planned during off-peak hours and communicated to users in advance.
- **Usability:** The system should be user-friendly, with an intuitive interface and clear instructions for renting cycles. It should be accessible to users of varying technical proficiency and provide a seamless experience from browsing available cycles to completing the rental process.
- **Maintainability:** The system should be designed with a modular and extensible architecture, making it easier to maintain, update, and enhance over time. Code readability, documentation, and adherence to best practices should be considered to facilitate future development and maintenance efforts.

2.2.4. System Requirement to develop the system

- Html, CSS
- PHP
- Java Script
- Visual Studio
- Xampp
- Draw.io
- Microsoft Word
- Microsoft PowerPoint

2.2.5. Solution Design

2.2.5.1. ER Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system.

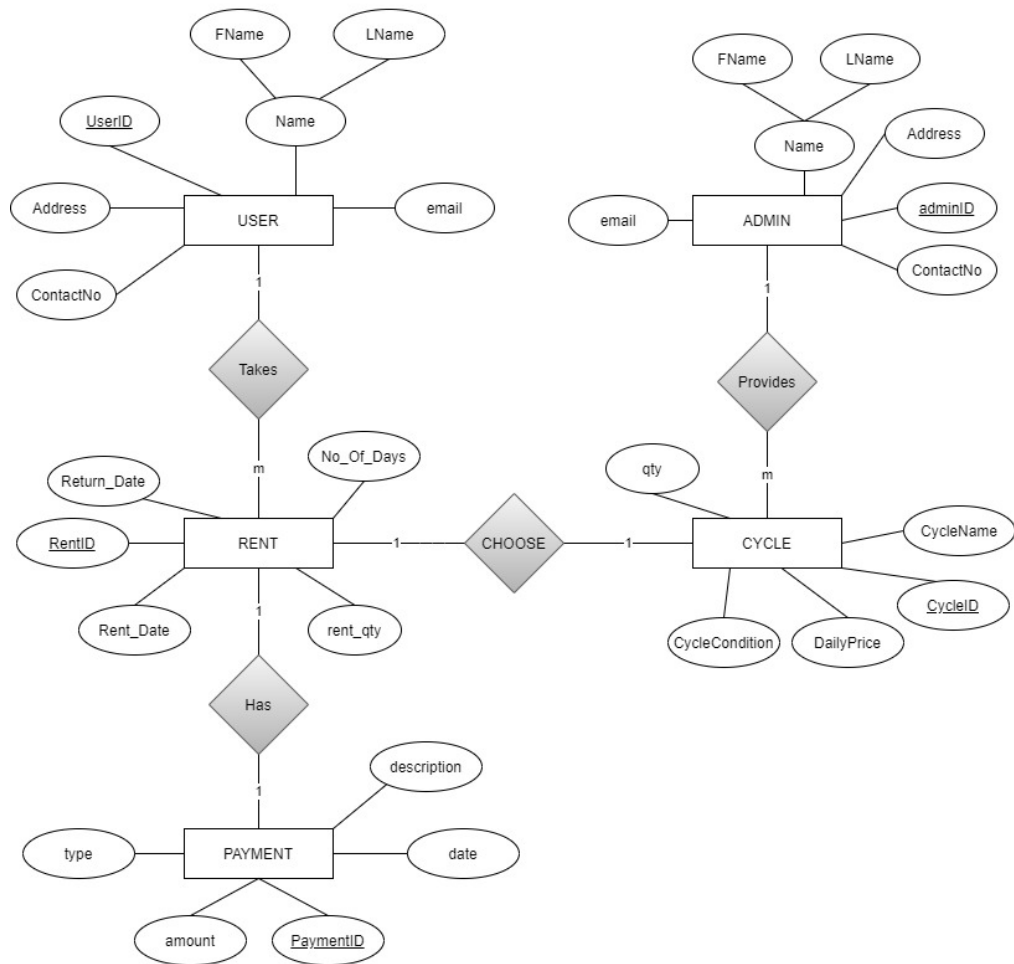


Fig: ER-Diagram

2.2.5.2. Relational Model

The relational model is a way of organizing data in a database. It is based on the idea of tables, which are made up of rows and columns. Each row represents a single record, and each column represents an attribute of that record. The relational model is a very popular way of organizing data because it is easy to understand and use. It is also very efficient, and it can be used to store a wide variety of data.

