-California State University – Los Angeles

Park Me

Your Spot, Reserved for the Big Day

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Capstone Project

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EXECUTIVE SUMMARY

Parking in Los Angeles is a common frustration because it wastes time, causes stress, and increases traffic congestion. Our project aims to tackle this issue with a mobile app that is simple, reliable, and easy to use.

The app helps users find free, street, and paid parking spots in real-time using detailed maps and turn-by-turn directions. It also allows individuals and businesses to register and rent out their unused parking spaces, creating a marketplace for parking. This feature connects parking space owners with drivers who need short-term or long-term parking options, offering a win-win solution for both.

The app's user-friendly interface makes it easy for drivers to search for parking near their location, book spots in advance, and make secure payments. It also remembers the location of parked cars, helping users easily return to their vehicles. Filters let users choose from pre-owned parking spaces, street parking, or parking structures based on their needs.

By simplifying the parking process, the app saves time, reduces stress, and cuts down on traffic caused by cars circling for spots. At the same time, it helps parking space owners earn extra income by renting out their spaces. This innovative solution makes parking more convenient, reduces pollution from idling cars, and improves the overall quality of life for people in Los Angeles. Whether for residents or visitors, this app is designed to make parking in the city easier and more efficient.

INTRODUCTION

Finding a parking spot in Los Angeles is a game of luck that too often feels unwinnable. According to David Wharton, LA Time's staff writer, "Los Angeles has some of the worst traffic in the country. But getting to your destination doesn't mean your driving challenges are over. Parking lots around the Southland can be just as difficult to navigate as our freeways and surface streets". You've been there: circling city blocks, growing more anxious with every minute, and silently cursing the urban chaos. Parking woes have become an unavoidable part of life in LA, wasting precious time, adding stress, and clogging already congested streets. But what if there was a way to turn this headache into a seamless, stress-free experience?

There are few applications that provide this kind of service but what makes our application different is that the process of booking the spots will be fast, safe and reliable. Our application also keeps track of the location that you booked to park your car, so it becomes easy to come back to the car. The app has dedicated filters to sort between pre-owned parking, street parking, parking structures which makes it easy for the users to find their desired parking spots.

For us to create a solution for parking, we looked around to see what was already on the market in terms of parking. SpotHero is a digital platform that allows users to find and reserve parking spots in advance. It was founded in 2011 and operates in many cities across North America. SpotHero aims to make parking easier and more convenient, helping users save time and money while reducing the stress of finding parking in busy urban areas.

ParkMobile is a mobile app and web-based platform that allows users to find, reserve, and pay for parking spots. ParkMobile's goal is to simplify the parking experience by providing a convenient,

cashless, and efficient way to manage parking, reducing the hassle of finding and paying for parking in urban and crowded areas.

ParkWhiz is a digital platform that helps users find, reserve, and pay for parking spaces in advance. Discounted Rates: ParkWhiz often provides parking at discounted rates compared to drive-up prices. Instant Access: The app provides users with digital passes or QR codes that can be scanned for entry to the parking facility.

In contrast to the previous solutions mentioned, our project aims to tackle LA's parking challenges with a simple, yet powerful mobile app designed to transform the way people find parking in the city. Using real-time mapping technology, our app will guide users to nearby free, street, or paid parking spots, making the process faster and less stressful. Instead of endlessly circling crowded streets, drivers will have a smooth and efficient experience, with turn-by-turn navigation leading them directly to available spaces. By streamlining parking, our app not only saves time but also helps reduce traffic congestion and the environmental impact of cars idling and circling. This convenient solution promises to enhance urban mobility and improve the daily lives of Los Angeles residents and visitors.

