

# **COMP3900 Computer Science Project**

## **Park It**

### **Car Space Sharing System**

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**Submitted on 07/03/2022 by 3900-W14B-Blue Man Group**

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# The background

## **The problem**

Australia has one of the world's lowest ratios of car spaces to workers, and Sydney CBD has the lowest ratio among Australian capital cities at 12.2 spacers per 100 workers (NRMA, 2019). Sydney CBD also has the highest average daily prices in Australia at A\$70.85/per day to rent a car space (NRMA, 2019). It is both difficult to find a car space in a metro area due to their relative scarcity, and also expensive to rent a space due to the high demand for those limited spaces.

## **The solution**

This is the problem our car space sharing system ('Park It') seeks to address, and it seeks to do so not by building more car spaces, but by improving the utilisation rate of existing car spaces. If car spaces were able to be occupied at a higher rate, the demand would be met more effectively as existing spaces would be used more efficiently.

Compared to simply building more car spaces, an effective car space sharing system will achieve more environmentally friendly outcomes, with lower costs and greater efficiency. Park It will allow for the advertising and renting of car spaces through a Web-based platform designed to bridge the gap between providers of car space rentals and consumers of car space rentals.

Consumers will be able to search for available car spaces near a certain location and through Park It process rental payments and authorise parking instantly. Furthermore, as a central platform for car space rentals, Park It allows you to compare prices in a given area which will incentivise competitive pricing. Providers will also benefit by being able to reach a much wider market segment, and greatly reduce any operating costs by effectively automating the rental process after the initial set up, as the system will handle processing payments and accepting renters. By charging a small commission for every rental transaction, the business is able to generate revenue.

## **Analysing existing solutions**

There are existing car space sharing systems such as Parkhound and Oscar who similarly seek to provide a platform for providers and consumers to interface. However these platforms have certain drawbacks due to how they have been implemented, and these drawbacks have been innovated upon by Park It to deliver a compelling and competitive new product.

Parkhound requires direct contact between the owner of the car space and the renter in order to facilitate the exchange of keycodes and other items necessary to access the car space. This is both inconvenient and may be a potential health risk due to the COVID-19 pandemic. Furthermore, this means that transactions are not instant and the process of renting a car space can take up to 48 hours, which is clearly unsuitable in shorter term scenarios like needing a parking space for the evening.

Oscar has its own drawbacks, for example, it can be cumbersome to navigate back to car spaces that have been frequently rented like a car space that is ideally situated near your workplace. In this case, one needs to manually search for the car space again in the list of car spaces in the nearby area.

Neither platform offers the ability to leave written reviews of parking spaces. While there is a 'like' system in place, this lacks the necessary detail to explain the 'why' of a rating or like given (or not given). Perhaps a parking space is in direct sunlight for most of the day, and a poor rating was given as a result - such information could only be conveyed through written reviews if not present in the provider description.

# The core functionalities

Park It has eight core functionalities which together form the car space sharing system. In order to deliver each of these eight functionalities, we have created epic stories and user stories for each feature that makes up a functionality, in order to clearly articulate the value of those features to the end-user.

The (\*) denotes novel functionalities which are unique to Park It in the car space sharing system space, and are examples of innovation.

## Account registration and management

### **Epic Story 1 (BMG-69): As a user, I want to have an account and manage it so that I can access the system to use the car space sharing services.**

#### ▼ Backlog (6 of 123 issues visible)

	BMG-72 As a user, I want to be able to create an account so that I can access the system to use the car space sharing services. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
	BMG-73 As a user, I want to be able to update my personal details from my account so that I can still use the services without any problems in case I have some changes in my personal details. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
	BMG-74 As a user, I want to be able to delete my account when I don't want to use services anymore so that I can make sure personal information from my account does not persist in the system. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
	BMG-75 As a user, I want to be able to login to the system with my account details so that I can access the system to use the services. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
	BMG-76 As a user, I want the system to be able to remember my login status so that I don't need to login repeatedly every time I access the system. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
	BMG-147 As a user, I want to be able to reset my password when I forget my password so that I can access my account even when I forget my password. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>

Account registration and management is important for any web-based service, and allowing users to log in and remember their details leads to greater ease of use and security. Park It makes account management simple by adhering to industry standards for registering and using an account.

Users are able to register their own accounts (**BMG-72**) and log into the system using those credentials (**BMG-75**). If personal details change, those may be updated (**BMG-73**). Password reset functionality is also included (**BMG-147**) and the ability to remain logged in across different sessions (**BMG-76**). Furthermore, users are able to delete their accounts if they do not wish to use the services anymore, and their personal information will not remain in the system (**BMG-74**).

## **Epic Story 2 (BMG-71): As a user, I want to be able to use the system as a consumer, provider and administrator with a single account so that I can use the system for various purposes without creating multiple accounts.**

Backlog (3 of 152 issues visible)	
	BMG-80 As a user, I want to be able to use the system as Consumer so that I can register my car and find a parking place. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>
	BMG-81 As a user, I want to be able to use the system as Provider so that I can register a place to rent. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>
	BMG-82 As a user, I want to be able to use the system as Admin so that I can do system administrative jobs to make services available to all the other non-Admin users without any problems. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>

Rather than force users to create multiple accounts to handle both consumer and provider functions (and potentially another account for administrator functions) we have chosen to go with a unified account system where users are able to access the functionality of different user types with a single account.

