Business Requirements Document

Project No. 1

Bike-O Mobile Application

**VERSION: 1.0**

DATE 2023-08-18

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| **Version #** | **Date** | **Author** | **Modifications** |
| **1**.0 | **1**8/08/2023 | **Z**dravko Zdravkov | **I**nitial Draft |
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1. Project Details

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| --- | --- |
| **Project Name** | Bike-O Mobile Application |
| **Project Type** | New Initiative |
| **Project Start Date** | 22/08/2023 |
| **Project End Date** | 22/10/2023 |
| **Project Sponsor** | Soft Uni |
| **Project Manager** | Zhilber Baev |

1. Executive Summary

The Bike-O Mobile Application Project is a strategic initiative aimed at revolutionizing the urban mobility experience for Bike-O users. This project seeks to address current limitations, enhance user convenience, and promote sustainable transportation practices. By leveraging innovative technologies, such as a feature-rich mobile app and cashless payment system, Bike-O aims to redefine how users access and utilize bike-sharing services.

The project will involve the development and implementation of a comprehensive mobile app that enables users to effortlessly locate and unlock bikes, plan routes, and make seamless payments. Additionally, the introduction of a cashless payment system will eliminate the need for physical currency, streamlining the transaction process.

The technical team will play a pivotal role in ensuring platform compatibility, GPS integration for accurate tracking, robust security measures, and real-time data synchronization. Furthermore, the project will incorporate user-friendly features, including QR code functionality, push notifications, and an optional offline mode for enhanced user experience.

The Bike-O Mobile Application Project is poised to not only address current user concerns but also position Bike-O as a leader in sustainable urban mobility solutions. This strategic shift aligns with Bike-O's commitment to innovation, customer-centricity, and a greener urban future.

1. Project Overview
   1. **Problem Statement**

Urban centers grapple with traffic congestion, pollution, and limited parking. Bike-O's current model, reliant on fixed docking stations and cash payments, poses challenges. Users face difficulties finding available bikes, and cash transactions create friction. Fixed stations limit accessibility, and bike abandonment is a concern.

The Bike-O Mobile Application Project aims to address these issues. By introducing a mobile app and cashless payments, we seek to enhance convenience, accessibility, and sustainability in urban mobility.

* 1. **Solution Overview**

The Bike-O Mobile Application Project introduces a transformative solution to revolutionize urban mobility. By leveraging cutting-edge technologies and user-centric design, this project addresses the existing challenges faced by Bike-O users. The core components of this solution include:

1. **Feature-Rich Mobile App**: The centerpiece of the project, the mobile app empowers users with real-time bike tracking, seamless unlocking, and route planning capabilities. Compatible with both iOS and Android platforms, it provides an intuitive and convenient interface for accessing Bike-O services.
2. **Cashless Payment System**: A transition to cashless transactions eliminates the need for physical currency, streamlining the payment process. Users can make secure and hassle-free payments through various methods, including credit cards, mobile wallets, and digital payment platforms.
3. **GPS Integration**: Accurate GPS tracking ensures precise location-based services. Users can easily locate nearby docking stations, available bikes, and plan optimal routes, enhancing the overall user experience.
4. **Secure Authentication**: A robust authentication system, including biometric options, ensures secure user logins and protects against unauthorized access. This feature is essential for maintaining user privacy and security.
5. **QR Code Functionality**: Each bike is equipped with a unique QR code, allowing users to seamlessly unlock bikes through the mobile app. This enhances bike tracking, user security, and overall operational efficiency.
6. **Real-time Data Synchronization**: A seamless data synchronization mechanism updates bike availability, ride status, and payment transactions in real time. This ensures that users have accurate and up-to-date information at their fingertips.
7. **Push Notifications**: Users receive timely notifications about bike availability, promotions, maintenance updates, and other important announcements. This feature enhances user engagement and keeps them informed of relevant updates.
8. **Optional Offline Mode (Nice-to-have)**: An offline mode allows users to access essential features and view previously downloaded maps even when internet connectivity is limited. While not critical, it enhances user convenience in areas with limited connectivity.
9. Stakeholders
10. Project Scope