In addition to that, our app's intuitive interface will provide a seamless experience, offering turn-by-turn navigation to guide drivers directly to their chosen parking spot. Additionally, the app will allow individuals to rent out their own parking spaces, enabling property owners to earn extra income while providing drivers with more convenient parking options. Users can easily view available spots, reserve them, and pay for the time they need. By streamlining this process, we aim to not only make parking more convenient but also ease traffic congestion and minimize the environmental impact of cars idling and driving in circles. This innovation will contribute to a more efficient and sustainable urban experience for everyone in Los Angeles.

TOPIC RELEVANCE

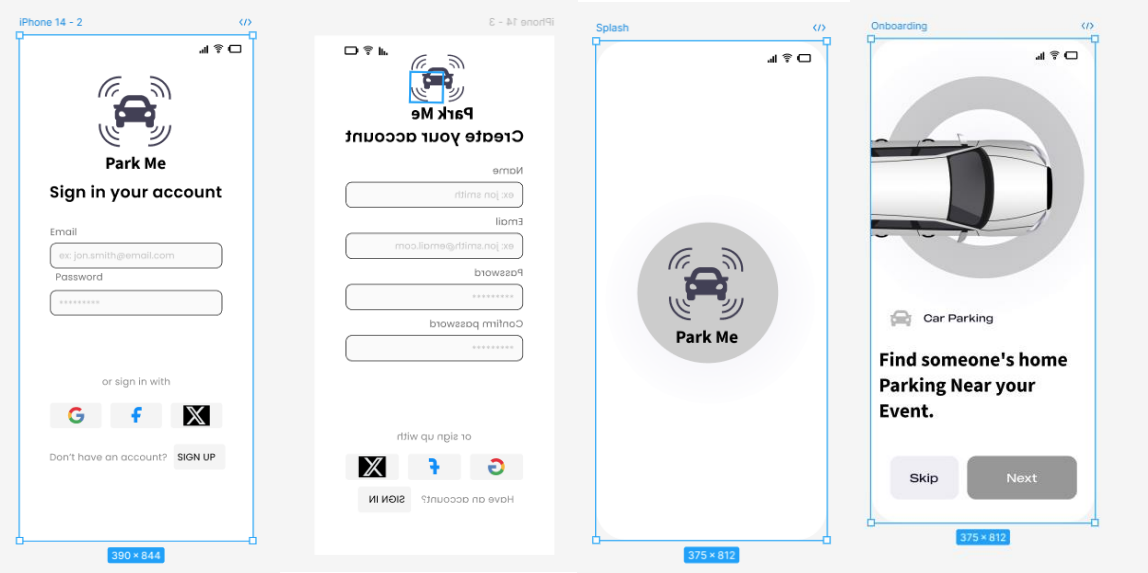
A mobile app for searching and reserving parking covers several key areas of technology. In project management, it ensures punctuality for events and meetings, tracks expenses, and analyzes usage patterns for future projects. For cybersecurity, it handles sensitive user data, including personal information, payment details, and location data, ensuring it is encrypted and securely stored to prevent unauthorized access and data breaches. Network administration involves encrypting data transmitted between the app and servers using protocols like HTTPS to protect against eavesdropping and securing IoT devices like smart parking meters against cyber threats. In system analysis, the app's integration with existing parking management systems is critical, analyzing how the new app will interact with or replace them. Database administration focuses on designing a robust database schema to support the app’s functionality, handling large volumes of data efficiently, and ensuring secure storage and management of user information and transaction histories. Lastly, data analysis involves examining when and where users search for and reserve parking to identify peak usage times and popular locations, as well as understanding user preferences to tailor services effectively.

Prototypes

For the creation of the static website and the prototyping process in Figma, we focused on establishing a strong foundation for the visual and functional elements of our application and website. Using Figma, we designed basic visuals and interactive prototypes that allowed us to clearly communicate the look and feel of the user interface. This step was crucial in ensuring that our design aligned with our vision and provided a seamless experience for our target audience.

To complement the prototypes, we developed a static website to showcase a preliminary version of the platform, focusing on delivering the core design and layout that reflect our intended user experience. This approach allowed us to experiment with different layouts, colors, and navigation elements to refine the user journey.