Users are able to access those different functionalities of the system by using the different tabs on the navigation bar. The ‘Consumer’ tab allows access to the consumer specific functionality largely related to the renting of car spaces (**BMG-80**) whereas the ‘Provider’ tab will allow access to provider specific functionality related to the offering of car spaces (**BMG-81**). With proper authorisation, users can view and select the ‘Admin’ tab which provides functionality related to platform administration (**BMG-82**).

## Transaction and system usage history

### **Epic Story 3 (BMG-205): As a user, I want to view my past bookings so that I can keep track of previous rentals of my car spaces and previous car spaces I've rented.**

Backlog (2 of 141 issues visible)	
	BMG-37 As a consumer, I want to be able to see my past rentals/bookings so I can see where I have previously rented. <a href="#">AS A USER, I WANT TO VIEW MY P...</a>
	BMG-46 As a provider, I want to be able to see my past bookings so I can see who rented each space <a href="#">AS A USER, I WANT TO VIEW MY P...</a>

Users are able to view past bookings, both those made as a consumer and bookings made of car spaces that the user has provided. This history allows for record-keeping and the ability to review how you are using Park It.

As a provider, it is helpful to be able to see past bookings of your car spaces as you can assess the demand and historical pricing of a space you own (**BMG-46**). Similarly, as a consumer you

can review which spaces you use most frequently and at what times, and monitor pricing changes in your area by comparing them to historical prices (**BMG-37**).

## Car space searching

**Epic Story 4 (BMG-14): As a consumer, I want to search for parking spots so I can find a parking spot that best suits me.**

▼ Backlog (3 of 152 issues visible)

- BMG-15 As a consumer, I want to search for a parking spot in a location at a time I specify so I can park my car close to my destination. [AS A CONSUMER I WANT TO SEAR...](#)
- BMG-16 As a consumer, I want to see which parking spot is available/occupied so I can know which spot I can choose. [AS A CONSUMER I WANT TO SEAR...](#)
- BMG-25 As a consumer, I want to see a list of parking spot options after I search so I can know which parking spots are within the area. [AS A CONSUMER I WANT TO SEAR...](#)

Being able to search for parking spaces near a location is an essential part of what makes the car space sharing system usable. It is necessary to be able to find the appropriate spaces and compare prices and locations between available spaces so consumers can make an informed decision.

Consumers are able to search through parking spaces for spaces that are close to the specified location (**BMG-15**). Consumers will also be able to filter searches for spaces that are currently available for rent, and those that are currently occupied but will be available in the future (**BMG-16**). Parking spaces in the area will be recommended by the system to the consumer and shown in a list so that the consumer may browse the options available and select spaces for further auditing (**BMG-25**).

## Auditing and renting car spaces for use

**Epic Story 5 (BMG-29): As a consumer, I want to be able to view the details of a parking spot so I can know whether it is a suitable choice for myself.**

▼ Backlog (3 of 141 issues visible)

- BMG-30 As a consumer, I want to be able to view the address of a parking spot so I can know whether it is a suitable choice for myself. [AS A CONSUMER, I WANT TO BE A...](#)
- BMG-31 As a consumer, I want to be able to view the cost of a parking spot so I can know whether it is a suitable choice for myself. [AS A CONSUMER, I WANT TO BE A...](#)
- BMG-34 As a consumer, I want to be able to see the size of the parking spot so I can know if my vehicle can fit [AS A CONSUMER, I WANT TO BE A...](#)

Viewing the details of a car space allows for the collation of information which goes into making the decision on whether to rent the car space. Park It provides all the relevant information in an easily accessible and understandable format so the decision making process is as painless as possible.

Consumers are able to view the address of the parking space and assess the distance to the desired destination (**BMG-30**). Furthermore, they can view the cost of the parking space to determine whether the space is within their budget, and compare the pricing to nearby parking spaces (**BMG-31**). Consumers are also able to see the size of the parking space in order to determine whether it is appropriate for their vehicle in terms of being able to fit in the parking space (**BMG-34**).

### Epic Story 6 (BMG-17): As a consumer I want to rent parking spots so I can park my car conveniently.

▼ Backlog (5 of 141 issues visible)

- BMG-36 As a consumer, I want to be able to register my car details to my account so my car can be identified by the system. [AS A CONSUMER I WANT TO RENT...](#)
- BMG-18 As a consumer, I want to specify the time frame I want to rent the parking spot so I don't have to pay more than what I need to. [AS A CONSUMER I WANT TO RENT...](#)
- BMG-19 As a consumer, I want to be able to see how much I am paying for the parking spot depending on the check in and check out time so I can know if it is an acceptable price. [AS A CONSUMER I WANT TO RENT...](#)
- BMG-26 As a consumer, I want to be able to book a parking spot so the spot is available to me. [AS A CONSUMER I WANT TO RENT...](#)
- BMG-27 As a consumer, I want to be able to cancel my booking so I can change my mind. [AS A CONSUMER I WANT TO RENT...](#)

As one of the cornerstone features of Park It, the process whereby a consumer actually rents the parking space after deciding on one is critical. All the details of the booking are made available for review, and upon approval by the consumer the space booked and made available to the consumer upon successful receipt of the rental fee.