**In Scope**

1. **Mobile App Development**:
   * Development of a feature-rich mobile application compatible with both iOS and Android platforms.
2. **User Registration and Authentication:**
   * User registration with required information (email, password, birthdate, address, name, Id of Identity Card).
   * Secure authentication process, including optional biometric authentication.
3. **Bike Selection and Unlocking:**
   * Users can locate and select available bikes through the mobile app.
   * Bikes are unlocked via a QR scan option within the app.
4. **Route Planning and Navigation (Optional):**
   * Option for users to input their destination for route recommendations, considering real-time traffic conditions.
5. **Flexible Bike Return:**
   * Users can securely lock the bike at any suitable location within the designated service area, not restricted to fixed docking stations.
6. **Cashless Payments:**
   * Integration of various payment methods (Debit/Credit card, Paypal, Google Pay, Apple Pay, POS Payment at Docking Station).
7. **Real-Time Data Updates:**
   * Ensuring bike availability, ride status, and payment transactions are updated in real time for accurate information.
8. **Push Notifications:**
   * Users receive timely notifications about bike availability, promotions, maintenance updates, and other important announcements.
9. **Offline Mode (Optional):**
   * Users can access essential features and view previously downloaded maps even with limited internet connectivity.
10. **Security Measures:**
    * User-submitted picture of the bike is required after it is returned.
    * If a bike is broken (signal received), it is repaired or replaced.
11. **Integration with External Systems:**
    * Integration with Google Maps for enhanced mapping and navigation.
12. **Data Validation and Privacy:**
    * Personal data is validated after scanning of Identity Card.
    * Compliance with data privacy regulations.
13. **Performance Optimization:**
    * The app should load within 1 second.
14. **User Support:**
    * Customer service management for incident reporting during bike rentals.

**Out of Scope**

1. **Gamification:**

* Introducing gamification elements within the app for user engagement.

1. **Chat Bot and Customer Service Chat:**
   * Implementing automated chatbots or in-app customer service chat functionality.
2. **Multiple Bike Bookings:**
   * Allowing users to book multiple bikes simultaneously.
3. **Real Traffic Information:**
   * Providing real-time traffic updates within the app.
4. **Anti-Trust Measures:**
   * Implementation of specific measures against anti-trust customers.
5. **Legacy System Integration (Beyond Compatibility):**
   * Extensive integration with legacy systems beyond basic compatibility.
6. **Third-Party Identity Providers (Beyond Google and Facebook):**
   * Integration with additional third-party identity providers.
7. **Additional Payment Methods (Beyond Initial Scope):**
   * Introducing new payment methods not listed in the initial scope.
8. **Additional Security Features (Beyond Initial Scope):**
   * Implementing advanced security features not initially specified.
9. **Additional User Features (Beyond Initial Scope):**
   * Introducing new features beyond the initial scope (subject to further consideration).
10. Business Process Flow
    1. **As-Is Diagram**