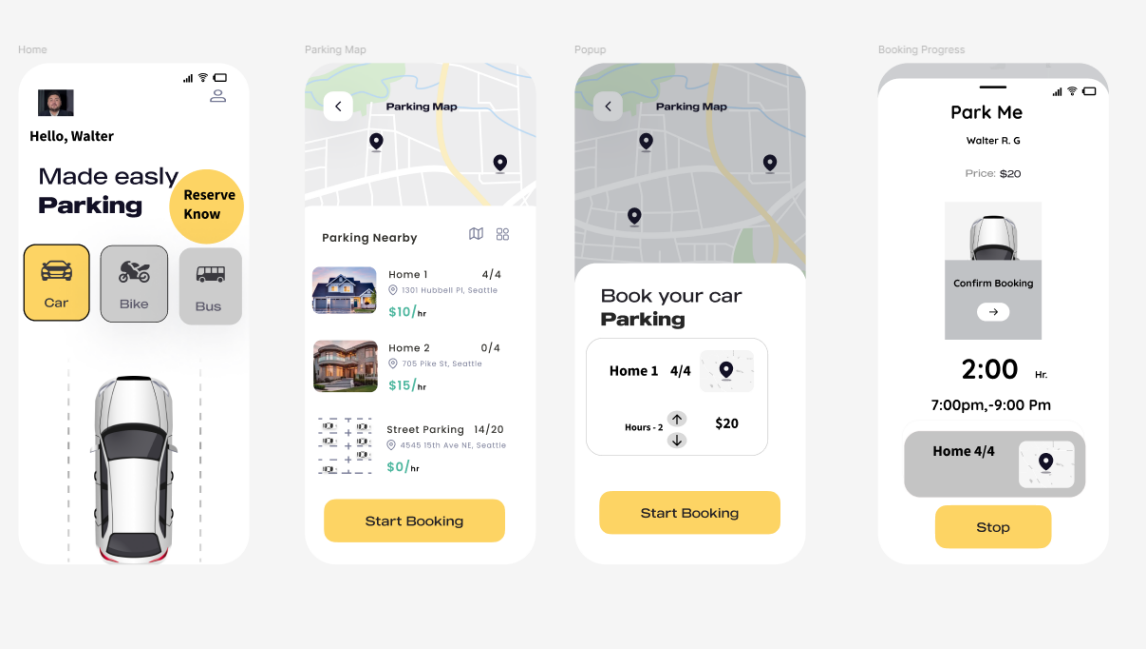
Our primary goal is to ensure accessibility and versatility by making our platform available on multiple devices. Users will have the ability to access our content seamlessly, whether they are on a computer or a mobile phone. This flexibility caters to diverse user preferences, ensuring they can interact with our platform in a way that suits their needs. Additionally, by offering various options for utilizing our platform, we aim to create an inclusive and user-friendly environment that maximizes engagement and enhances the overall experience.



As shown in the images above, these four visuals represent the initial elements that users will encounter when engaging with our platform. We deliberately designed these elements to be simple, clean, and visually appealing, ensuring they are both easy to understand and intuitive to navigate. Our goal was to create an immediate sense of clarity and purpose for users as they access our website or application.

Simplicity was a key focus in this design phase, as we aimed to avoid overwhelming users with excessive information or clutter. Each visual has been thoughtfully crafted to prioritize readability and usability, guiding users effortlessly toward their desired actions. By presenting content in a straightforward and digestible format, we enhance the o verall user experience and make the platform accessible to a wider audience, regardless of their technical expertise.

This design philosophy reflects our commitment to user-centric development, ensuring that the first impression users have of our platform is positive, engaging, and aligned with their needs. The visuals serve not only as a gateway to the platform's features but also as a representation of our core values: simplicity, accessibility, and functionality.