Consumers must first register the details of their vehicle with the system before being able to rent a parking space (**BMG-36**). Consumers are able to vary the time frame of the rental period in order to fit their needs (**BMG-18**). Following this, the total cost is calculated and presented to

the consumer so they are able to make a final approval of the booking (**BMG-19**). Once the total cost has been accepted the consumer is able to book the car space (**BMG-26**). If necessary, the consumer is still able to cancel the booking (**BMG-27**).

## Providing and managing car spaces for rent

**Epic Story 7 (BMG-2): As a provider, I want to be able to rent out my spare parking space so that I can start using the platform.**

▼ Backlog (3 of 143 issues visible)

- BMG-42 As a provider, I want to be able to register a new car space so that I can earn extra income [AS A PROVIDER, I WANT TO BE AB...](#)
- BMG-208 As a provider, I want to be able to modify the availability of the car space I'm offering so I can control when it is being used by someone else [AS A PROVIDER, I WANT TO BE AB...](#)
- BMG-209 As a provider, I want to be able to upload images of the car space I'm offering so I can properly market and advertise the space to potential consumers [AS A PROVIDER, I WANT TO BE AB...](#)

Another cornerstone feature of Park It, the ability to rent out parking spaces lies at the heart of the provider/consumer dynamic. As of such, it is important that it is seamless and easy to operate in order to populate the platform with available car spaces. Car spaces must be registered in the system with details such as the address of the space, the size of the space and pricing details (**BMG-42**). Functionality for image upload is available in order to help market the space to potential consumers (**BMG-209**). Providers are also able to vary the availability of the car space so they can control when it is used and when it is kept free for personal use (**BMG-208**).

**Epic Story 8 (BMG-5): As a provider, I want to be able to manage my parking spaces so that I can keep them organised and up to date.**

▼ Backlog (3 of 143 issues visible)

- BMG-43 As a provider, I want to be able to view all scheduled bookings on my space, so that I can check when it is available/not available [AS A PROVIDER, I WANT TO BE AB...](#)
- BMG-44 As a provider, I want to be able to update my car space information so that I can keep my listings most up to date [AS A PROVIDER, I WANT TO BE AB...](#)
- BMG-45 As a provider, I want to be able to easily communicate with my customers who are using my car space so that I can provide the best level of service [AS A PROVIDER, I WANT TO BE AB...](#)

As a provider, it is necessary to have the ability to manage parking spaces that are offered in order to ensure high quality listings and attract potential consumers.

Providers are able to view all registered car spaces and any scheduled bookings of those car spaces, allowing an overview of the usage rate and availability of the car spaces being offered (**BMG-43**). Furthermore, providers are able to continuously update car space listings with new information to keep them up to date and ensure that the consumer is receiving the correct information to avoid any misunderstandings or other issues (**BMG-44**). Providers are made easily available to contact by consumers that have booked car spaces to facilitate provider/consumer communication and ensure a high level of service (**BMG-45**).

## Platform administration

### Epic Story 9 (BMG-53): As an admin, I want to view and edit all car spaces and review whether it adheres to BMG standards

#### ▼ Backlog (3 of 149 issues visible)

- BMG-61 As an admin, I need to review whether car space applications adhere to BMG standards [AS AN ADMIN, I WANT TO VIEW A...](#)
- BMG-54 As an admin, I want to view and edit all registered car spaces' information so I can determine which information needs updating [AS AN ADMIN, I WANT TO VIEW A...](#)
- BMG-56 As an admin, I want to delete information related to any car space so that incorrect information can be removed [AS AN ADMIN, I WANT TO VIEW A...](#)

Admins serve to moderate all activity on Park It, starting with the car spaces offered on the platform. This process starts by admins reviewing all car space applications to see if they adhere to BMG standards (**BMG-61**). Admins then approve or deny the application.

Similar to providers, admins are able to view and edit car spaces, with admins given access to view and edit any of the car spaces on the system (**BMG-54**). This is to allow for corrections to be made by administrators. In extreme instances, admins also have the ability to delete car spaces (**BMG-56**), which would notify the provider and prevent future bookings of that space.

### Epic Story 10 (BMG-57): As an admin, I need to manage payments on the platform so that the revenue can be distributed.

#### ▼ Backlog (2 of 149 issues visible)

- BMG-58 As an admin, I want the system to distribute the revenue from bookings, so that I do not have to make manual payments to providers [AS AN ADMIN, I NEED TO BE ABLE ...](#)
- BMG-213 As an admin, I want to view all transactions, so that support can be provided if necessary [AS AN ADMIN, I NEED TO BE ABLE ...](#)

Admins ensure that the system is working correctly, and a critical part of this role is the ability to monitor transactions. Admins are able to monitor and ensure that the payments system works correctly and that all relevant parties, including the business, are correctly remunerated.

Admins ensure that the system distributes payments correctly and automatically to the provider and the business in the correct proportions (**BMG-58**). Admins are also able to monitor the transaction history of the entire platform in case any support is required to resolve discrepancies (**BMG-213**).