* 1. **To-Be Diagram**



1. Use Cases

**Use Case Diagram**



**Use Case Narrative**

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-001 | | | | | |
| Use Case Name: | User Registration and Authentication | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | **1**8/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for customer Authentication and Registration | | | | |
| Goal in context | | The User wants to create an account and log into the Bike-O mobile app. | | | | |
| Preconditions | | The User has downloaded and installed the Bike-O mobile app. | | | | |
| Successful outcome | | The User successfully registers and logs into the app. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| Invalid User details | | The User is not registered and logged in. | | * The User enters incorrect registration information. * The User enters incorrect login credentials. |
| Primary Actor | | New User, Registered User | | | | |
| Secondary Actor | | Bike-O System | | | | |
| Main Scenario | | 1. The User opens the Bike-O mobile app for the first time. 2. The User selects the "Register" option. 3. The system prompts the User to enter registration information, including name, email, password, birthdate, address, and ID of Card. 4. The User submits the registration information. 5. The system validates the provided data, including personal data validation after scanning of Identity Card (REQ-37). 6. The system generates a verification code and sends it to the User's provided email address (REQ-11). 7. The User verifies their email by entering the code in the app (REQ-11). 8. The system creates an account for the User. 9. The User logs into the app by entering their registered email and password. 10. The system verifies the login credentials. | | | | |
| Alternatives | | * If the User provides incorrect registration information, the system prompts the User to correct the input. * If the User enters incorrect login credentials, the system prompts the User to try again. * If the email provided already exists in the system, the User is prompted to log in instead. * If the User opts for biometric authentication, they can use their fingerprint or face recognition to log in. | | | | |
| Variations | |  | | | | |
| Business Requirements | | * REQ-01: User Registration and Authentication * REQ-08: Data Validation * REQ-11: Security Measures * REQ-19: Biometric Authentication * REQ-32: Log In screen is the first screen on app launch * REQ-37: Personal data validation after scanning of Identity Card | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-002 | | | | | |
| Use Case Name: | Bike Selection and Unlocking | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for bike rental | | | | |
| Goal in context | | The User wants to select and unlock a bike for rental. | | | | |
| Preconditions | | * The User must be registered to logged into the Bike-O app. * The User has successfully logged into the Bike-O mobile app. * The User is within a reasonable range of available bikes. | | | | |
| Successful outcome | | The User successfully selects and unlocks a bike. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| The Bike cannot be rented | | The Bike is not Unlocked | | * The QR code scan is unsuccessful. * The selected bike is not available. * The currently identified bike by a QR code is reserved. |
| Primary Actor | | Mobile User | | | | |
| Secondary Actor | | Bike-O System | | | | |
| Main Scenario | | 1. The User opens the Bike-O mobile app. 2. The User selects the "Find Bike" option. 3. The system displays a map with nearby available bikes and docking stations. 4. The User selects a bike on the map. 5. The system displays detailed information about the selected bike, including price and location. 6. The User initiates the rental process. 7. The system guides the User through the rental process, including any required deposits. 8. The User scans the QR code on the bike using the app. 9. The system verifies the QR code. 10. The system checks if a deposit is required for bike reservation. 11. If a deposit is required, the User provides the necessary deposit information. 12. The system unlocks the bike for use. | | | | |
| Alternatives | | * If the QR code is invalid or damaged, the system prompts the User to try again or select a different bike. * If the currently identified bike by a QR code is reserved, the system notifies the User and provides an alternative available bike. * If there are no available bikes nearby, the system provides alternative docking stations or recommends waiting for availability. | | | | |
| Variations | | * If the User selects the "Show Availability Heatmap" option, the system displays areas with high bike availability. * If the User selects the "Reserve Bike" option, the system enables the User to reserve the selected bike for a specific duration before unlocking. * If the User chooses to directly scan the QR code on the bike, the system verifies the QR code and unlocks the bike for use. | | | | |
