PROJECT REPORT ON

"Bike Rental System"

Towards partial fulfilment of the requirement in

4th Semester BSc IT (2022-2023)

Submitted by:

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Submitted To:-



Parul Institute of Computer Application,
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Under the guidance of

Assistant Professor

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Acknowledgement

The success and final outcome of this project required a lot of guidance and assistance from many people and we are extremely privileged to have got this all along the completion of our project. All that we have done is only due to such supervision and assistance and we would not forget to thank them.

We respect and thank Dr Priya Swaminarayan, Dean, FITCS for providing us an opportunity to do the project work in BCA and giving us all support and guidance, which made us complete the project duly. We are extremely thankful to Mam for providing her support and guidance, although she had busy schedule managing the academic affairs.

We would not forget to remember Prof. Hina Chokshi, HOD, BCA department for her encouragement and more over for her timely support and guidance till the completion of our project work.

We owe our deep gratitude to our project guide Assistant Professor Bharti Vani, who took keen interest on our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good system.

We are thankful to and fortunate enough to get constant encouragement, support and guidance from our Parents, all Teaching staffs of BCA Department which helped us in successfully completing our project work. Also, we would like to extend our sincere esteems to all staff in laboratory for their timely support.

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CERTIFICATE

This is to certify that <u>Snehashish Madan Patra</u>, <u>Poonam Pareshbhai Patel</u>, <u>Shiv Jigneshbhai Patel</u> the student(s) of Parul Institute of Computer Application, has/have satisfactorily completed the project entitled "<u>Bike</u> <u>Rental System</u>" as a part of course curriculum in BCA / IMCA semester-IV for the academic year 2022-2023 under guidance of <u>Assistant ProfessorBharti</u> *Vani*.

Enrollment Number: 210510119003

Enrollment Number: 210510119001

Enrollment Number: 210510119002

Quality of work	Grade	Sign guide	of	Internal
Poor / Average / Good / Excellent	B /B+ / A / A+			

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HOD, Principal,

Prof. Hina Chokshi Dr Priya Swaminarayan

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1. Research

1.1. What is research?

Research is an activity that leads us to finding new facts, information, assisting us in verifying the available knowledge and in making us question things that are difficult to understand as per existing data.

1.2. Types of Research Methodology

Research can be classified into various categories depending on the perspective under which the research activity is initiated and conducted.

Pure / Basic / Fundamental Research: As the term suggests a research activity taken up to look into some aspects of a problem or an issue for the first time is termed as basic or pure. It involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. The knowledge produced through pure research is sought in order to add to the existing body of research methods. Pure research is theoretical but has a universal nature. It is more focused on creating scientific knowledge and predictions for further studies. b. Applied / Decisional Research: Applied research is done on the basis of pure or fundamental research to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive. The purpose of doing such research is to find solutions to an immediate issue, solving a particular problem, developing new technology and look into future advancements etc. This involves forecasting and assumes that the variables shall not change.

Descriptive Research: This attempts to explain a situation, problem, phenomenon, service or programme, or provides information viz. living condition of a community, or describes attitudes towards an issue but this is done systematically. It is used to answer questions of who, what, when, where, and how associated with a particular research question or problem. This type of research makes an attempt to collect any information that can be used to statistically analyse a target audience or a particular subject. Descriptive research is used to observe and describe a research subject or problem without influencing or manipulating the variables in any way.

Co relational Research: This is a type of non-experimental research method, in which a researcher measures two variables, understands and assesses the statistical relationship between them with no influence from any extraneous variable. This is undertaken to discover or establish the existence of a relationship/interdependence between two or more aspects of a situation. For example, the mind can memorize the bell of an ice cream seller or sugar candy vendor. Louder the bell sound, closer is the vendor to us.

Explanatory: is the research whose primary purpose is to explain why events occur, to build, elaborate, extend or test a theory. It is more concerned with showcasing, explaining and presenting what we already have. It is the process of turning over 100 rocks to find perhaps 1 or 2 precious gemstones. Explanatory survey research may look into the factors that contribute to customer satisfaction and determine the relative weight of each factor, or seek to model the variables that lead to people shifting to departmental stores from small shops from where they have been making purchases till now.

2. Feasibility Studies

What is Feasibility?

A feasibility study is part of the initial design stage of any project/plan. It is conducted in order to objectively uncover the strengths and weaknesses of a proposed project or an existing business. It can help to identify and assess the opportunities and threats present in the natural environment, the resources required for the project, and the prospects for success.

2.1. Technical Feasibility

Technical feasibility, can be described as the formal process of assessing whether it is technically possible to manufacture a product or service. Before launching a new offering or taking up a client project, it is essential to plan and prepare for every step of the operation.

2.2. Economic Feasibility

Economic analysis is a method of studying economic processes, which consists in considering the relationships between the various elements of these processes. It also serves as an independent project assessment and enhances project credibility—helping decision-makers determine the positive economic benefits to the organization that the proposed project will provide.

2.3. Operational Feasibility

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

Operational feasibility reviews the willingness of the organization to support the proposed system.

2.4. Importance of Feasibility Studies

Feasibility studies can be used for nearly any type of potential business project.

Tribal governments use feasibility studies as economic development decision-making tools, and they can be used to access funding opportunities. Some state and federal grants require feasibility studies, and most lenders and investors prefer to review one before lending money. Conducting a feasibility study is always beneficial to the project as it gives you and other stakeholders a clear picture of the proposed project.