## Bookmarking favourite car spaces (\*)

**Epic Story 11 (BMG-204): As a consumer I want to be able to save my favourite locations so that I can rebook them quickly.**

Backlog (2 of 149 issues visible)	
 BMG-156	As a consumer, I want to be able to bookmark my favourite parking spots for future use so that I can park at a familiar location. <a href="#">AS A CONSUMER I WANT TO BE A...</a>
 BMG-206	As a consumer, I want to be able to un-bookmark my favourited parking spots so that I can remove them from my favourite list <a href="#">AS A CONSUMER I WANT TO BE A...</a>

As one of the novel functionalities of Park It, the ability to save favourite parking spaces for quick and painless rebooking makes it unique among existing car space sharing systems. The foundation of Park It is being able to rent car spaces with as little hassle as possible, and as quickly as possible and favoriting car spaces is one of the best examples of that. Neither Parkhound or Oscar have the favourites list functionality and require you to navigate back to listings to rebook.

Consumers are able to select their favourite car spaces and add them to an easily accessible favourites list so they can book those spaces at a moment's notice (**BMG-156**). Consumers are also able to unfavourite those spaces if they no longer would like to have them included in their favourites list (**BMG-206**).

## Reviewing car spaces and providing feedback (\*)

**Epic Story 12 (BMG-203): As a consumer, I want to be able to view and leave feedback about car spaces, so I can make more informed decisions and help others make informed decisions.**

▼ Backlog (2 of 149 issues visible)

- BMG-32 As a consumer, I want to be able to see public reviews of parking spots so I can know whether the spot was good. [AS A CONSUMER, I WANT TO BE A...](#)
- BMG-33 As a consumer, I want to be able to write a public review of parking spots I've used so I can let other users or my future self know whether the spot was good. [AS A CONSUMER, I WANT TO BE A...](#)

As the second novel functionality, the review system is a core process for continuously iterating and improving the service provided by Park It. Consumers are able to rate car spaces, and unique to Park It, are additionally able to leave written reviews outlining any important information for future consumers (**BMG-33**). The written review system does not currently exist in any competitor's product including Parkhound and Oscar. Reading available reviews of a car space makes it easier for future consumers to select parking spaces, and incentivises providers to improve the quality of their service (**BMG-32**).

# The product backlog

## ▼ Backlog (37 of 149 issues visible)

BMG-15	As a consumer, I want to search for a parking spot in a location at a time I specify so I can park my car close to my destination.	AS A CONSUMER I WANT TO SEAR...
BMG-16	As a consumer, I want to see which parking spot is available/occupied so I can know which spot I can choose.	AS A CONSUMER I WANT TO SEAR...
BMG-36	As a consumer, I want to be able to register my car details to my account so my car can be identified by the system.	AS A CONSUMER I WANT TO RENT...
BMG-18	As a consumer, I want to specify the time frame I want to rent the parking spot so I don't have to pay more than what I need to.	AS A CONSUMER I WANT TO RENT...
BMG-19	As a consumer, I want to be able to see how much I am paying for the parking spot depending on the check in and check out time so I can know if it is an acceptable price.	AS A CONSUMER I WANT TO RENT...
BMG-26	As a consumer, I want to be able to book a parking spot so the spot is available to me.	AS A CONSUMER I WANT TO RENT...
BMG-25	As a consumer, I want to see a list of parking spot options after I search so I can know which parking spots are within the area.	AS A CONSUMER I WANT TO SEAR...
BMG-27	As a consumer, I want to be able to cancel my booking so I can change my mind.	AS A CONSUMER I WANT TO RENT...
BMG-30	As a consumer, I want to be able to view the address of a parking spot so I can know whether it is a suitable choice for myself.	AS A CONSUMER, I WANT TO BE A...
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BMG-42	As a provider, I want to be able to register a new car space so that I can earn extra income	AS A PROVIDER, I WANT TO BE AB...
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BMG-46	As a provider, I want to be able to see my past bookings so I can see who rented each space	AS A USER, I WANT TO VIEW MY P...
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BMG-74	As a user, I want to be able to delete my account when I don't want to use services anymore so that I can make sure personal information from my account does not persist in the system.	AS A USER, I WANT TO HAVE AN A...
BMG-75	As a user, I want to be able to login to the system with my account details so that I can access the system to use the services.	AS A USER, I WANT TO HAVE AN A...
BMG-76	As a user, I want the system to be able to remember my login status so that I don't need to login repeatedly every time I access the system.	AS A USER, I WANT TO HAVE AN A...
BMG-80	As a user, I want to be able to use the system as Consumer so that I can register my car and find a parking place.	AS A USER, I WANT TO BE ABLE TO...
BMG-81	As a user, I want to be able to use the system as Provider so that I can register a place to rent.	AS A USER, I WANT TO BE ABLE TO...
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# The sprints structure

We have chosen to adopt the 5 sprints structure suggested in the course resources.