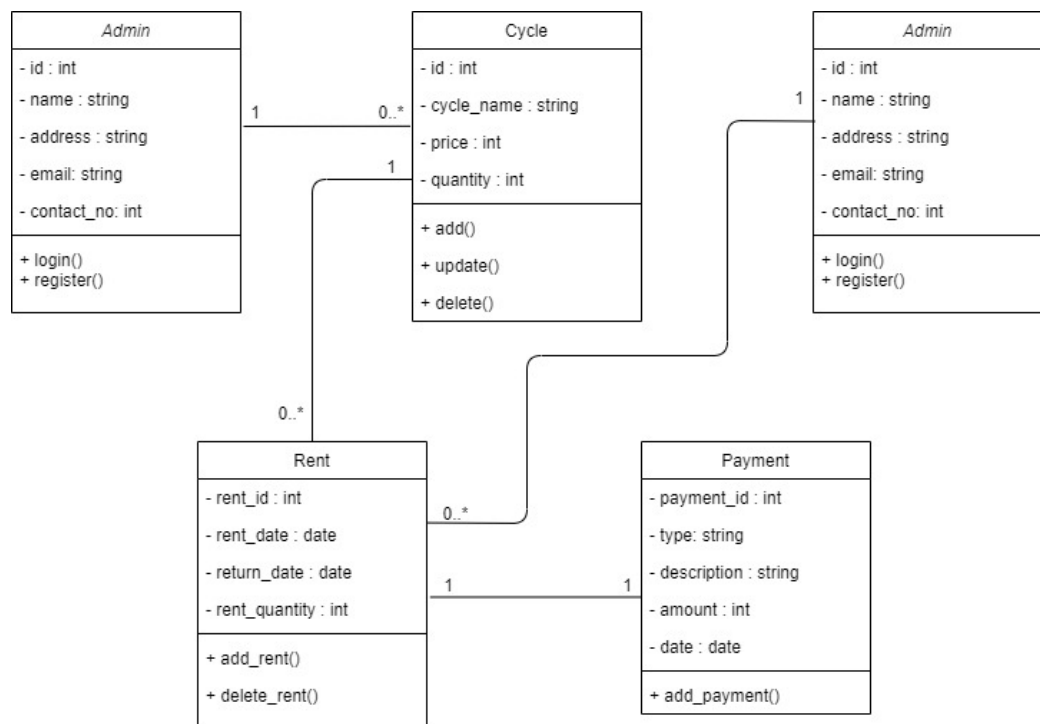


Fig: Relational Model

2.2.5.3. Activity Diagram

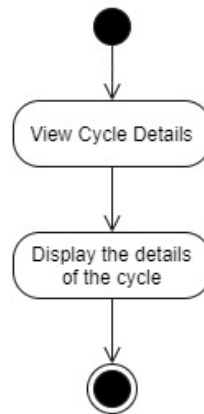


Fig: Activity diagram of Displaying cycle

The above figure describes how customers view the details of the cycle. The customer must login to the system and select the cycles they are interested in, and the cycles details are displayed.

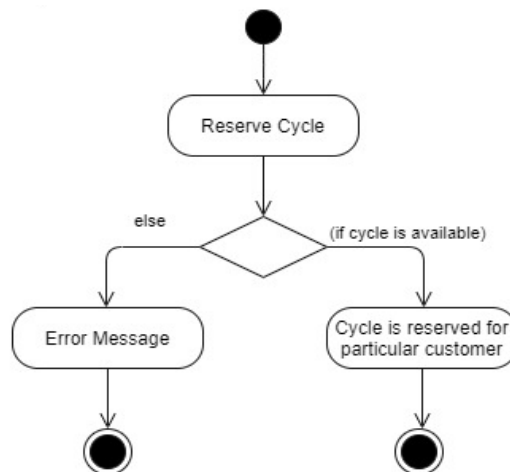


Fig: Activity diagram of Renting Cycle

The above figure describes how customers can reserve the cycle. The customer must login to the system and select the cycles they are interested in, and the cycles details are displayed and then they can rent the cycle if it is available.

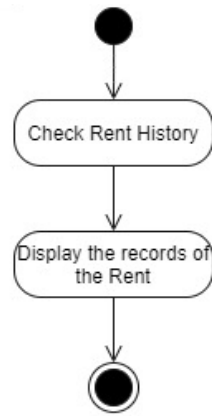


Fig: Activity diagram of Checking rent history

The above figure describes how users can check the records of the rent. The customer must login to the system and select the rent option and the rent history is displayed of that customer.