2.5. Feasibility Study of our Proposed System

2.5.1. Technical Feasibility:

- Technical: Hardware and software
- Existing or new technology
- Site analysis

2.5.2. Economical Feasibility:

- Initial investment
- Resources to procure capital: Banks, investors, venture capitalists
- Return on investment

2.5.3. Operational Feasibility:

- Type of industry
- Prevailing market
- Competitors and potential customers
- Projection of sales

3. System Requirement Specification

3.1. Introduction To SRS

3.1.1. What is SRS?

A software requirements specification (SRS) is a description of a software system to be developed. It lays out functional and non-functional requirements, and may include a set of use cases that describe user interactions that the software must provide.

3.1.2. Need of SRS

In order to fully understand one's project, it is very important that they come up with a SRS listing out their requirements, how are they going to meet it and how will they complete the project. It helps the team to save upon their time as they are able to comprehend how are going to go about the project. Doing this also enables the team to find out about the limitations and risks early on.

3.2.Abstract

This website, which assists users in renting bikes, is part of the bike rental system. This software reduces the amount of manual data entry and gives greater efficiency. The User Interface of it is very friendly and can be easily used by anyone. It also cuts down on the time spent writing details and other modules. Finally, we can state that this software accurately completes all duties and performs the work for which it was created. We created this project to allow users to rent a bike at a fixed rate. All booking work is done manually in the current system, and it takes a lot of effort to keep the information about bookings and bike up to date. It takes a long time to find out which vehicles are available for booking. It only adds to the difficulty and difficulty of the process. The project's goal is to automate the work performed in the bike rental management system, such as generating daily bookings, records of vehicles available for booking, records of routes available, rental charges for bikes for each route, and storing customer records. A bike rental management system is a bike booking system that offers a complete solution to all of your bike rental needs. Day-to-day bike booking office operations requirements. This system allows you to keep Customer information online. Using this system, you can access your customer information at any time. The bike rental management system is a one-of-a-kind and innovative product. You can also use this to keep track of the number of bookings in the current month, the previous six months, or the previous year. We can rent bikes within this framework. If you are travelling for more than a month, you can rent a bike. On lease, clients can select bikes based on their accessibility; after selecting a bike, they can book and pay. This rental system is divided into three modules: Admin, User, and Vendor. Admins can log in and add, update, and delete vendor information as well as the bike list. He/she has access to bookings, users, and user feedback. Users can register on the website, login, and then check the availability of bikes, book the bike of their choice, and pay accordingly. Vendors can login, update and delete their bike list, as well as view bookings.

3.3.System Users

- 3.3.1 Admin
- 3.3.2 User/Renter

3.3.1. Description of User Role

Admin

Admin will manage the registered users and history of the rentals as well as vendors registering their bikes on the system. Can delete vendors

Renter

Renter can search for desired bikes and rent according to their need and convenience.

3.4. Modules

- 1. Social Login/Sign Up
- 2. Push Notifications
- 3. Real-time Analytics

3.5. Modules Description

- 1. **Social Login/Signup:** Admin, Users As well as the vendors will have to sign up before using the platform.
- 2. **Push Notifications:** Users or Renters will get the notifications of their confirmation from the admin.
- 3. **Real-time Analytics:** Users can see the confirmation from the admin after the admin marks the bike as available.

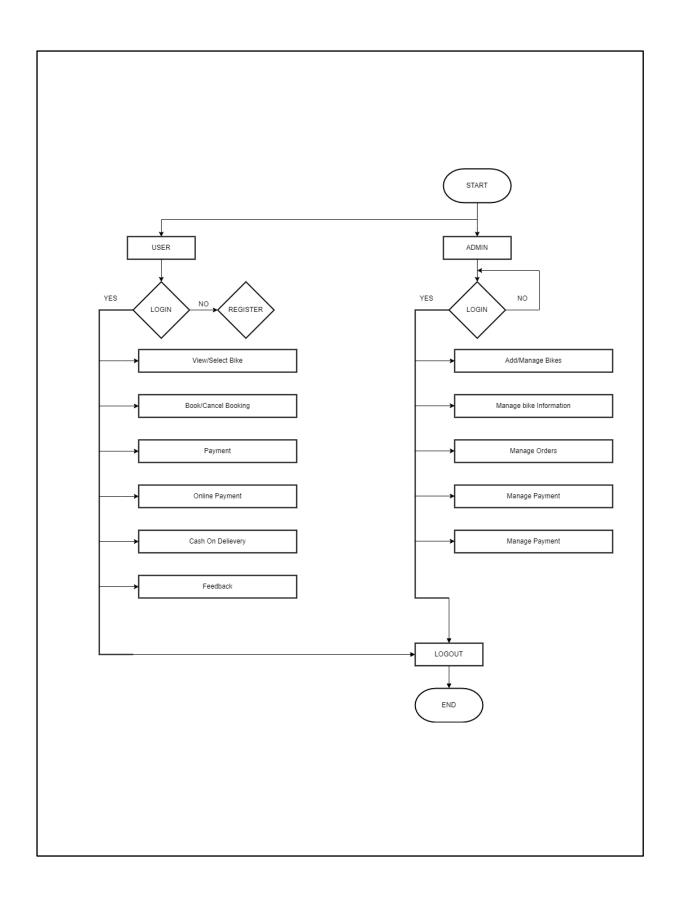
3.6.Hardware Requirements

Name of Components	Specification
Processor	Intel core i3, /i5
RAM	4GB/8GB
Hard Disk	512GB/1TB

3.6. Software Requirements

Name of Components	Specification		
Operating System	Windows XP, Windows10		
Software development Kit	Google Chrome, Internet Explorer, Mozilla Firefox (any appropriate or suitable browser)		
Tools & languages	PHP, HTML, CSS, JAVASCRIPT, MySQL		

