Conception Phase (Updated)

Project Profile

Consisting of a summary of the project proposal

- **Project Overview:**

  The overview of the project is to develop a user-friendly website for bicycle rentals. This is the innovative online platform, unlike other traditional bike rental services, this platform will operate completely free of charge. The website will serve two main following groups of users:

  - Bicycle Owners: These are individuals who own bicycles and wish to make them available for rental to others. The website will provide features that allow bicycle owners to create listings for their bikes, provide detailed descriptions, and manage the availability of their bicycles for potential renters.

  - Individuals Seeking to Rent Bicycles: These are users who are looking to rent bicycles for a specific duration and purpose. The website will offer a search and booking functionality that allows renters to browse through available bicycles, view their specifications, and make reservations for the desired rental period.

- **Project Scope:**

  The scope of the project is to create a bicycle rental website, which involves planning,

  - Plan how the website will look and work (design),

  - Creating all the parts of the website (development),

  - Making the website available online for people to use (deployment).

- **Project Objectives:**

  There are the following key objectives for the website;

  - Log in and Sign up securely,

  - enabling bicycle owners to list their bikes for rent with detailed descriptions,

  - providing a search and booking functionality for renters,

  - giving users the ability to write reviews and give ratings,

- **Target Group:**

  The target groups are the following ones:

- o Guests (family members, friends) who visited from other countries and want to roam around the area alone.

- o Students who need bicycles for short period of time, for example, from hostel to campus, etc.

- o Working professionals, who wants to go from home to work or vice versa.

- **Risks (Expanded Risks and Mitigation Strategies) (Updated):**

  - o Technical Challenge and User Experience: We try to identify the potential risk of developing a user-friendly platform. Moreover, mitigation is involved that is conducting iterative user testing to gather the feedback and try to make necessary UI/UX adjustments.

  - o Bicycle Repair Scenarios: We recognized the risks involved if bicycle breaking or any damage during the rental period. So, we update it with that it is responsibility of the renter to make the bicycle repair if any damage occur during the ride.

  - o Data Security: After understanding the importance of the securing user data, we use the mitigation strategy. We implemented the SSL encryption for data transmission.

- **Detailed Agile Project Organization (Updated):**

  As a solo-developer, we can use the Agile-Lite approach, it focuses on flexibility and responsiveness to change. The project is organized into sprints, each of the sprint is related to the different functionalities like user registration, bicycle listings, and booking system development.

Requirements for Bicycle Rental Website

- **Functional Requirements:**
  - o User Registration:
    - Users can register by creating an account with their email addresses and passwords.
  - o Bicycle Listing:
    - Bicycle owners can list the bicycles, including details such as brand, model, size, and rental price.
    - They also can get an option to upload the images of their bikes.
  - o User Reviews and Ratings:
    - Allow renters to leave reviews and ratings for bicycles they have rented.

- ▪ Display average ratings and user feedback on bicycle listings to help others make informed decisions.
- **Non-Functional Requirements (Updated):**
  - o Responsiveness: The website is designed to be fully responsive, so under 3 seconds it would load in any of the device. It is tested by using on Google PageSpeed insights.
  - o Security: we implemented a secure user authentication with password hashing and SSL encryption for data transmission.

- **Software and System Architecture Documentation (Updated)**
  - o **Backend Structure and Database Schema (Updated)**

    In this project, the backend structure of Flask application is refined throughout development to enhance the functionality and the user experience. The database schema represents the relationships between User, Bicycle, Booking, and Review models. This adjustment allows for more efficient data retrieval and manipulation.
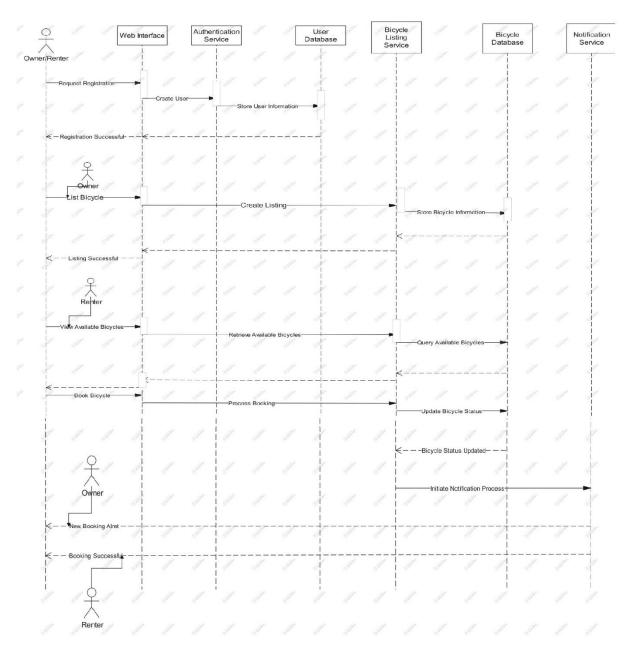
  - o **Frontend Overview (Refined)**

    The special enhancements are made for the frontend. It focuses on user interaction and visual appeal. The integration of Flask with HTML templates (home.html and others) helps to render the content in more effective way. These changes improve the user experience, make the platform easy to navigate.

  - o **Security Measures (Enhanced)**

    The comprehensive overview of the security measured. These measures are password hashing, and Werkzeug is used to secure user passwords. The focus is on the foundational security measure right now in the project. it is also a good practice to learn about the data protection.

System Diagrams

UML Sequence Diagram (Updated)

UML Component Diagram (Updated)

User Interface(UI)
- User Interaction Interface
- User Registration and Authentication
- Bicycle Listings for Rent
- Viewing Available Bicycles

User Authentication

User Management
- Authentication Services
- User Registration and Authentication

Access User Data

Bicycle Database
- Bicycle Data Interface
- User Registration and Authentication
- Bicycle Listings for Rent
- Booking System

Bicycle Management
- Bicycle Listings for Rent
- Viewing Available Bicycles
- Booking System

← Check Availability

Booking System
- Booking System
- Notifications

← Recieve Booking Events ←

Notification Service
- Notifications
- Notification Interface

Manage Bicycle Listings

Update and Retrieve Bookings