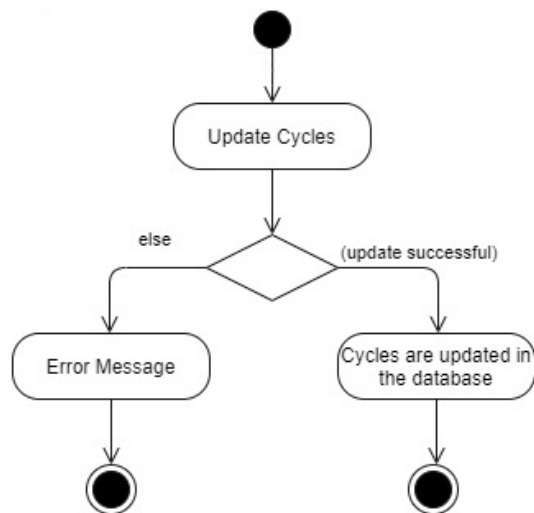


Fig: Activity diagram of Updating cycles

The above figure describes how admin can update the cycles. The admin must login to the system and add the cycles details. The cycle is stored in the database and the customers can view all those cycles.

2.2.7 Sequence Diagram

A sequence diagram simply depicts interaction between objects in a sequential order i.e., the order in which these interactions take place. Sequence diagrams describe how and in what order the objects are in a system function.

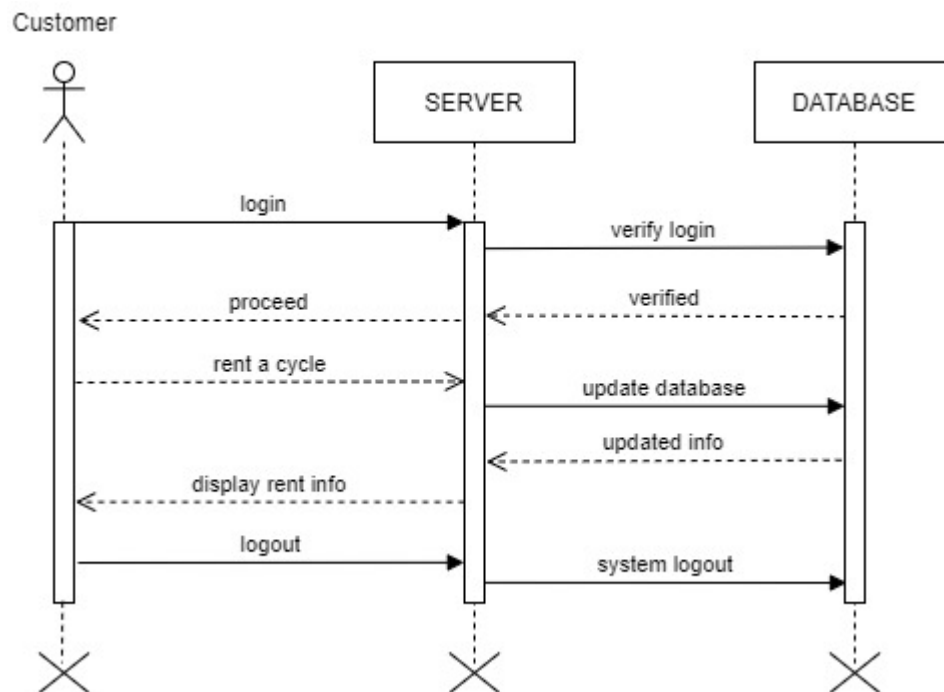


Fig: Sequence Diagram

The above sequence diagram illustrates the order of events, in the cycle rental system. It showcases steps like checking cycle availability, verifying customer credentials, and calculating costs. The customer requests a cycle from the cycle station. The cycle station checks the availability of cycle and then releases a cycle to the customer. The customer provides payment for the cycle rental. When the customer is finished with the cycle, they return it to the cycle station. The cycle station checks the condition of the cycle and charges the customer for any damages.

2.2.5.7. Testing

Software testing is a process of finding faults in the software development process. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps, or missing requirements in contrast to actual requirements.

2.3 Findings

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

Chapter III: Discussion and Conclusion

3.1. Discussion

“Cycle Rental System” web-based desktop application is made for the easy renting of cycles in an organization. This software helps organization to rent cycles in an easy way. This software provides a faster way for operation organization in such as renting cycles, recording rent information, recording date and time.

3.2. Conclusion

In conclusion, the project has successfully completed with the set of objectives. Moreover, this project will be useful for the organization to deal with management inflow and outflow activities at certain periods. It will help the manager to keep records of events in an effective and efficient way. Since this software is developed for computerized recording, it decreases human error.