| Business Requirements | | * REQ-02: Bike Selection and Unlocking * REQ-10: QR Code Scanning: Allow users to scan QR codes for bike interaction * REQ-12: Bike Details Display: Show bike details, price, and location * REQ-13: Rental Process: Guide users through bike rental process * REQ-23: Bike Availability Heatmap: Display high bike availability areas * REQ-28: Bike reservation requires deposit * REQ-30: GPS located bikes * REQ-31: Client must be registered to search for a bike * REQ-15: Bike Locking: Enable users to reserve a bike | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-003 | | | | | |
| Use Case Name: | Route Planning and Navigation | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for route planning and navigation | | | | |
| Goal in context | | The User wants to plan a route and navigate to their desired destination using the Bike-O mobile app, utilizing Google Maps for optimal navigation. | | | | |
| Preconditions | | * The User has successfully logged into the Bike-O mobile app. * The User has selected a bike for rental. | | | | |
| Successful outcome | | The User successfully plans a route and navigates to their desired destination using Google Maps integration. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| Navigation is not working | | No planet road and navigation | | The User encounters technical issues preventing route planning and navigation. |
| Primary Actor | | Registered User | | | | |
| Secondary Actor | | Bike-O System, Google Maps | | | | |
| Main Scenario | | 1. The User has selected a bike for rental. 2. The User selects the "Plan Route" option. 3. The system prompts the User to enter their desired destination. 4. The User inputs the destination address. 5. The system communicates with Google Maps to calculate and display the optimal route to the destination, considering traffic conditions if possible (REQ-03, REQ-07). 6. The User confirms the route. 7. The system initiates navigation with turn-by-turn directions provided by Google Maps. | | | | |
| Alternatives | | If the User encounters technical issues, the system prompts the User to try again. | | | | |
| Variations | | * The User chooses to manually select a route without using the navigation feature. * If the bike is stationary for more than 10 minutes during the trip, the system sends a notification to the User (REQ-35). | | | | |
| Business Requirements | | * REQ-03: Route Planning and Navigation * REQ-06: Real-Time Data Updates * REQ-07: Integration with External Systems (Google Maps) * REQ-24: Display Bike Parking Zones and Docking Station locations * REQ-35: Notification sent if bike is stationary for more than 10 mins | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-004 | | | | | |
| Use Case Name: | Flexible Bike Return | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for bike return | | | | |
| Goal in context | | The User wants to return the bike flexibly, either at a designated docking station or within a specified parking zone. | | | | |
| Preconditions | | * The User has successfully logged into the Bike-O mobile app. * The User is currently using a rented bike. | | | | |
| Successful outcome | | The User successfully returns the bike, either at a designated docking station or within a specified parking zone. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| Bike cannot be returned | | Bike is not returned | | * The user is not at docking station or inside specified parking zone * The User encounters technical issues preventing the bike from being returned. |
| Primary Actor | | Registered User | | | | |
| Secondary Actor | | Bike-O System, Payment Processor | | | | |
| Main Scenario | | 1. The User approaches a designated docking station to return the bike. 2. The User selects the "Return Bike" option in the app. 3. The system prompts the User to either return the bike at the docking station or within a parking zone. 4. The User selects their preferred return option. 5. If returning at a docking station, the User docks the bike in an available slot and confirms the return (REQ-04, REQ-05, REQ-12). 6. If returning within a parking zone, the User locks the bike and takes a picture as proof of return (REQ-04, REQ-05, REQ-33). 7. The system processes the return and updates the User's rental history (REQ-14). | | | | |
| Alternatives | | If the User encounters technical issues, the system prompts the User to try again. | | | | |
| Variations | | * The User may choose to reserve a bike before returning it (REQ-15). * If the bike is left outside designated zones, the system notifies the User and continues the rental taxation (REQ-34). * If the bike is stationary for more than 10 minutes, the system sends a notification to the User (REQ-35). * Payment handling is processed for bike rentals (REQ-14). * Invoices are sent to the client's email (REQ-29). | | | | |