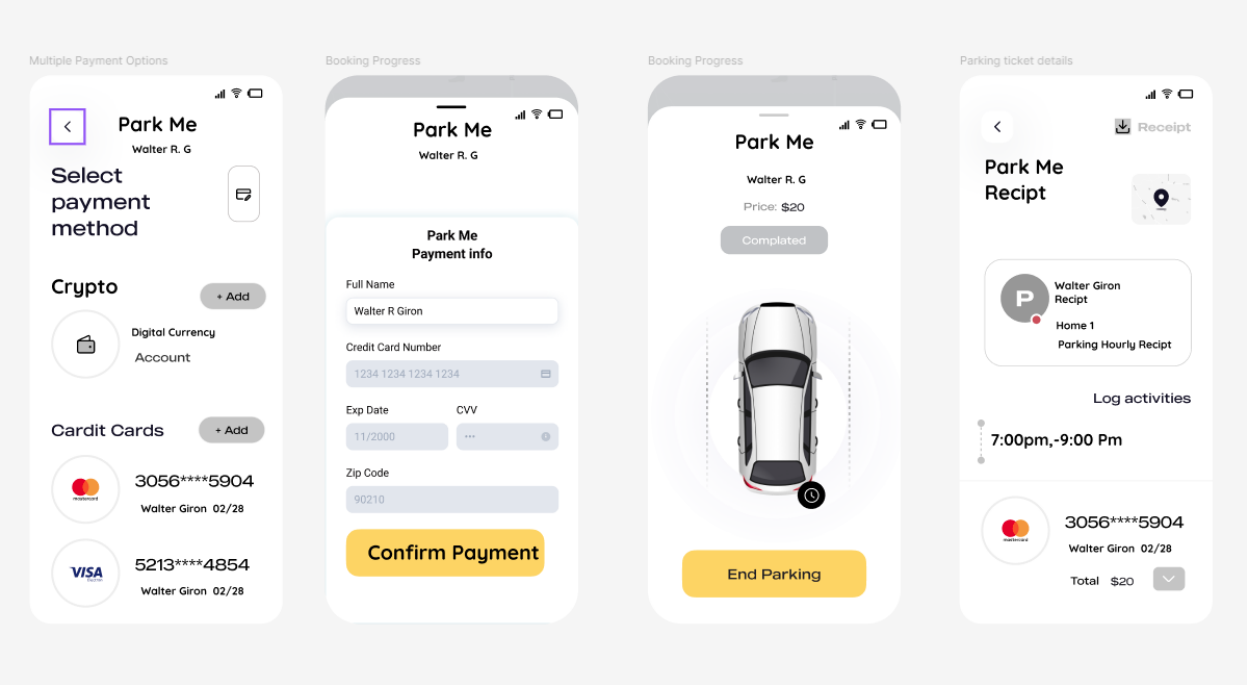


For the dashboard, our primary objective was to create an intuitive and user-friendly interface that allows users to perform essential actions with minimal effort. We designed it to enable users to seamlessly complete tasks with just a few clicks. Specifically, the dashboard allows users to select a type of car, choose a home with available parking, and specify the duration for which they would like to rent a parking spot.

This functionality is presented through a clean and simplistic design, as seen in the image above. The dashboard layout prioritizes clarity and ease of use, with straightforward navigation and clearly labeled options to guide users through the process. Each feature is thoughtfully arranged to minimize complexity and ensure that users, regardless of their technical skills, can accomplish their goals efficiently.

The minimalist design approach not only enhances usability but also reduces cognitive load, enabling users to focus solely on the task at hand. By eliminating unnecessary distractions and emphasizing practicality, the dashboard serves as a cornerstone of our platform, embodying our

commitment to accessibility and convenience. This design ensures a smooth and satisfying user experience, fostering trust and engagement with our platform.

