Project Name: Bike Rental System

Software Requirements Specification

Course Code: INT219 & INT220
Course Name: Front-End Web Developer & Server-Side Scripting

Student Names:

Name	Registration No.
Tusar Goswami	12315905
Shivang Choubey	12315910
Anjali Thakur	12325272
Dhriti Gupta	12326635

Table of Contents

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) details the requirements for the Bike Rental System, which consists of two major components: the Frontend and the Backend. Its purpose is to guide the development team, update stakeholders, and let testers know what to anticipate.

1.2 Scope

It can manage all aspects of bike rentals, including user registration, monitoring of available bikes, bike rental & return processing. Physical maintenance or delivery would not be covered under the software. The key modules:
Frontend: Where customers and admins use the website.
Backend: Business logic, data handling, API and Security services.

1.3 Definitions, Acronyms, and Abbreviations

- SRS – Software Requirements Specification
- GUI – Graphical User Interface
- API – Application Programming Interface
- DB – Database
- ID – Identifier

1.4 References

- Tailwind CSS Documentation
- PHP Manual
- MySQL Documentation
- IEEE SRS Template

1.5 Overview

This Software Requirement Specification (SRS) is made for Bike Rental System (BRS) project. The document describes:

Frontend Responsibilities: Involves a UI/UX component from user registration to browsing bikes, initiating and completing a rental, user doing customer and admin.

Some of these are user authentication, inventory management, rental and return processes, integration with payment systems, and administrative reporting.

2. General Description

2.1 Product Perspective

The system is a stand-alone program with two main modules:

REST APIs are used by the frontend and backend to communicate.

2.2 Product Functions

Frontend Functions:

- User Registration/Login
- View Bikes
- Rent/Return Bikes
- Payment UI
- View Rental History

Backend Functions:

- User authentication & role management
- Bike inventory CRUD operations
- Rental and return logic
- Payment integration
- Report generation

2.3 User Characteristics

- ***Customers***: Need intuitive access to bike rentals
- ***Admins:*** Require management tools for users, bikes, and reports

2.4 General Constraints

- Must use MySQL or PostgreSQL
- UI in English

2.5 Assumptions and Dependencies

- Users have basic computer skills
- Stable internet is required for real-time payment processing

.

3. Specific Requirements

3.1 Frontend Requirements

3.1.1 User Interfaces

- Intuitive GUI for customers and admins
- Responsive design for desktop and tablet

3.1.2 Functional Requirements

- Login/Register Forms
- Bike listing with filters
- Interactive rental/return calendar
- Payment screen
- Admin dashboards for users and bikes

3.1.3 Non-Functional Requirements

- Load time < 2 seconds
- Works on latest Chrome, Edge, Firefox
- Accessible UI (WCAG compliance)

3.2 Backend Requirements

3.2.1 External Interfaces

- REST API with endpoints for all core functions
- MySQL/PostgreSQL database
- Payment gateway (e.g., Stripe/PayPal)

3.2.2 Functional Requirements

Bike Rental Module:

- Authenticates user
- Checks bike availability
- Processes rental logic

- Records rental info

Bike Return Module:

- Validates user and rental
- Calculates late fees
- Updates inventory

Admin Module:

- CRUD operations for bikes and users
- Rental and return logs
- Report exports

3.2.3 Non-Functional Requirements

- API response < 1 second
- 99.9% uptime
- Data encryption in-transit and at-rest
- Modular and well-documented code

3.2.4 Other Requirements

- Admin and customer user roles
- Backend logs all critical operations
- REST API follows OpenAPI standard