## Sprint 1

▼ BMG Sprint 1 7 Mar – 13 Mar (9 issues)	
■ BMG-72	As a user, I want to be able to create an account so that I can access the system to use the car space sharing services. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
■ BMG-75	As a user, I want to be able to login to the system with my account details so that I can access the system to use the services. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
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■ BMG-74	As a user, I want to be able to delete my account when I don't want to use services anymore so that I can make sure personal information from my account does not persist in the system. <a href="#">AS A USER, I WANT TO HAVE AN A...</a>
■ BMG-80	As a user, I want to be able to use the system as Consumer so that I can register my car and find a parking place. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>
■ BMG-81	As a user, I want to be able to use the system as Provider so that I can register a place to rent. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>
■ BMG-82	As a user, I want to be able to use the system as Admin so that I can do system administrative jobs to make services available to all the other non-Admin users without any problems. <a href="#">AS A USER, I WANT TO BE ABLE TO...</a>

**Start Date:** 07/03/2022 (Monday Week 4) -

**End Date:** 13/03/2022 (Sunday Week 4)

**Duration:** 1 week

## Sprint 2

**Start Date:** 14/03/2022 (Monday Week 5)

**End Date:** 27/03/2022 (Sunday Week 6)

**Duration:** 2 weeks

## Sprint 3

**Start Date:** 28/03/2022 (Monday Week 7)

**End Date:** 03/04/2022 (Sunday Week 7)

**Duration:** 1 week

## Sprint 4

**Start Date:** 04/04/2022 (Monday Week 8)

**End Date:** 10/04/2022 (Sunday Week 8)

**Duration:** 1 week

## Sprint 5

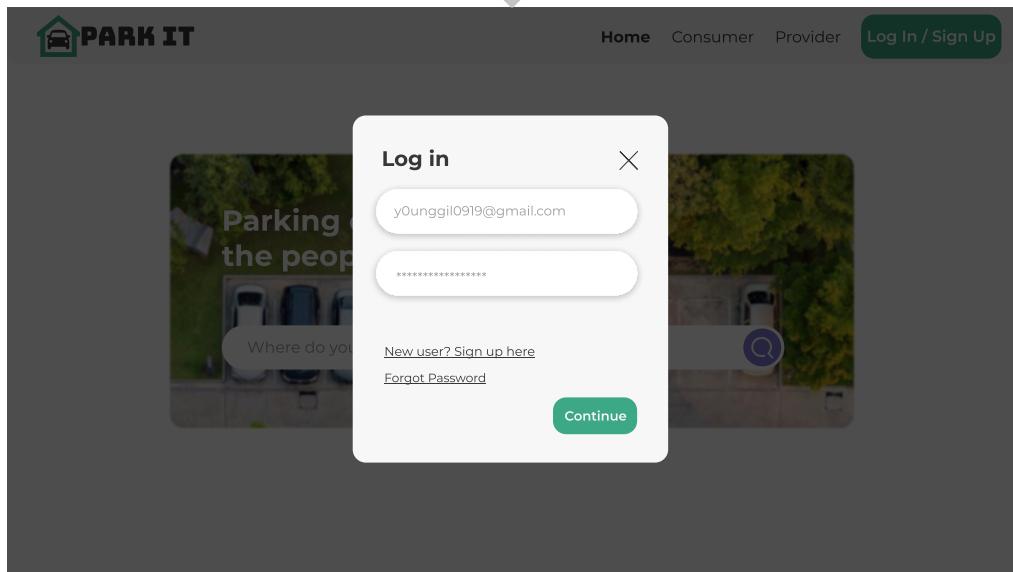
**Start Date:** 11/04/2022 (Monday Week 9)

**End Date:** 16/04/2022 (Sunday Week 9)

**Duration:** 1 week

# The interface and flow diagrams

## **User storyboards**



PARK IT

Home Consumer Provider Log In / Sign Up

**Log in**

X

y0unggil0919@gmail.com

\*\*\*\*\*

New user? [Sign up here](#)

[Forgot Password](#)