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Appendices

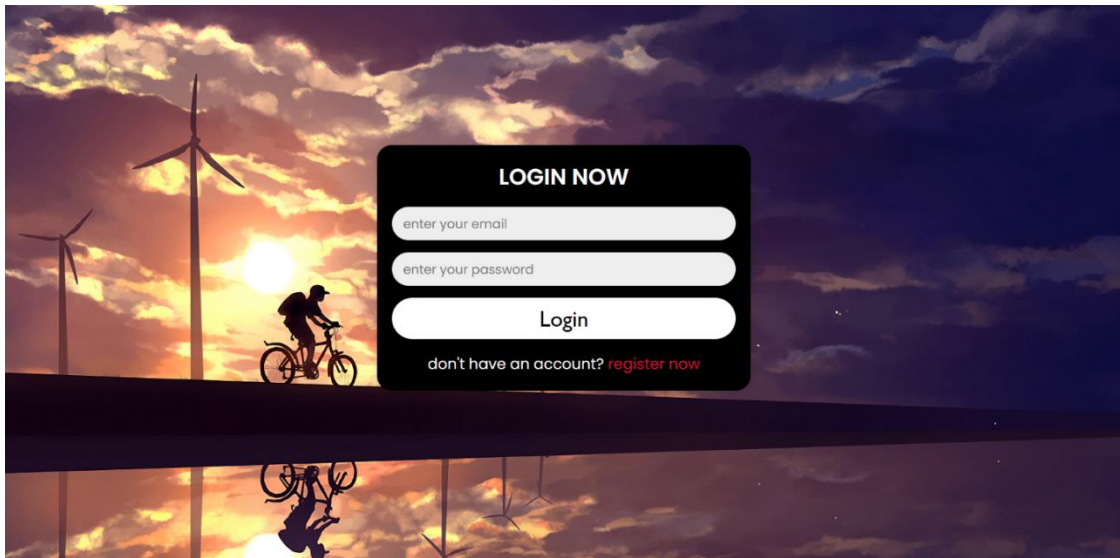


Fig 3.1: Login

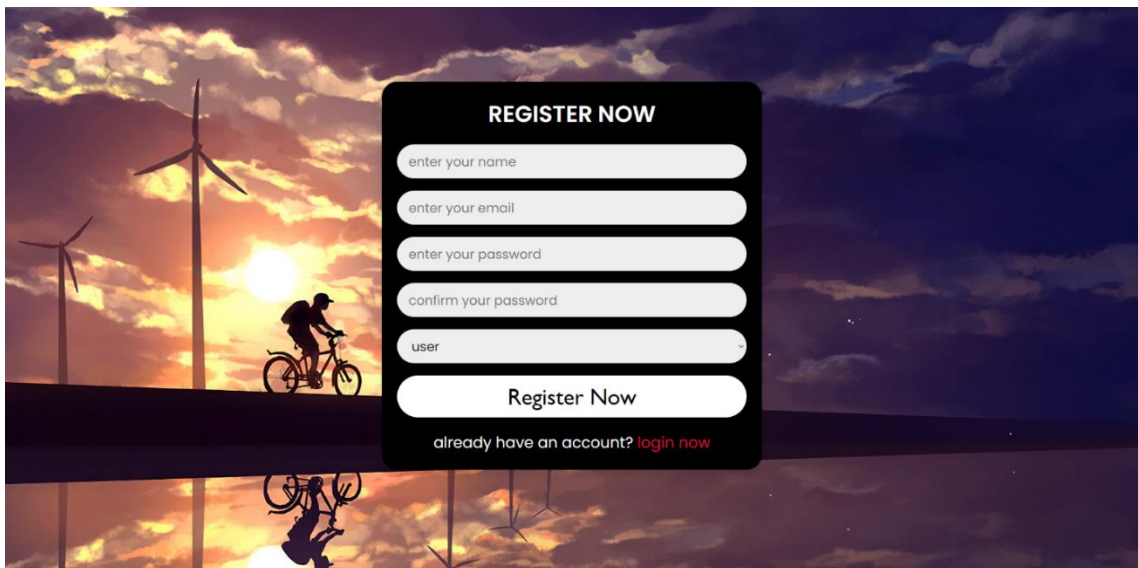


Fig 3.2: Register

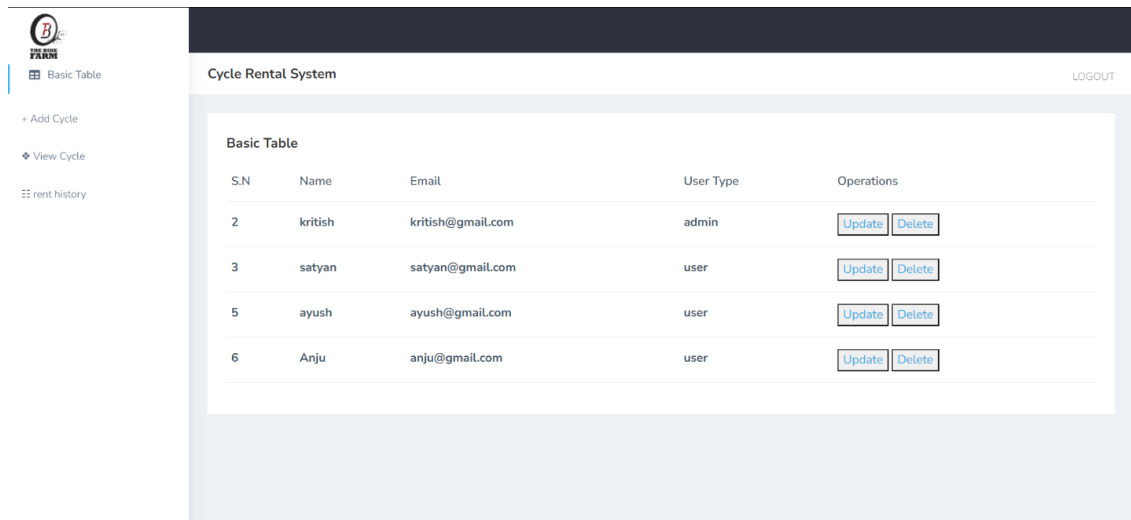


Fig 3.3: Dashboard

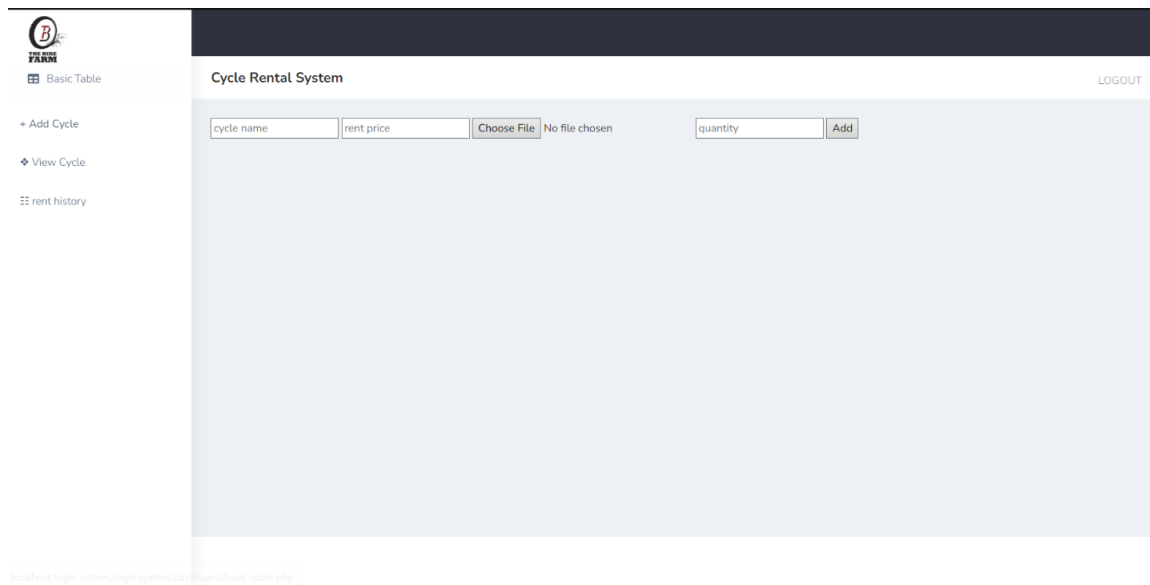


Fig 3.3: Add Cycle





Cycle Rental System						LOGOUT
Current Cycles						
ID	Name	Price	Image	Quantity	Operations	
20	Furry Gx10	800		3	Update Delete	
21	CAPRIS	700		6	Update Delete	
31	Furry Fusion 2x9	1200		3	Update Delete	
32	Lenak	700		3	Update Delete	

Fig 3.4: View, Update, Delete Cycle

Cycle Rental System										LOGOUT
All Rents										
ID	User Id	Cycle Id	From	To	Mobile no	Address	Price	Quantity	Operations	
80	3	20	2023-07-08	2023-07-10	9876543210	kathmandu	800	3	4800	Update Delete
82	2	31	2023-07-07	2023-07-09	984563259	patan	1200	2	2400	Update Delete
84	2	35	2023-07-07	2023-07-09	9874566895	patan	700	1	1400	Update Delete
86	3	21	2023-07-18	2023-07-21	9847563214	patan	700	2	4200	Update Delete
90	3	34	2023-07-28	2023-07-30	9861566389	sankhamul	700	1	1400	Update Delete

Fig 3.5: Rent History