| Business Requirements | | * REQ-04: Flexible Bike Return * REQ-05: Cashless Payments * REQ-12: Bike Details Display: Show bike details, price, and location * REQ-14: Payment Handling: Process payments for bike rentals * REQ-15: Bike Locking: Enable users to reserve a bike * REQ-29: Invoices sent to client email * REQ-33: Picture of the bike required after return * REQ-34: Taxation continues if the bike is left outside designated zones * REQ-35: Notification sent if the bike is stationary for more than 10 mins | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-005 | | | | | |
| Use Case Name: | Receive Push Notifications | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for receiving push notifications | | | | |
| Goal in context | | The User wants to receive notifications related to bike availability, promotions, maintenance updates, and important announcements. | | | | |
| Preconditions | | The User has the Bike-O mobile app installed and is logged in. | | | | |
| Successful outcome | | The User successfully receives push notifications related to bike availability, promotions, maintenance updates, and important announcements. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| User cannot receive notification | | Notification not received | | The User encounters technical issues preventing the receipt of notifications. |
| Primary Actor | | Mobile User | | | | |
| Secondary Actor | | Bike-O System | | | | |
| Main Scenario | | * The Bike-O system identifies and generates push notifications for the User based on relevant events (REQ-16). * The system sends the push notification to the User's mobile device (REQ-16). | | | | |
| Alternatives | | If the User's mobile device is offline or has restricted notification settings, the push notification may not be received. | | | | |
| Variations | |  | | | | |
| Business Requirements | | REQ-16: Push Notifications | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-006 | | | | | |
| Use Case Name: | View Trip History | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for accessing trip history | | | | |
| Goal in context | | The User wants to view the history of their previous bike rides. | | | | |
| Preconditions | | * The User has the Bike-O mobile app installed and is logged in. * The User has completed at least one bike ride. | | | | |
| Successful outcome | | The User successfully views their trip history, including details such as date, time, duration, distance, and cost of previous bike rides. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| Cannot access trip history | | No trip history | | The User encounters technical issues preventing them from accessing their trip history. |
| Primary Actor | | Registered User | | | | |
| Secondary Actor | | Bike-O System | | | | |
| Main Scenario | | 1. The User navigates to the "Trip History" section within the mobile app. 2. The system retrieves and displays the User's trip history, including details of previous rides (REQ-25). | | | | |
| Alternatives | | If the User has not completed any bike rides, a message indicating no trip history is displayed. | | | | |
| Variations | |  | | | | |
| Business Requirements | | REQ-25: Trip History | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| Use Case ID: | UC-007 | | | | | |
| Use Case Name: | User Profile Management | | | | | |
| Created By: | Zdravko Zdravkov | | Last Updated By: | |  | |
| Date Created: | 18/08/2023 | | Date Last Updated: | |  | |
| Scope & Level | | Primary use case for User Profile Management | | | | |
| Goal in context | | The User wants to manage and update their profile information within the Bike-O mobile app. | | | | |
| Preconditions | | The User has the Bike-O mobile app installed and is logged in. | | | | |
| Successful outcome | | The User successfully accesses and updates their profile information, including details such as name, email address, password, birthdate, payment methods, and privacy settings. | | | | |
| Failure Outcome | | Failure | | Outcome | | Condition leading to outcome |
| User Profile cannot be updated | | User Profile is not updated | | The User encounters technical issues preventing them from accessing or updating their profile information. |
| Primary Actor | | Registered User | | | | |
| Secondary Actor | | Bike-O System | | | | |
| Main Scenario | | 1. The User navigates to the "Profile" section within the mobile app. 2. The system displays the User's current profile information. 3. The User selects the option to edit their profile. 4. The system provides fields for the User to update their profile information. 5. The User saves the updated information. | | | | |
| Alternatives | | If the User encounters technical issues while updating their profile, an error message is displayed, and they are prompted to try again. | | | | |
| Variations | | The User also has the option to manage their privacy settings, including preferences for data sharing and visibility of certain information (Privacy Settings: Manage privacy preferences and data sharing - REQ-22). | | | | |
| Business Requirements | | * REQ-18: User Profile Management * REQ-20: Personal Data Update * REQ-22: Privacy Settings: Manage privacy preferences and data sharing | | | | |
| Notes and Issues | |  | | | | |
| Use Case Diagram | | | | | | |