3.7.Flow Chart



3.8. Time Line Chart

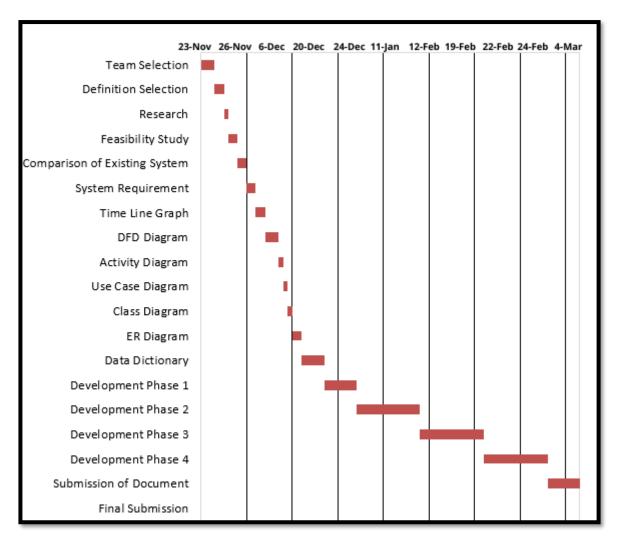


Figure 3.7.1. Time Line Chart

4. Technology Description

The Bike Rental System is an online platform that enables users to book bikes easily and conveniently. It is particularly beneficial for individuals who cannot afford to purchase their own bikes. This system offers a range of bikes to choose from, tailored to the customer's requirements and preferences. Users can book a bike online with just a few clicks, making it an ideal solution for long-distance travel.

4.1. Features and Limitations of New System

Existing System	New System
Behavior Tracking	Recent built requires a wait time for the confirmation from the admin
Push Notifications	Needs a secure Payment gateway.
Real-Time Analytics	In case the user is not satisfied with the planning result, the system needs some settings options to modify the outcome.

5. Data Flow Diagram

5.1. Context Level DFD's

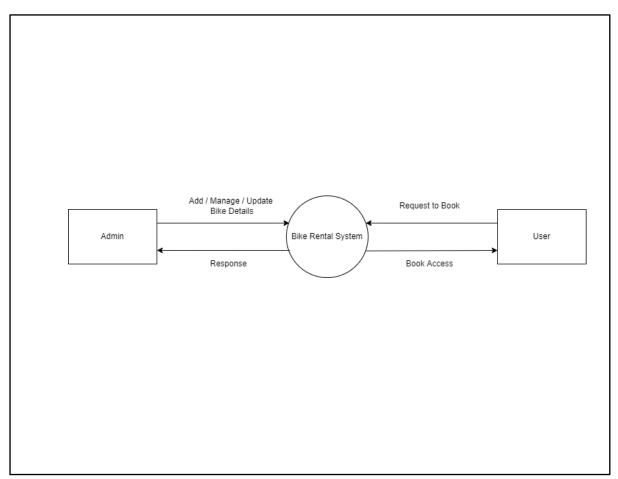


Figure 5.1.1. Context Level DFD: 0 Level

5.2.Level 1 DFD's:

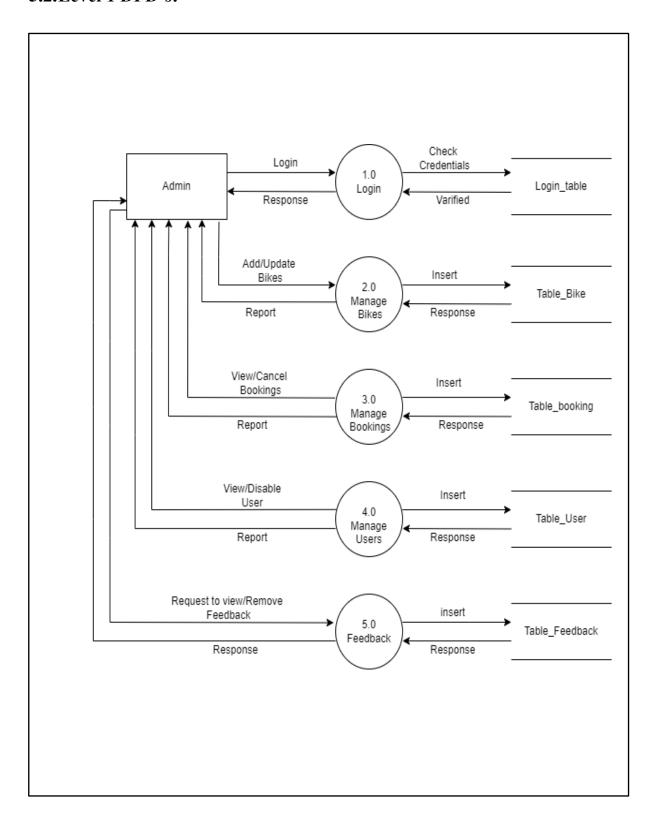
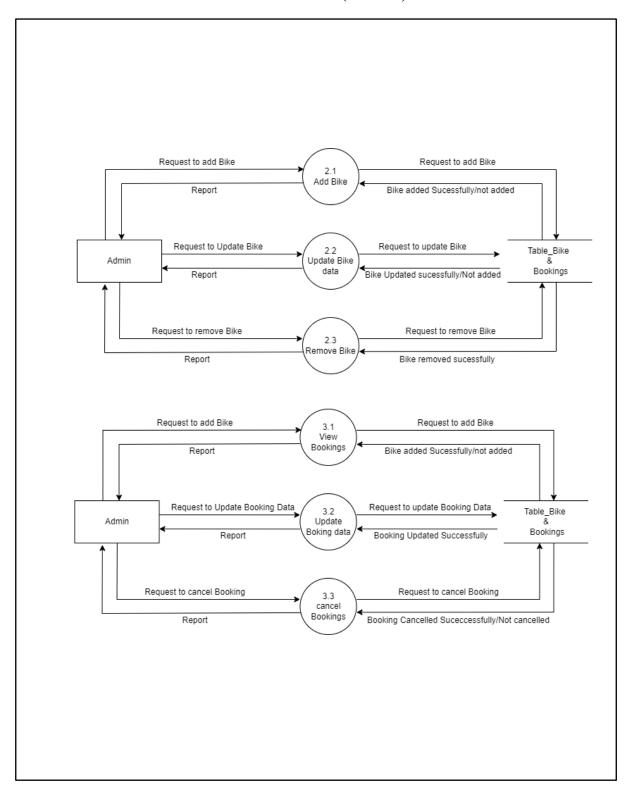
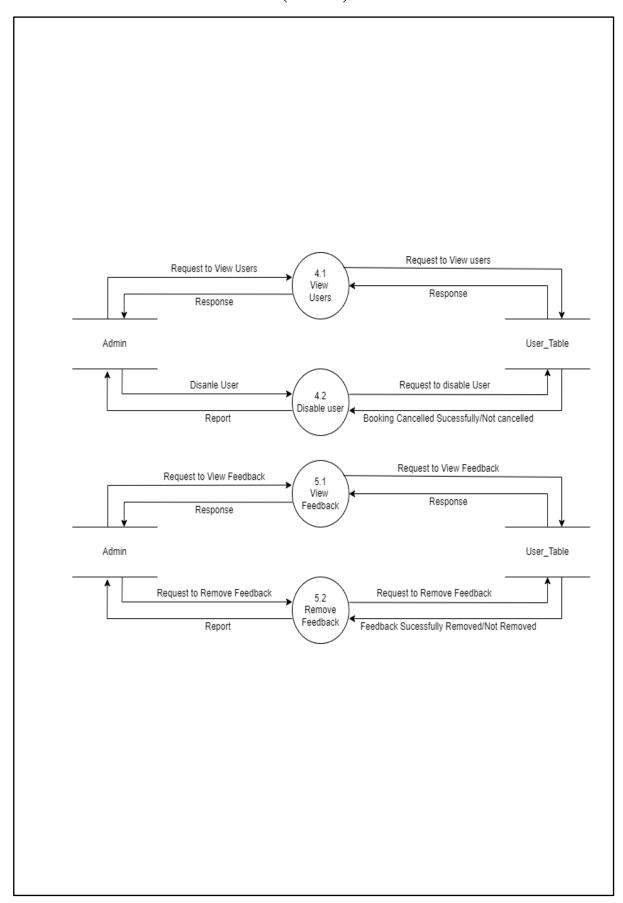


Figure 5.2.1.DFD: 1 Level

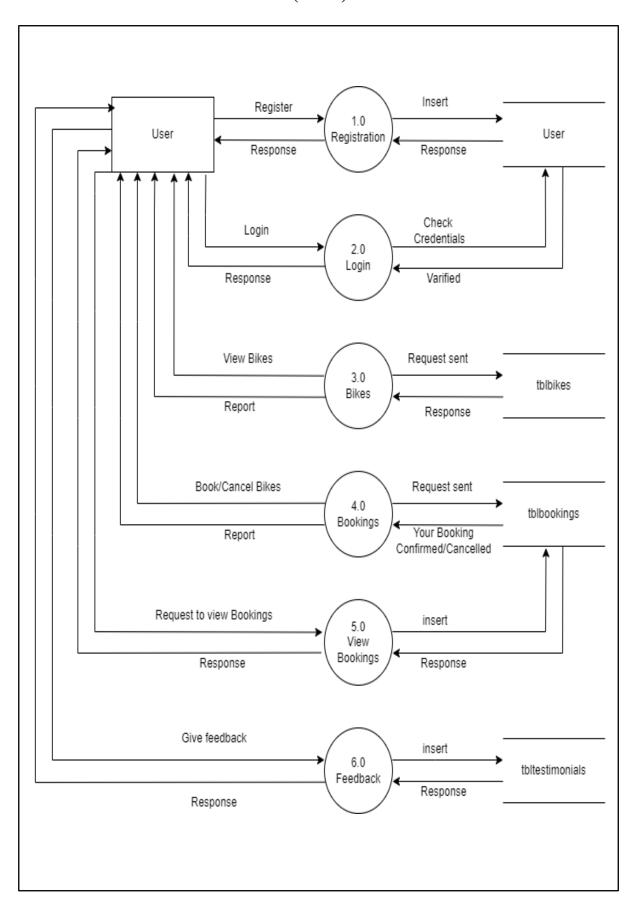
Level 2 DFD's(Admin)



