Requirement Analysis

The purpose of the application is to find an available parking spot as soon as possible. Especially in crowded cities, it is a common challenge. Leading to unnecessary fuel consumption, increased traffic congestion, and driver frustration. The purpose of this application is to provide a real-time, user-driven parking availability system that allows drivers to mark their spots when leaving, helping others find and claim available parking spaces. By integrating GPS tracking and Google Maps API, the app will create a dynamic, community-driven solution for parking management.

For this application, there will be only one user type which is the drivers. The drivers can mark a parking spot as "available" when leaving. Can search for available parking spots in real time. Can claim a parking spot when they arrive. Will be authenticated using Firebase Authentication. May receive rewards/discounts for contributing to parking availability.

Finding an available parking spot is a major challenge in crowded cities, leading to increased search times, traffic congestion, and fuel waste. Drivers often spend excessive time looking for open spaces, which not only causes frustration but also contributes to unnecessary road congestion as cars move slowly in search of parking. Additionally, the extra driving results in higher fuel consumption and environmental pollution. Many existing parking applications attempt to address this issue but often rely on sensors or predictive models rather than real-time user updates, making them less reliable.

This application aims to solve these problems by utilizing a crowdsourced parking data system, where users actively mark available and occupied spots. By integrating real-time updates through Firebase, the system ensures that information remains accurate and up to date. The use of GPS tracking and Google Maps API allows drivers to easily locate nearby open parking spaces, reducing search times significantly. Furthermore, to encourage user participation, the app offers incentives such as parking discounts, motivating users to contribute to the system and improving the overall efficiency of urban parking management.

Several existing parking applications attempt to assist drivers in finding parking spots, but they have notable limitations. “Parkopedia” provides parking location data but lacks real-time updates, making it less reliable for drivers seeking immediate availability.

What sets this application apart is its user-driven approach, where real drivers actively mark available and occupied spots, eliminating the need for parking sensors. It also introduces incentives and rewards, encouraging user participation through parking discounts. With real-time interaction powered by Firebase, users receive instant updates on parking availability, enhancing accuracy and efficiency.