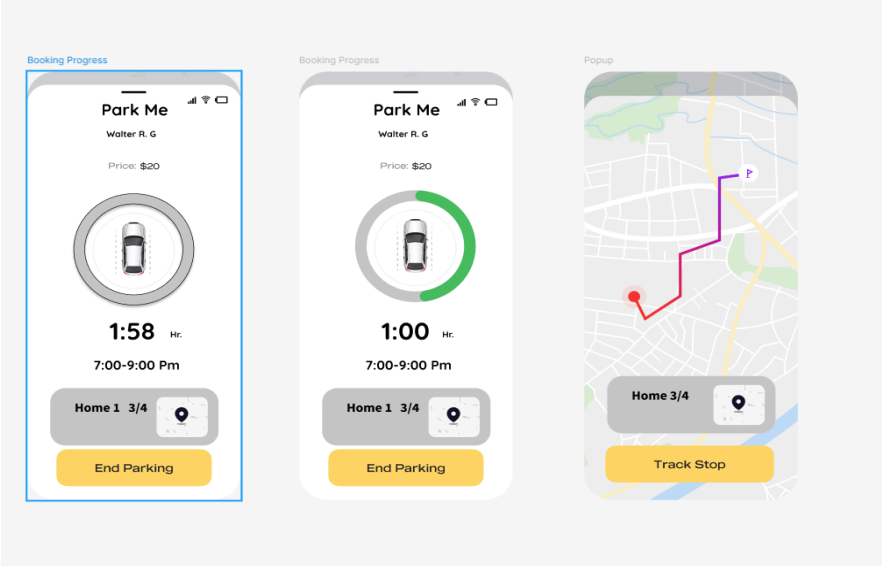


Our platform places a strong emphasis on simplicity and user convenience, especially when it comes to the payment process. We designed the payment selection system to be as straightforward and intuitive as possible, ensuring that users can complete transactions quickly and without hassle. With just a few clicks, users can select their preferred payment method and securely input their payment details.

The interface is designed to accommodate various payment options, including credit/debit cards, digital wallets, and other popular payment methods. Each step is clearly laid out, guiding users through the process without overwhelming them with unnecessary complexity. The input fields

are optimized for clarity, with prompts and error-checking features to minimize any potential confusion or mistakes.

By focusing on creating a seamless payment experience, we aim to enhance user satisfaction and encourage trust in the platform. The simplicity of this process not only saves time but also ensures that users feel confident in managing their transactions. Whether accessing the platform on a desktop or mobile device, users can easily input their payment details and complete their bookings, reinforcing our commitment to a hassle-free and user-friendly experience.