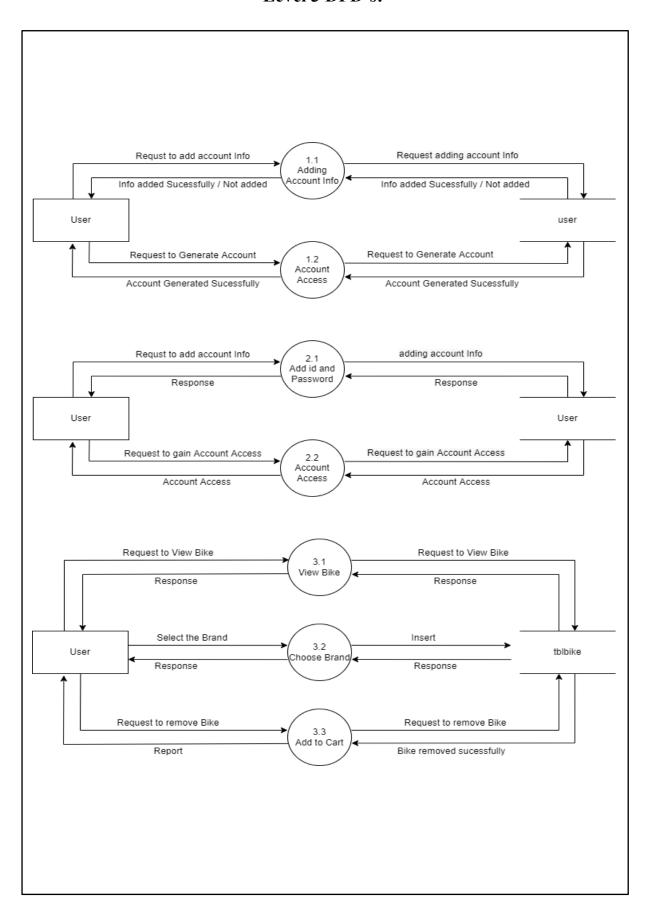
(Admin)



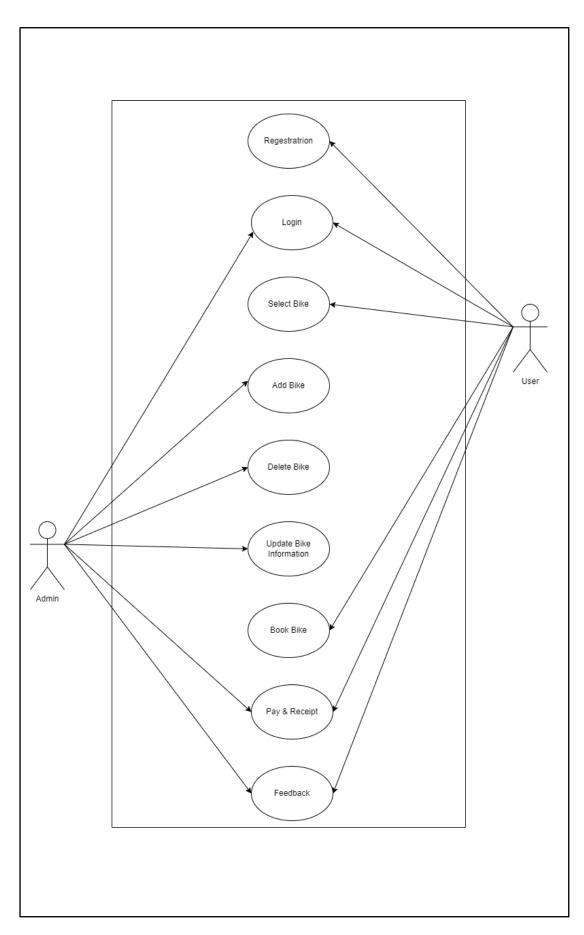
(User)



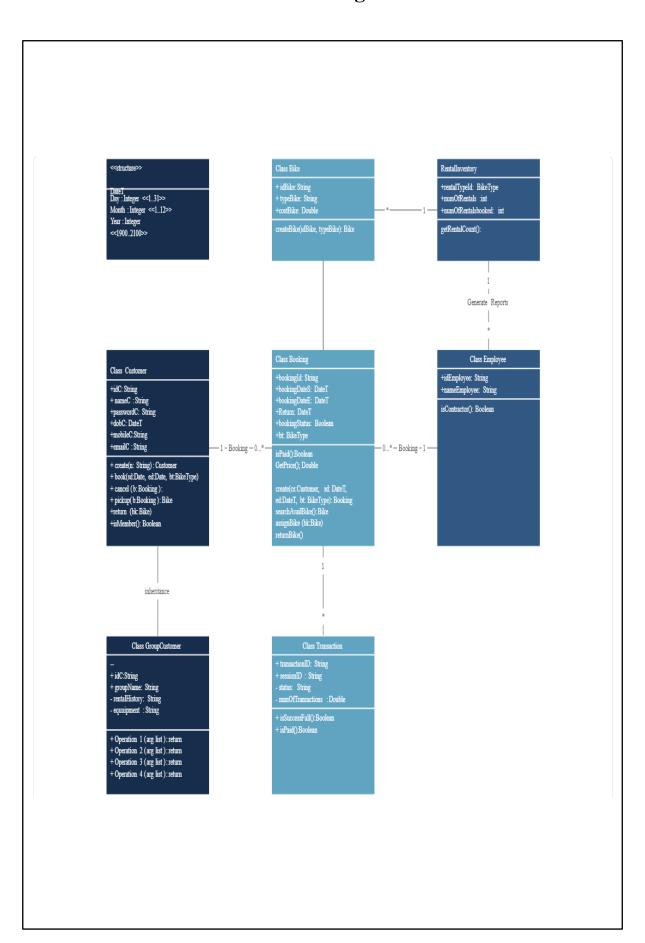
Level 3 DFD's:



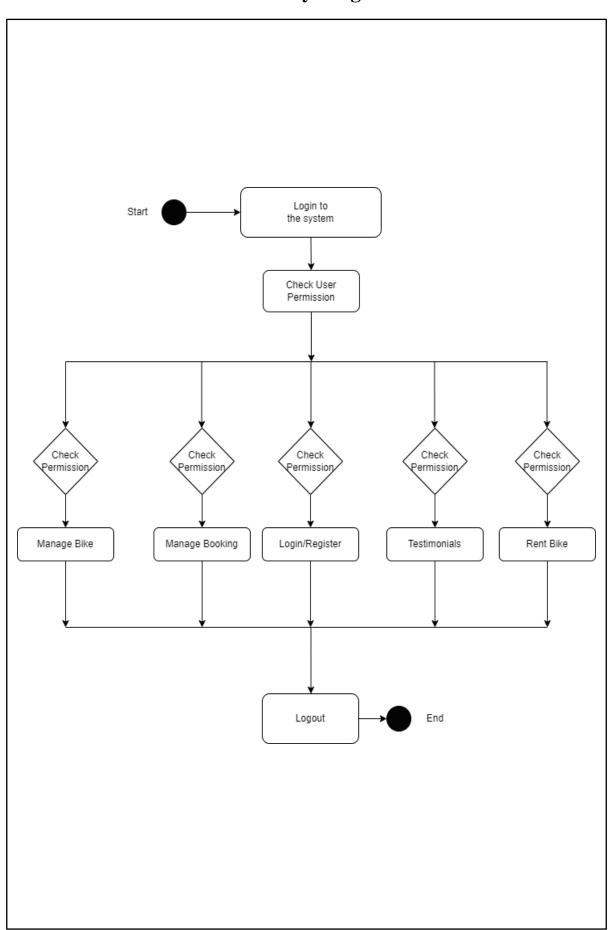
6. Use Case Diagram



7. Class Diagram



8. Activity Diagram



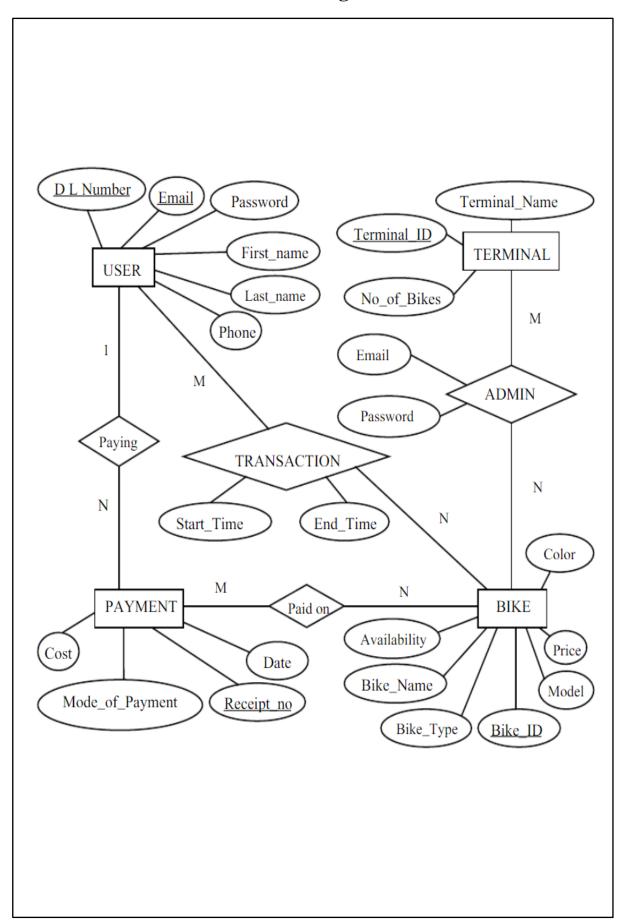
8.1 Description of Activity Diagram:

An activity diagram for a bike rental system might look something like this:

- Start: The activity diagram starts with a "Start" node that represents the beginning of the bike rental process.
- Login: The next step in the process is for the user to log in to the system. This involves providing a username and password.
- Select Bike: Once the user has logged in, they can select a bike to rent. This involves browsing through a list of available bikes and selecting one that they want to rent.
- Check Availability: The system then checks the availability of the selected bike to ensure that it is not already rented out to another user.
- Rent Bike: If the selected bike is available, the user can then rent the bike. This involves entering the rental duration and making the necessary payment.
- Confirm Rental: Once the rental has been processed, the system confirms the rental by displaying a rental confirmation message.
- Use Bike: The user can then use the bike for the duration of the rental period.
- Return Bike: When the rental period is over, the user must return the bike. This involves returning the bike to a designated bike rental station and checking it back in to the system.
- Payment: Once the bike has been returned, the system calculates the total rental cost based on the duration of the rental and any additional fees, and processes the payment.
- End: The activity diagram ends with an "End" node that represents the completion of the bike rental process.

This activity diagram provides a visual representation of the different steps involved in renting a bike from the system, helping to clarify the process and make it easier for users to understand and follow.

9. E-R Diagram



9.1.Description of E-R Diagram:

Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. The primary purpose of testing is to identify defects or bugs that may exist in the software being tested, so they can be fixed before the software is deployed to the end-users.

An ER (Entity-Relationship) diagram is a visual representation of the relationships between entities in a system. For a bike rental system, an ER diagram may look like this: ER Diagram of Bike Rental System

The diagram consists of the following entities:

- 1. Customers: The customers who rent bikes from the system. This entity contains attributes such as customer ID, name, contact information, and address.
- 2. Bikes: The bikes available for rent in the system. This entity contains attributes such as bike ID, bike type, model, and rental price.
- 3. Rentals: The rental transactions between customers and the bike rental system. This entity contains attributes such as rental ID, rental start date, rental end date, rental duration, and rental cost.

The relationships between these entities are as follows:

A customer can rent one or more bikes. A bike can be rented by one or more customers. This is a many-to-many relationship, represented by the Rental entity.

A rental transaction is associated with one customer and one or more bikes. This is a many-to-one relationship between the Rental and Customers and Bikes entities.

By using this ER diagram, the bike rental system can be developed and implemented more efficiently, and any required modifications can be made more easily.