Continue

PARK IT

Home Consumer Provider Log In / Sign Up

**Sign up**

Username \*  Check Username should be less than 20 characters

First name \*  Last name \*

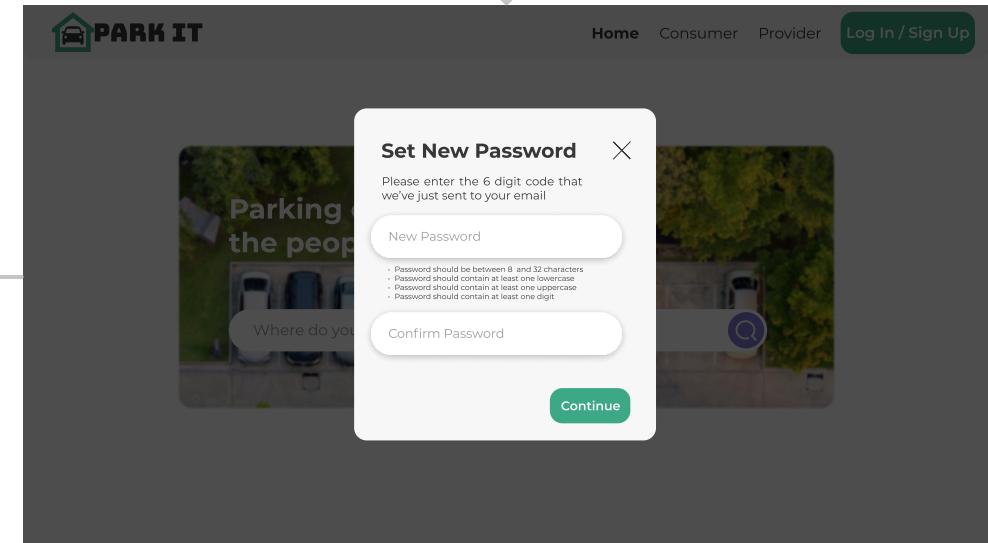
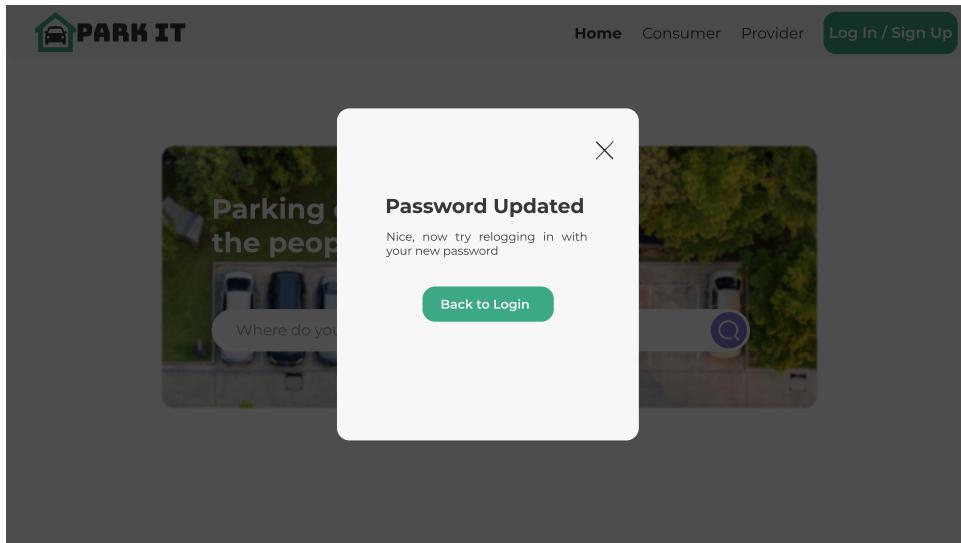
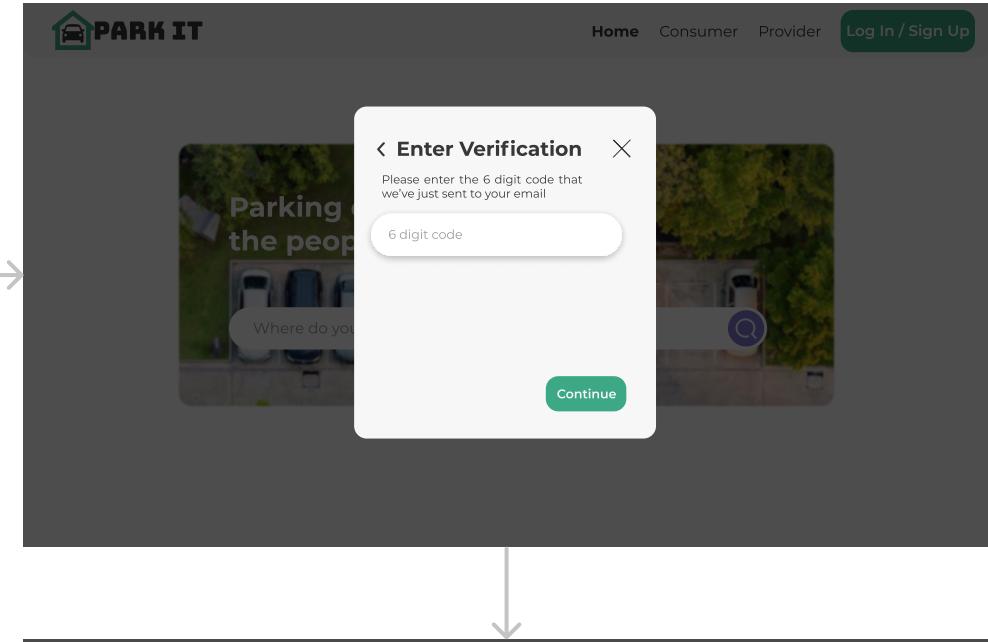
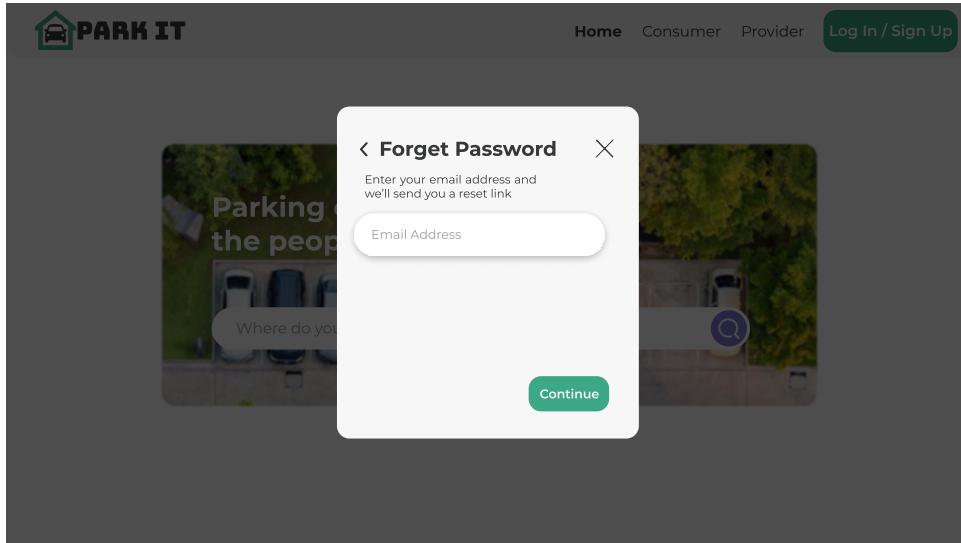
Password \*  Confirm Password \*   
• Password should be between 8 and 51 characters  
• Password should contain at least one lowercase  
• Password should contain at least one uppercase  
• Password should contain at least one digit