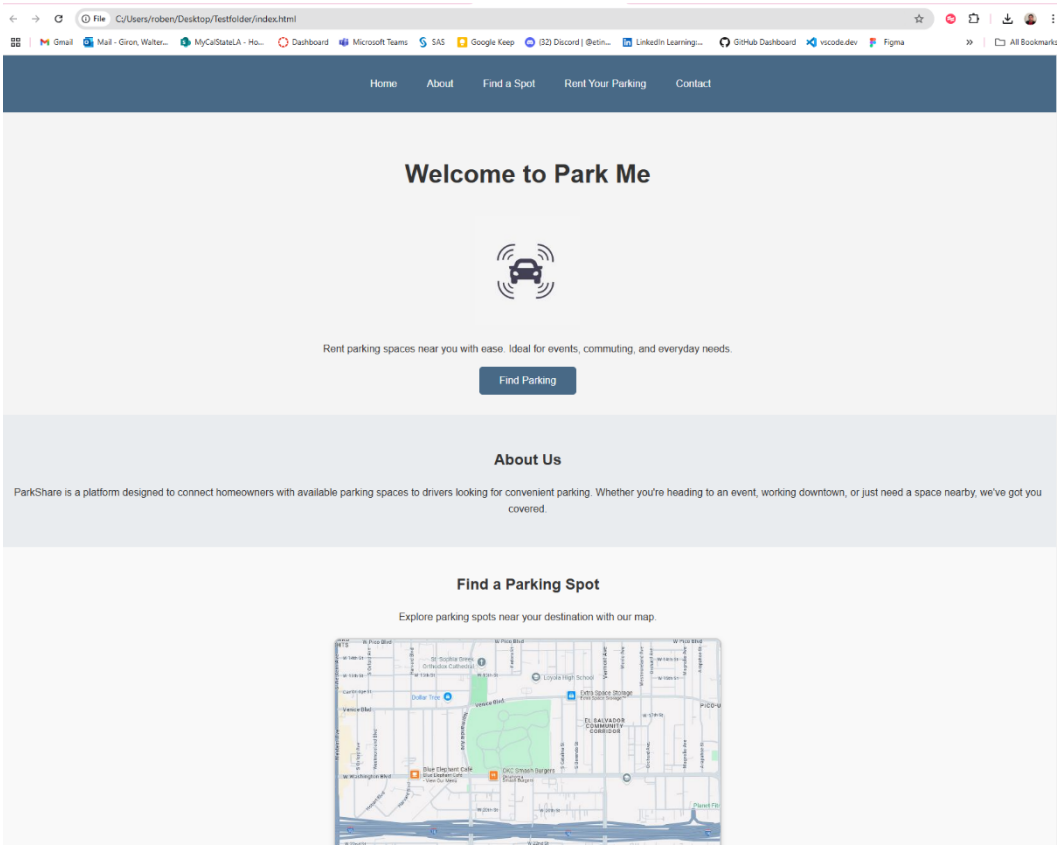


As for the final features we included, we wanted to provide users with a simple and visually intuitive way to track their parking time. We implemented a circular timer with a green progress indicator that moves around the circle, giving the impression of time counting down. This design allows users to quickly glance at their screen and immediately understand how much time remains, making it both efficient and user-friendly.

Additionally, we are working on developing a car location tracking feature, which will be invaluable for helping users locate their vehicles effortlessly. While still in the development phase,

this functionality is designed to enhance convenience and reduce the stress of navigating back to parked cars. Together, these features aim to round out the platform's utility, ensuring a seamless and practical experience for users from start to finish.

Static Website



We designed our static website using HTML and CSS with the goal of creating a clean and straightforward platform that is easy for users to navigate. The site features a simple layout with essential options, such as "Find a Spot" and "Rent Your Parking," conveniently located in the navigation bar. This streamlined design ensures users can quickly access the core functionalities without confusion. By keeping the interface minimalistic, we aimed to provide a user-friendly experience while leaving room for future enhancements and additional features as the platform evolves.

RISK ASSESSMENT MATRIX

Likelihood and Impact Ratings

- **Likelihood**: Rare (1), Unlikely (2), Possible (3), Likely (4), Almost Certain (5)
- **Impact**: Insignificant (1), Minor (2), Moderate (3), Major (4), Catastrophic (5)

Risk Categories

1. **Technical Risks**
2. **Operational Risks**
3. **Security Risks**
4. **User Experience Risks**
5. **Compliance Risks**

Risk	Category	Description	Likelihood	Impact	Risk Level (L x I)	Mitigation Strategies
Server Downtime	Technical	App becomes unavailable due to server issues	3	4	12	Implement redundant servers and failover mechanisms

Data Breach	Security	User data is compromised by malicious actors	2	5	10	Use encryption, regular security audits, and monitoring
GPS inaccuracy	Technical	Incorrect parking location data due to GPS errors	4	3	12	Use multiple sources for location data verification
Poor User Interface	User Experience	Users find the app difficult to navigate	3	3	9	Conduct usability testing and implement feedback
Legal Non-compliance	Compliance	Failure to comply with local regulations and laws	2	4	8	Regularly review and update compliance policies
Network Issues	Technical	App performance is affected by poor	4	2	8	Optimize app for low-bandwidth

		network connectivity				usage and offline mode
User Data Privacy	Security	Inadequate privacy controls leading to misuse of user data	3	4	12	Implement strong privacy policies and user controls
Payment Processing Failures	Operational	Users unable to pay for parking due to payment gateway issues	3	3	9	Integrate multiple payment gateways and monitor
Negative Reviews	User Experience	Poor reviews impacting app reputation and downloads	3	3	9	Continuous innovation and marketing efforts