10. Data Dictionary

1. Table Name: Table_Admin

Table Description: To store the Information Of Admin

admin

Column	Туре	Null	Default	Comments
id (Primary)	int(11)	No		
UserName	varchar(100)	No		
Password	varchar(100)	No		
updationDate	timestamp	No	00:00-00-00 00:00:00	

2. Table Name: Table_Booking

Table Descripiton: To store the Booking Information

tblbooking

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
userEmail	varchar(100)	Yes	NULL	
VehicleId	int(11)	Yes	NULL	
FromDate	varchar(20)	Yes	NULL	
ToDate	varchar(20)	Yes	NULL	
message	varchar(255)	Yes	NULL	
Status	int(11)	Yes	NULL	
PostingDate	timestamp	No	current_timestamp()	

3. Table Name: Table_Brands

Description: To store the Bike Brands Information.

tblbrands

Column	Туре	Null	Default	Comments
id (Primary)	int(11)	No		
BrandName	varchar(120)	No		
CreationDate	timestamp	Yes	current_timestamp()	
UpdationDate	timestamp	Yes	NULL	

4. Table Name: Table_ContactusInfo

Description: To Store the Contact Info about website

tblcontactusinfo

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
Address	tinytext	Yes	NULL	
EmailId	varchar(255)	Yes	NULL	
ContactNo	char(11)	Yes	NULL	

5. Table Name: Table_Contact us query

Description: To Store the Queries

tblbrands

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
BrandName	varchar(120)	No		
CreationDate	timestamp	Yes	current_timestamp()	
UpdationDate	timestamp	Yes	NULL	

6. Table Name: Table_Pages

Description: To manage the integrated Pages in the system. For eg:Privacy Policy, Terms & Conditions etc.

tblpages

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
PageName	varchar(255)	Yes	NULL	
type	varchar(255)	No		
detail	longtext	No		

7. Table Name: Table_Subscribers

Description: To Store the Information About Subscribers.

tblsubscribers

Column	Туре	Null	Default	Comments
id (Primary)	int(11)	No		
SubscriberEmail	varchar(120)	Yes	NULL	
PostingDate	timestamp	Yes	current_timestamp()	

8. Table Name: Table_Testimonial

Description: To Store the Feedbacks of the users

tbltestimonial

Column	Туре	Null	Default	Comments
id (Primary)	int(11)	No		
UserEmail	varchar(100)	No		
Testimonial	mediumtext	No		
PostingDate	timestamp	No	current_timestamp()	
status	int(11)	Yes	NULL	

9. Table Name: Table_Users

Description: To Store the Information about Users.

tblusers

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
FullName	varchar(120)	Yes	NULL	
EmailId	varchar(100)	Yes	NULL	
Password	varchar(100)	Yes	NULL	
ContactNo	char(11)	Yes	NULL	
dob	varchar(100)	Yes	NULL	
Address	varchar(255)	Yes	NULL	
City	varchar(100)	Yes	NULL	
Country	varchar(100)	Yes	NULL	
RegDate	timestamp	Yes	current_timestamp()	
UpdationDate	timestamp	Yes	NULL	

10. Table Name: Table_Vehicles

Description: To Store The Information about vehicles

tblvehicles

Column	Type	Null	Default	Comments
id (Primary)	int(11)	No		
VehiclesTitle	varchar(150)	Yes	NULL	
VehiclesBrand	int(11)	Yes	NULL	
VehiclesOverview	longtext	Yes	NULL	
PricePerDay	int(11)	Yes	NULL	
FuelType	varchar(100)	Yes	NULL	
ModelYear	int(6)	Yes	NULL	
SeatingCapacity	int(11)	Yes	NULL	
Vimage1	varchar(120)	Yes	NULL	
Vimage2	varchar(120)	Yes	NULL	
Vimage3	varchar(120)	Yes	NULL	
Vimage4	varchar(120)	Yes	NULL	
Vimage5	varchar(120)	Yes	NULL	
AirConditioner	int(11)	Yes	NULL	
PowerDoorLocks	int(11)	Yes	NULL	
AntiLockBrakingSystem	int(11)	Yes	NULL	
BrakeAssist	int(11)	Yes	NULL	
PowerSteering	int(11)	Yes	NULL	
DriverAirbag	int(11)	Yes	NULL	
PassengerAirbag	int(11)	Yes	NULL	
PowerWindows	int(11)	Yes	NULL	
CDPlayer	int(11)	Yes	NULL	
CentralLocking	int(11)	Yes	NULL	
CrashSensor	int(11)	Yes	NULL	
LeatherSeats	int(11)	Yes	NULL	
RegDate	timestamp	No	current_timestamp()	
UpdationDate	timestamp	Yes	NULL	

10.1. Description of Data Dictionary

A data dictionary is a tool used to define and describe the data objects, their attributes, and their relationships within a system. For a bike rental system, the data dictionary may include the following:

<u>User:</u> The customers who rent bikes from the system. This data object includes the following attributes:

User ID: A unique identifier for each customer.

Name: The name of the customer.

Contact information: The phone number and email address of the customer.

Address: The physical address of the customer.

<u>Bikes:</u> The bikes available for rent in the system. This data object includes the following attributes:

Bike ID: A unique identifier for each bike.

Bike Type: The type of bike, such as road bike or mountain bike.

Model: The model of the bike, such as Trek or Giant.

Rental Price: The cost to rent the bike per hour or per day.

<u>Rentals:</u> The rental transactions between customers and the bike rental system. This data object includes the following attributes:

Rental ID: A unique identifier for each rental transaction.

Customer ID: The ID of the customer who rented the bike.

Bike ID: The ID of the bike that was rented.

Rental Start Date: The date and time the rental started.

Rental End Date: The date and time the rental ended.

