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CROSS-PLATFORM APP DEVELOPMENT

Software Requirements Specification Version 1.0

Park Smart

Project Name: Park Smart

Theme: Smart Parking & Navigation

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1.1 Background and Necessity for the Mobile App

Urban cities are facing increasing traffic congestion and a shortage of available parking spaces. Drivers often waste valuable time searching for parking, leading to frustration, fuel wastage, and higher carbon emissions. Manual parking management systems lack real-time data, while existing solutions may not provide integrated booking and navigation features. A mobile-based smart parking system can address these issues by offering real-time availability, reservations, and guided navigation to parking spots.

1.2 Proposed Solution

Park Smart will be a smart mobile application that enables users to locate available parking spaces in real-time, book them in advance, and navigate directly to the spot. The app will integrate with parking lot databases, GPS navigation, and allow digital payments for a fully automated experience.

1.3 Purpose of this Document

This document provides a detailed description of the Park Smart mobile application, its functionalities, design requirements, and system specifications. It serves as a development guide for stakeholders and developers.

1.4 Scope of Project

Park Smart will cater to drivers in metropolitan areas, helping them find and book parking spaces efficiently. The initial release will focus on:

- Real-time parking spot search.
- Booking and navigation.
- Payment integration (optional for phase 2).

1.5 Constraints

- GPS and internet connection are required for real-time updates.
- Map and parking lot images should be optimized for quick load times.
- Must comply with local parking authority data integration standards.

1.6 Functional Requirements

Home Page & Dashboard

- Real-time parking availability map.
- Quick links to search, book, and navigate.

User Registration & Login

- Registration with email, password, vehicle details, and phone number.
- Client-side validation for correct data formats.
- Welcome email on registration.
- Roles: Admin (manage parking data) & User (search/book).

Parking Search & Filter

- Search by location, availability, price, or parking type (indoor/outdoor).
- Filter by hourly/daily rates, distance, or amenities.

Booking Management

- Book parking spots for specific dates and times.
- View booking details, modify, or cancel reservations.
- QR code generation for gate access.

Navigation

- GPS-based navigation to booked parking spot.
- Live traffic updates for estimated arrival time.

Payment Processing (Optional for Phase 2)

- Secure payment gateway integration.
- Payment history view for users.

Admin Functions

- Add/Edit/Delete parking lot details.
- Update availability in real-time.
- View booking analytics.

Feedback & Help

- Submit feedback on parking experience.
- FAQs and contact support.

1.7 Non-Functional Requirements

- Safe and secure mobile application.
- Clear, accessible interface with easy navigation.
- Minimal load time for maps and spot availability.
- Scalable to handle large volumes of users and parking spots.
- Strong encryption for personal and booking data.
- 24/7 availability with minimal downtime.

1.8 Interface Requirements

Hardware

- Intel Core i5/i7 Processor or higher
- 8 GB RAM or higher
- 500 GB HDD
- Mouse, Keyboard, Android/iOS smartphone

Software

- Android Studio IDE (Android 9+ with Java) OR Flutter 1.2 with Dart 2.6+
- Database: SQLite or Firebase

1.9 Project Deliverables

- Database Design
- Source Code
- APK file
- Installation Instructions
- Read Me File with User Credentials (login/password)
- Demo video showing all functionality