Parksy

1. Project Overview

Parksy is a parking management application that focuses on solving the problem of **personal and private parking space utilization**. It connects **parking space owners** who have unused or underutilized personal parking spots with **drivers who need parking spaces**, creating a smart, on-demand parking ecosystem.

The application enables parking owners to list their personal parking spaces and allows drivers to discover, reserve, and use these spaces efficiently. By bridging this gap, Parksy reduces parking shortages, improves space utilization, and provides a practical solution for real-world urban parking challenges.

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2. Problem Statement

In urban areas, finding a parking space is often time-consuming and inefficient. Common problems include: - Lack of real-time parking availability - Manual parking management systems - Traffic congestion caused by searching for parking - Poor utilization of existing parking spaces

Parksy addresses these challenges by providing a centralized, digital parking management solution.

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3. Objectives

- Provide real-time visibility of available parking slots
- Allow users to search, reserve, and manage parking spaces
- Enable parking owners/admins to manage slots efficiently
- Reduce parking-related traffic and waiting time
- Ensure secure and reliable transactions

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4. Scope of the Application

The Parksy application supports: - Registration and authentication for parking owners and drivers - Listing of **personal/private parking spaces** by owners - Searching and discovering nearby parking spaces for drivers - Real-time availability tracking of parking slots - Booking, usage, and release of parking spaces - Time-based parking allocation - Admin-level monitoring and system control

The scope is designed to support real-world peer-to-peer parking use cases and can be expanded with additional services.

5. System Architecture

Parksy follows a layered Java-based architecture:

- **Presentation Layer**: User interface for interaction (web)
- **Business Logic Layer**: Core application logic, validations, and workflows
- **Data Access Layer**: Database interaction using JDBC / ORM
- **Database Layer**: Stores users, parking slots, bookings, and logs

This separation improves maintainability, scalability, and security.

6. Technology Stack

- **Backend**: Java
- **Framework**: Spring Boot
- **Frontend**: React.js
- **Database**: MySQL
- **API Communication**: RESTful APIs

The technology stack is intentionally kept minimal and focused to ensure clarity, maintainability, and scalability of the application.

7. Key Features

- Role-based access for parking owners and drivers
- Listing and management of personal parking spaces
- Easy discovery of parking spaces for drivers
- Real-time availability and booking management
- Secure backend logic and validations
- Clean and responsive React-based user interface

8. Benefits

- Saves time for users searching for parking
- Improves parking space utilization
- Reduces traffic congestion

- Provides structured data for decision-making
- Easy to maintain and extend

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9. Future Enhancements

- Online payment gateway integration
- Mobile application support
- GPS-based parking navigation
- IoT sensor integration for live slot detection
- Analytics and reporting dashboard

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10. Conclusion

Parksy is a robust Java-based parking management application that addresses real-world parking challenges through smart resource management.