Project Description final.

Business Case

Jot Bikes is a growing provider of electric bikes and scooters that provides both sales and rental services. Currently, the company uses a manual process for managing its operations that includes bookings, inventory tracking, customer information, and vendor coordination. As a result, there have been frequent errors, inefficiencies, and customer dissatisfaction. To maintain competitiveness in market and improve internal processes, Jot Bikes should implement an integrated and automated rental management system. The new system will streamline operations, improve accuracy, operational speed, and customer engagement. It will also deliver real-time data handling, powerful management tools, and secure access for various stakeholders.

Problem Scenario:

* Inaccurate Inventory Tracking:

The current system has problem in accessing the real-time availability of bikes, leading to customer dissatisfaction.

* Poor booking system:

Due to poorly designed booking system, users are facing challenges which has resulted in lost sales opportunities.

* Limited customer engagement:

There is limited customer engagement due to absence of automated communication and feedback mechanisms.

* Security vulnerabilities:

Lack of adequate security features in the existing system is posing risk to valuable customer data.

Purpose and objectives

* To Develop centralized management of inventory, rentals, and sales:

By creating a web-based system that integrates all the data on electric bikes and scooters. This will include real-time updates on product availability, detailed listings, and lifecycle tracking for both rental and sales unit.

* To create automated booking and secure payment integration

To enhance user experience by allowing users to search, book, and pay online through a seamless interface. Implement secure payment gateways to protect customer data.

* To improve customer engagement using Customer Relation Management(CRM)

Enhance communication channels between users and administrators through integrated feedback, real-time notification and query handling.

* To create Vendor management module

Create a dedicated interface for vendor that allows them to manage their product listings, track bookings, and respond to availability demands.

* To utilize reporting and analytics tools

Provide admin access to dashboards and reports that includes key business data like bike usage, user trends, vendor performance, and sales.

Proposed System design specifications

* Frontend
* Will be created using HTML, CSS, and JavaScript
* Will use responsive design techniques like flexbox, grid, and media query.
* Will use Fetch API to update parts of the page without reloading
* Will use forms and includes form checks on the browser side to make sure users don’t submit wrong or empty information.
* Will show different menus and options accordingly for admin, vendor or user.
* Backend
* Will be created using language like PHP
* Will provide restful APIs to communicate between server and the website
* Will handle login and permissions check using session-based authentication.
* Will support real-time booking and handles online payments safely.
* Will Include strong rules to check the data, encrypts sensitive information, and manages access.
* Database
* Will be created using MongoDB.
* Hosting and Deployment
* Will use Apache as web server.
* Will Set up with backup systems, scaling options, and security features to keep the website fast, reliable, and protected.

Methodology

Agile approach will be followed for the development of Jot Bikes Rental Management System. Particularly scrum framework will be utilized. This approach involves iterative development and collaboration that allows flexibility so that it can be adjusted according to stakeholder’s requirements. The methodology will consist of the following phases:

* Project Initiation
* Define project goals:

By conducting a kick-off meeting with stakeholders to establish project objectives and SMART goals.

* Feasibility study:

To determine if the project is feasible by examining its technical operational, economic, and legal feasibility.

* Early requirement gathering:

To gather initial requirements through discussion with stakeholders,

* Requirements gathering:
* Stakeholder interviews:

By conducting interviews and surveys to collect information on detailed functional and non-functional requirements.

* Documents requirement:

To prepare a requirement specification Document that includes functional and non-functional requirements, use cases and user stories.

* Review and approval:

To validate the documented requirements with stakeholders and obtain formal approval.

* System Design:
* Architectural design:

For defining system architecture, including technology stack and database design.

* User interface:

Will include creating wireframes and prototypes then conducting usability testing to refine the design.

* Design specifications:

Will describe database schema, Api details, and security mechanisms.

* Development:
* Agile Development:

Will break the project into 2-week cycles, with daily short meetings to check on progress.  
Version Control:

For collaborating and managing code using GitHub.

* Testing:
* Testing strategy:

This will include developing a strategy that includes unit, integration, system, and user acceptance testing.

* Test Case development:

For creating test cases from the requirements and conduct automated testing wherever possible.

* Deployment:
* Deployment planning:

Plan for deployment and preform final testing in the production environment.

* Go live:

Implement the system and monitor for any issues immediately.

* Training and support:
* User training:

It will involve creating sessions and user manuals to familiarize the user with the system.

* Support system:

Establish a support system for ongoing support and feedback collection.

* Update and maintenance:
* Regular maintenance:

This will involve scheduling routine check-ups and updates based on user feedback and system performance.

* Continuous improvement:

Use data and user feedback to guide future updates and improvements.