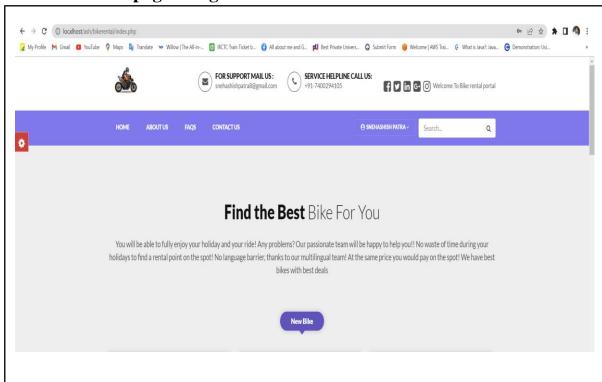
Rental Duration: The duration of the rental in hours or days.

Rental Cost: The total cost of the rental.

11. Form Design (Screenshots Phase 1,2,3,4 & validation's screenshots

11.1.1. Development Phase -1 Screenshot

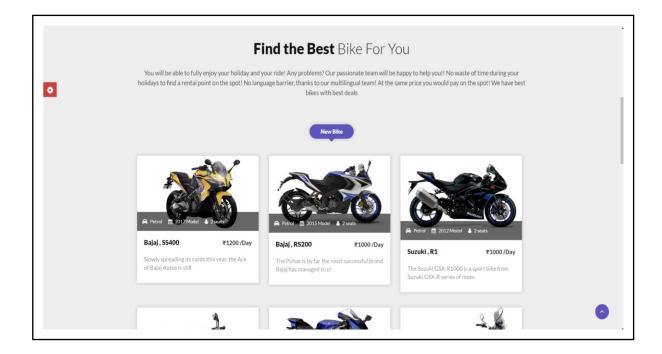
11.1.1 Homepage Design



11.1.2 Code of Homepage

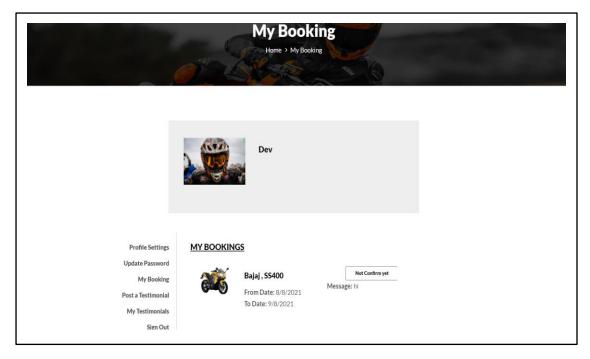
```
mindex.php
sq. <-- Resent Cat-->
section class="section-padding gray-bp">
class="container">
clay class="container">
c
```

11.2. Development Phase -2 (Bike-Listing)



CODE

11.3. Development Phase -3 (Booking)



CODE

```
| Sister | Session("login"); | Ssql = "SELECT Elbehicles.Vinage1 as Vinage1, tblvehicles.VehiclesTitle, tblvehicles.id as vid, tblbrands.Brandkame, tblbooking.FromDate, tblbooking.Tot Squery = Sdbh - > prepared(sqd)); | Squery - > bindbrand("isseremail", Suseremail, PDO::PANAM_STR); | Squery - > bindbrand("isseremail", Suseremail, PDO::PANAM_STR); | Squery - > bindbrand("isseremail", Suseremail, PDO::PANAM_STR); | Squery - > percent(); | Sresults-Squery - > FetchAll(PDO::FETCH_OR)); | String |
```

11.4. Development Phase -4 (Dashboard)



CODE

12. What is testing?

Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. The primary purpose of testing is to identify defects or bugs that may exist in the software being tested, so they can be fixed before the software is deployed to the end-users.

12.1. Importance and types of testing

The importance of testing includes:

Finding defects: Testing helps identify defects and errors in the software, allowing developers to fix them before releasing the software to end-users.

Improving quality: By identifying defects early on, testing helps improve the overall quality of the software being developed.

Ensuring reliability: Testing ensures that the software is reliable and performs as expected.

Reducing costs: By identifying and fixing defects early in the development cycle, testing helps reduce the costs associated with fixing defects later in the development cycle or after the software has been deployed.

Meeting user expectations: Testing ensures that the software meets the user's requirements and expectations.

There are different types of testing that can be used during the software development process. Some of the most common types of testing are:

- i. Unit testing: This type of testing involves testing individual components or modules of the software.
- ii. Integration testing: This type of testing involves testing how different modules of the software work together. System testing: This type of testing involves testing the entire system, including its integration with other systems.
- iii. Acceptance testing: This type of testing involves testing the software with end-users to ensure that it meets their requirements and expectations.
- iv. Performance testing: This type of testing involves testing how the software performs under different conditions, such as high traffic or heavy usage.
- v. Security testing: This type of testing involves testing the software's security features to ensure that it is protected against different types of security threats

13. Future Enhancement

In near future, our application will overcome the flaws that occurred and attains new features offered for the Flexible and easy Transportation.

Following are the Enhancements to the application.

- Try to Add the latest bikes.
- Implement the Online Payment system.
- Deliver the Bike directly to the customer's home.
- In the future, we will be adding some features which will be beneficial for the Customer.

14. References & Bibliography

Website:

- 1. Geekofgeeks.com
- 2. Stackoverflow.com

Books:

- 1. MySQL High Availability: Tools for Building Robust Data Centers (Charles Bell, Lars Thalmann, and Mats Kindahl)
- 2. SQL Queries for Mere Mortals: A Hands-on Guide to Data Manipulation in SQL (John Viescas and Michael J. Hernandez)
- 3. PHP & MySQL

(Laura Thomson and Luke Welling)