1. Requirements

The following sections document the various business requirements of this project. The requirements in this document are prioritized with MoSCoW as follows:

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| --- | --- |
| **RATING** | **DESCRIPTION** |
| **Must** | This requirement is critical to the success of the project. The project will not be possible without this requirement. |
| **Should** | This requirement is high priority, but the project can be implemented at a bare minimum without this requirement. |
| **Could** | This requirement is somewhat important, as it provides some value, but the project can proceed without it. |
| **Would** | This is a low priority requirement, or a “nice to have” feature, if time and cost allow it. |

**General Requirements**

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| --- | --- | --- | --- | --- |
| *REQ#* | DESCRIPTION | TYPE | PRIORITY | USE CASE |
| REQ-01 | User Registration and Authentication | F | **Must** | UC-001 |
| REQ-02 | Bike Selection and Unlocking | F | **Must** | UC-002 |
| REQ-03 | Route Planning and Navigation | F | **Must** | UC-003 |
| REQ-04 | Flexible Bike Return | F | **Must** | UC-004 |
| REQ-05 | Cashless Payments | F | **Must** | UC-004 |
| REQ-06 | Real-Time Data Updates | F | **Must** | UC-003 |
| REQ-07 | Integration with External Systems (Google Maps, Payment providers) | F | **Must** | UC-003 |
| REQ-08 | Data Validation | NF | **Must** | UC-001 |
| REQ-09 | Performance Optimization (App should load within 1 second) | NF | **Should** | N/A |
| REQ-10 | QR Code Scanning: Allow users to scan QR codes for bike interaction | F | **Must** | UC-002 |
| REQ-11 | Security Measures | NF | **Must** | UC-001 |
| REQ-12 | Bike Details Display: Show bike details, price, and location | F | **Must** | UC-002 UC-004 |
| REQ-13 | Rental Process: Guide users through bike rental process | F | **Must** | UC-002 |
| REQ-14 | Payment Handling: Process payments for bike rentals (Debit/Credit card, PayPal, Google Pay, Apple Pay, POS Payment, Cash Payment) | F | **Must** | UC-004 |
| REQ-15 | Bike Locking: Enable users reserve bike | F | **Should** | UC-002 UC-004 |
| REQ-16 | Push Notifications | F | **Should** | UC-005 |
| REQ-17 | User Support | F | **Should** | N/A |
| REQ-18 | User Profile Management: Update user details | F | **Should** | UC-007 |
| REQ-19 | Biometric Authentication | F | **Would** | UC-001 |
| REQ-20 | Personal Data Update: Allow users to update personal information | F | **Should** | UC-007 |
| REQ-21 | Data Analytics Dashboard: Provide admin dashboard for user and ride stats | F | **Could** | N/A |
| REQ-22 | Privacy Settings: Manage privacy preferences and data sharing | F | **Could** | UC-007 |
| REQ-23 | Bike Availability Heatmap: Display high bike availability areas | F | **Could** | UC-002 |
| REQ-24 | Display Bike Parking Zones and Docking Station locations | F | **Must** | UC-003 |
| REQ-25 | Trip History: View history of previous rides | F | **Would** | UC-006 |
| REQ-26 | Accessibility Features: Ensure app accessibility | NF | **Would** | N/A |
| REQ-27 | Offline Mode (Optional) | F | **Would** | N/A |
| REQ-28 | Bike reservation requires deposit | F | **Must** | UC-002 |
| REQ-29 | Invoices sent to client email | F | **Should** | UC-004 |
| REQ-30 | GPS located bikes | F | **Must** | UC-002 |
| REQ-31 | Client must be registered to search for a bike | NF | **Must** | UC-002 |
| REQ-32 | Log In screen is the first screen on app launch | F | **Must** | UC-001 |
| REQ-33 | Picture of the bike required after return | F | **Must** | UC-004 |
| REQ-34 | Taxation continues if bike is left outside designated zones | F | **Should** | UC-004 |
| REQ-35 | Notification sent if bike is stationary for more than 10 mins | F | **Should** | UC-003  UC-004 |
| REQ-36 | Basic Integration with Legacy Systems | NF | **Should** | N/A |
| REQ-37 | Personal data validation after scanning of Identity Card | NF | **Must** | UC-001 |