4. Analysis Models

4.1 Data Flow Diagrams (DFD)

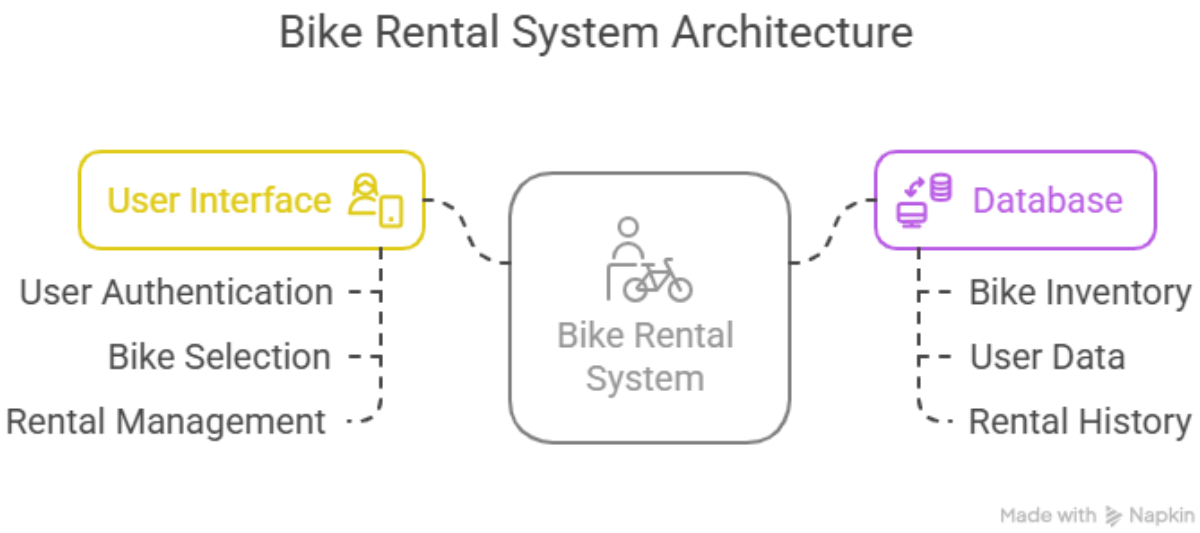

Fig- 4.1(Level – 0)

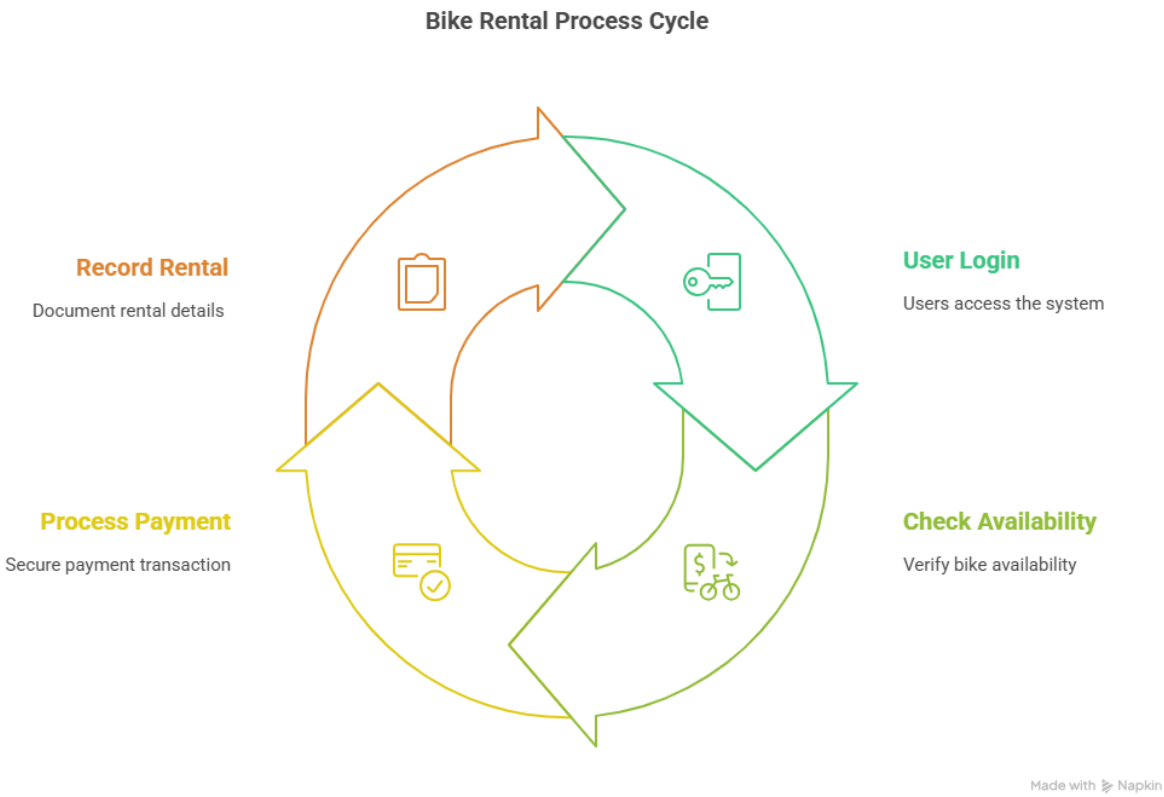

Fig-4.2(Level-1, Bike Rental Process)