Risk Level Interpretation

- **Low (1-6)**: Acceptable risk, monitor and review regularly.
- **Moderate (7-14)**: Moderate risk, implement mitigation strategies.
- **High (15-25)**: High risk, immediate action required to mitigate.

Summary

This risk assessment matrix provides a structured approach to identify, evaluate, and mitigate risks associated with a mobile app that searches for parking. Regular updates and reviews of the matrix will help ensure ongoing risk management and mitigation.

Results/Law

1. General Parking Rules

- **Metered Parking**: Ensure your app provides information about metered parking zones, rates, and enforcement hours.
- **No Parking Zones**: Highlight areas where parking is not allowed, such as red zones, bus stops, and fire hydrants.
- **Street Cleaning**: Include information on street cleaning schedules to help users avoid fines.
- **Permit Parking**: Some residential areas require permits for parking. Make sure to include this information and guide users on how to obtain permits if necessary.

2. Accessible Parking

- **Disabled Parking**: Highlight spaces reserved for disabled individuals and ensure your app complies with the Americans with Disabilities Act (ADA).

3. Legal Compliance

- **Data Privacy**: Ensure your app complies with data privacy laws, such as the California Consumer Privacy Act (CCPA).
- **Liability**: Clearly state your app's liability in case of parking violations or towing.