Phone number \*  Send Enter 6 digits

Email address \*  Send Enter 6 digits

Admin authentication code

Sign Up Cancel



## **Consumer storyboards**



Home Consumer Provider Log In / Sign Up



Home Consumer Provider



Account Details

Consumer History

Provider History

Favourites

Logout

Account Details

First name: Tom

Last name: Lee

Phone number: +61400000000

Email address: tom@tomlee.com.au

Basic Account Details

BIN: 1234567890

Account Number: 1234567890

Expiry Date: 31/12/2023

Payment Details

Card Number: 1234567890123456

Expiry Date: 31/12/2023

CVV: 123

Save

Cancel



Home Consumer Provider



MY FAVOURITES



Stewart Street

\$24/HOUR



Clearwater Street

\$5/HOUR



St. John's Park

\$5/HOUR



Home Consumer Provider



Account Details

Consumer History

Provider History

Favourites

Logout



Home Consumer Provider



Consumer History

Activity ID: 1234567890

Parking Spot Address: 123 Main Street, Sydney, NSW, 2000

Date: 20/10/2021 - 21/10/2021

Rating: 5 stars

Review: Great place to park!

Comments: None

Save

Cancel



Home Consumer Provider



Provider History

Activity ID: 1234567890

Parking Spot Address: 123 Main Street, Sydney, NSW, 2000

Date: 20/10/2021 - 21/10/2021

Rating: 5 stars

Review: Great place to park!

Comments: None

Save

Cancel



Home Consumer Provider



WRITE A REVIEW



St. John Park

31 Lagoon Road, Curl Curl, 2096

\$32 PER HOUR / \$190 PER DAY

Rating:

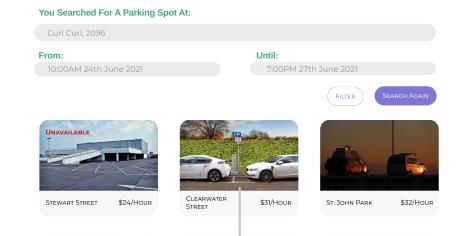
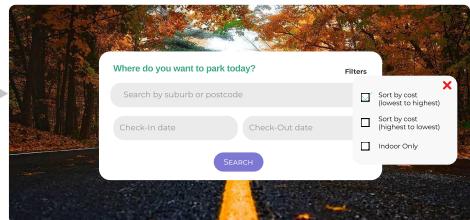
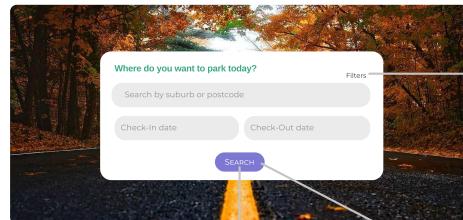


Comments:

Submit

Parking Spot Dimensions:

3m x 1.9m



You Searched For A Parking Spot At:

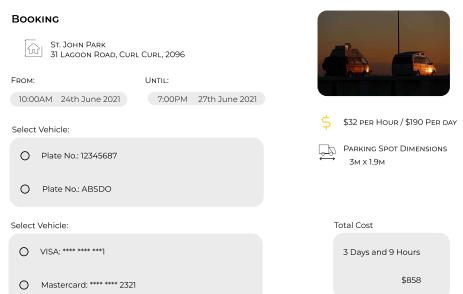
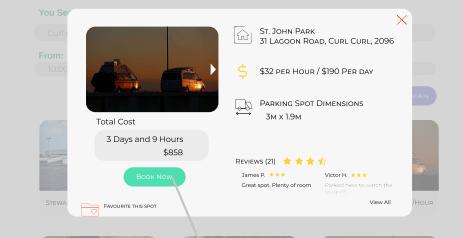
Curl Curl, 2096