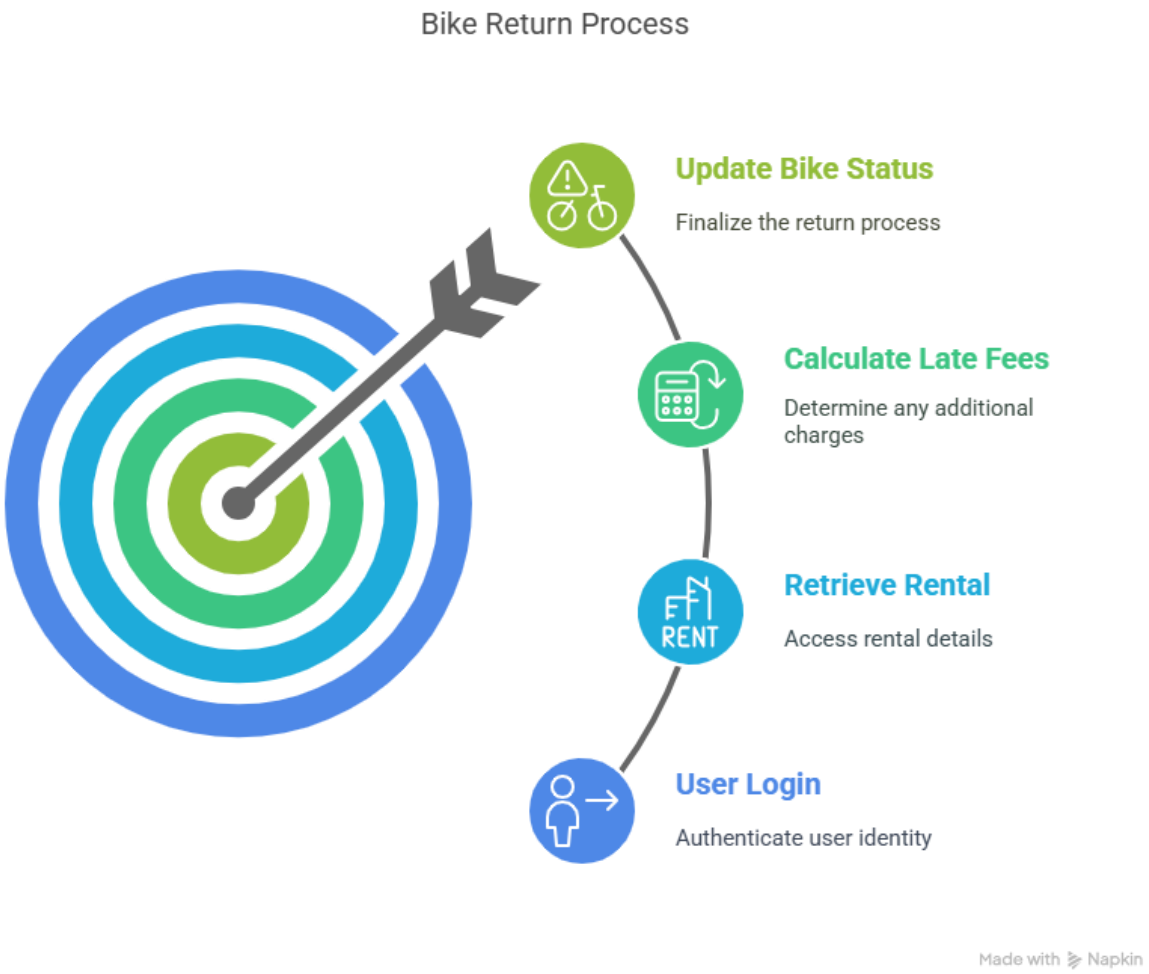

Fig-4.3(Lvel-1, Bike Return Process)

5. GitHub Link

https://github.com/dhritigupta-1

6. Video Link

https://www.instagram.com/reel/DIlZ8SuTKSz/?igsh=MW5tNzNhNXd0bHpzMw%3D%3D

A. Appendices

A.1 Appendix 1

The information in this paper is crucial for the development and quality assurance teams.

Every item in the appendix is regarded as a component of the system requirements.