Discussion

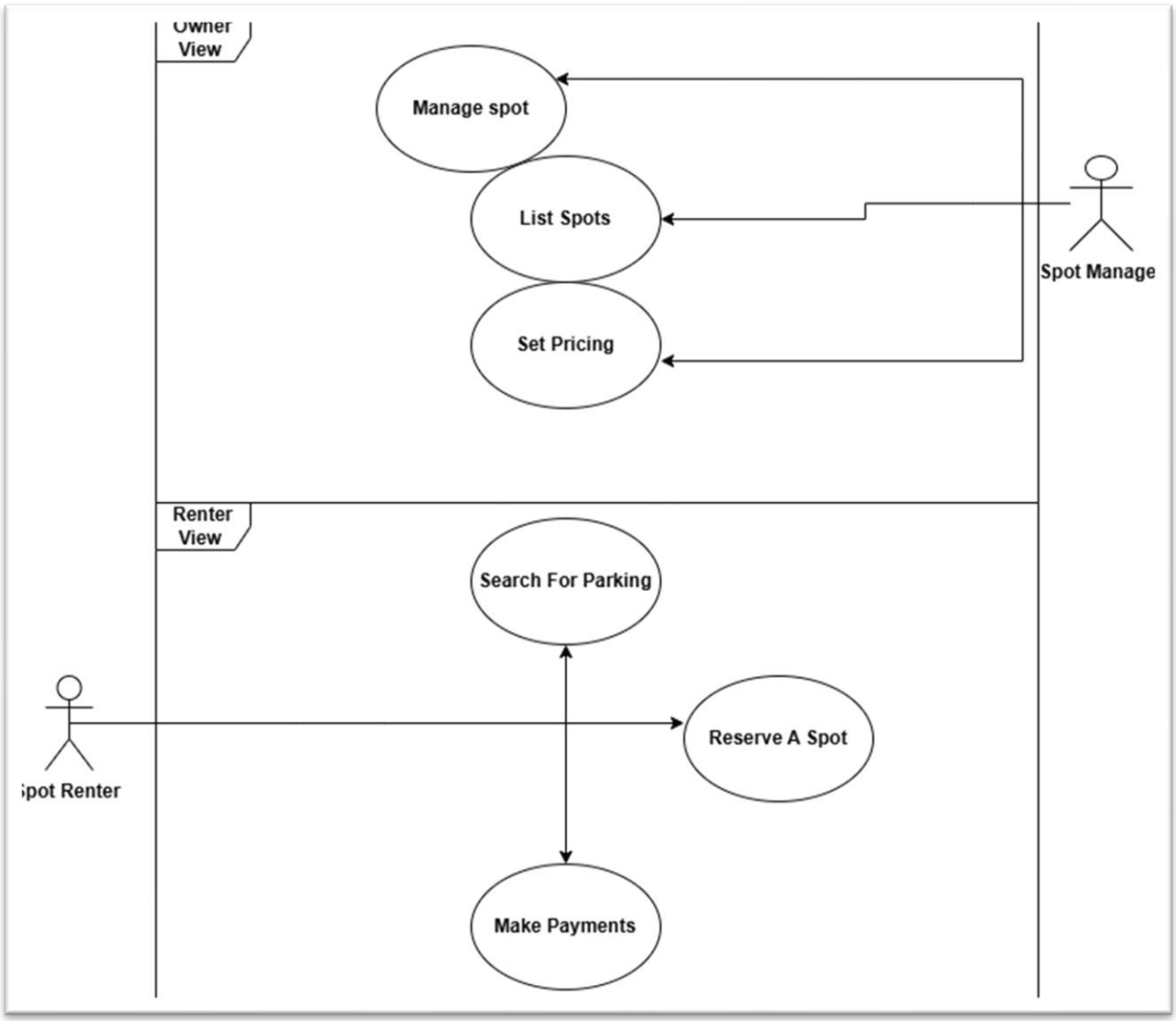
Our app can significantly benefit cities by helping to alleviate traffic congestion during large events. By offering a platform where people can rent out their private parking spaces, it helps disperse cars more evenly across the city rather than concentrating them in a few crowded lots. This can reduce strain on public infrastructure, minimize bottlenecks, and create a more efficient parking system. Additionally, the app can support sustainability by reducing emissions from cars circling to find parking and even encourage users to combine parking with public transportation options. It can also help improve accessibility by offering filters for different needs, such as spaces for people with disabilities or spots with EV chargers. Moreover, collecting parking data can provide valuable insights for urban planners, helping the city make more informed decisions about transportation and infrastructure development.

When compared to existing solutions, apps like ParkMobile and Just Park already provide similar parking services but typically focus on daily or long-term parking rather than event-specific needs. ParkMobile allows users to pay for street parking or rent private spaces but doesn't prioritize high-demand events, and Just Park primarily targets a broader range of parking, from private driveways to commercial lots. Our app's unique selling point could be its focus on temporary, event-based parking, allowing users to reserve spots in advance during major events like concerts, games, or

conventions. This targeted approach makes our app the go-to option for eventgoers looking for convenient parking near venues, especially in cities where parking is limited during peak times. Dynamic pricing based on demand could further distinguish our service from others. By partnering with local venues and businesses, our app can offer personalized, location-specific solutions.

What sets our app apart is its potential for localized, event-driven services. Unlike broader parking apps that cater to everyday users, your platform would be designed to serve a specific, high-demand market during major events. Integrating real-time availability, dynamic pricing, and customizable features, such as reserved spots or added services like valet or shuttles, would offer an enhanced user experience. Additionally, ensuring the safety and security of parking spaces, possibly through verification or insurance options, can build trust and set your app apart from others. By focusing on events, offering personalized options, and optimizing for both drivers and property owners, our app could benefit both the city and its residents.

Diagrams


Owner View
Manage spot
List Spots
Set Pricing
Spot Manage
Renter View
Search For Parking
Reserve A Spot
Make Payments
Spot Renter


Start
Search for Parking Spots
Select a Spot
Make Payment
Receive Confirmation
End

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