1. User Stories and Acceptance Criteria

|  |  |
| --- | --- |
| **ID:** | **TITLE:** |
| **User Story 1: User Registration** | **As a new user, I want to register for the Bike-O service, so that I can start using the app for bike rentals.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I am a new user, when I provide my name, email, password, birthdate, address, and ID card details during registration, then I should be able to create an account.**  *Acceptance Criteria 2:*  **Given that I have successfully registered, when I check my email, then I should receive a confirmation email.** |

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| --- | --- |
| **ID:** | **TITLE:** |
| **User Story 2: Bike Reservation** | **As a registered user, I want to reserve a bike for 15 minutes, so that I have guaranteed access to a bike when I need it.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I am a registered user, when I open the app, then I should see available bikes near my location on the map.**  *Acceptance Criteria 2:*  **Given that I have selected a bike, when I choose to reserve it, then the bike should be reserved for 15 minutes.**  *Acceptance Criteria 3:*  **Given that I have reserved a bike, when I don't unlock it within 15 minutes, then the reservation should expire.** |

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| **ID:** | **TITLE:** |
| **User Story 3: Bike Unlocking** | **As a user with a reserved bike, I want to unlock it by scanning the QR code, so that I can start my ride.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I have a reserved bike, when I scan the QR code on the bike, then the bike should unlock.** |

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| **ID:** | **TITLE:** |
| **User Story 4: Bike Rental** | **As a user with an unlocked bike, I want to start my rental and track the time and distance of my ride, so that I can be charged accurately.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I have an unlocked bike, when I start my rental, then the app should begin tracking the time and distance of my ride accurately.**  *Acceptance Criteria 2:*  **Given that I have reached my destination, when I end my rental, then the app should stop tracking my ride.** |

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| **User Story 5: Bike Return** | **As a user, after ending my rental, I want to return the bike, take a picture of it, and have it locked automatically, so that the rental process is complete.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I have ended my rental, when I return the bike, then I should be prompted to take a picture of the bike to confirm its condition.**  *Acceptance Criteria 2:*  **Given that I have taken a picture, when I confirm, then the bike should be locked automatically.** |

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| **ID:** | **TITLE:** |
| **User Story 6: Payment Handling** | **As a user, I want to make a payment for my bike rental, so that I can use the service seamlessly.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I have completed my ride, then the app should display the total cost of my ride.**  *Acceptance Criteria 2:*  **Given that I have selected a payment method, then it should be processed successfully.** |

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| **ID:** | **TITLE:** |
| **User Story 7: Trip History** | **As a user, I want to view my ride history, including details like date, time, distance, and cost of each ride, so that I can track my usage.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I am logged in, when I navigate to the ride history section, then the app should display a list of my rides with dates, times, distances, and costs.** |

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| **User Story 8: Notifications** | **As a user, I want to receive notifications for important events like successful payments, reservation expirations, and bike stationary alerts, so that I stay informed.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I have enabled notifications in my settings, when a payment is successful or a reservation expires, then I should receive a notification.** |

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| **User Story 9: Map Integration** | **As a user, I want to see the location of available bikes on a map, so that I can easily find and rent a bike.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I open the app, when I navigate to the map view, then the map should display docking stations, bike parking zones, and the current location of bikes.** |

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| **User Story 10: User Profile Management** | **As a user, I want to be able to update my profile information, including my name, email, address, and payment methods, so that my account remains accurate and up-to-date.** |
| **Acceptance Criteria** | *Acceptance Criteria 1:*  **Given that I am logged in, when I go to the profile settings, then I should be able to edit my name, email, address, and payment methods.** |