From: 10:00AM 24th June 2021

Until: 7:00PM 27th June 2021

SORRY, WE WERE UNABLE TO FIND ANY AVAILABLE PARKING SPOTS THAT MATCHES YOUR CURRENT SEARCH

PLEASE TRY ANOTHER SEARCH

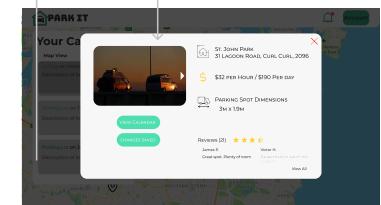
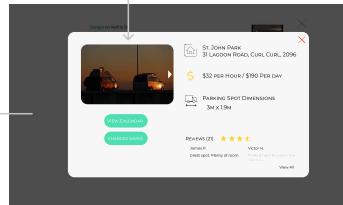
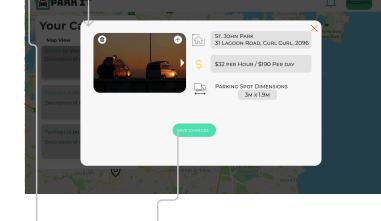
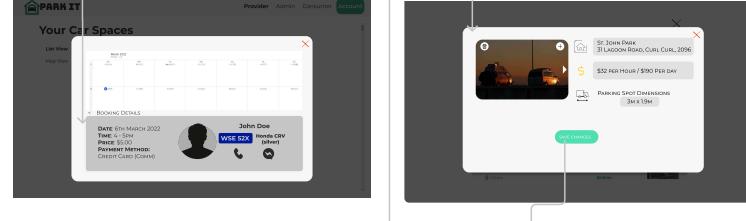
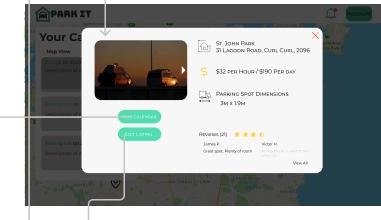
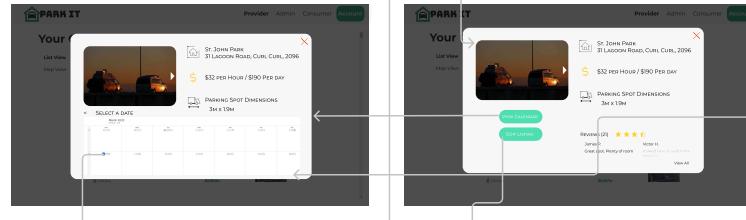
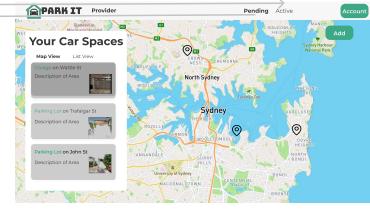
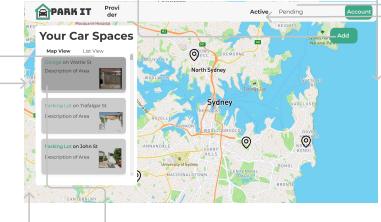
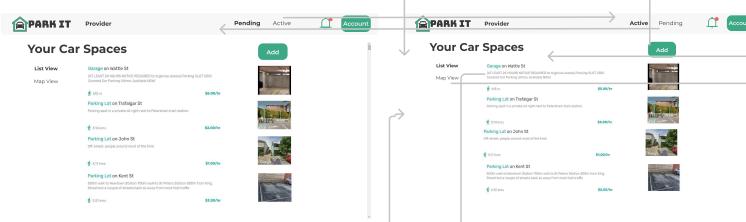
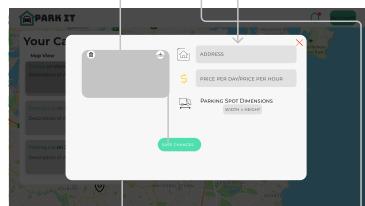
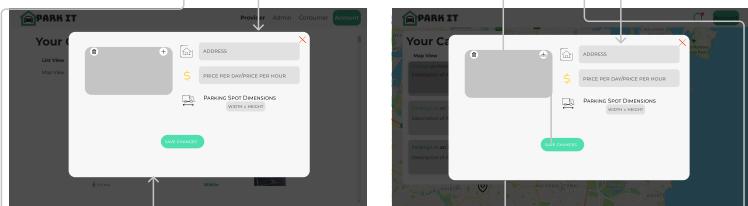
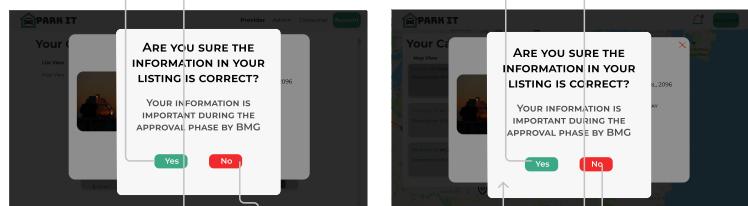
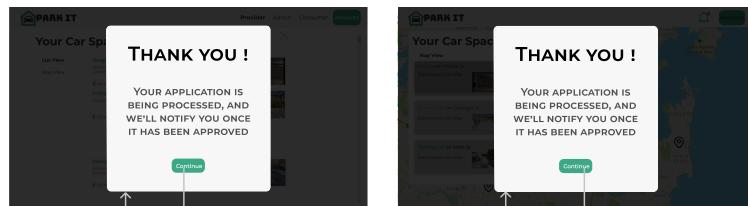


## THANK YOU !

YOU HAVE BOOKED A SPOT AT:  
St. JOHN PARK  
31 LAGOON ROAD, CURL CURL, 2096

FROM: 10:00AM 24TH JUNE 2021  
UNTIL: 7:00PM 27TH JUNE 2021

## **Provider storyboards**



## **Administrator storyboards**

PARK IT		Admin	Consumer	Provider	Account
 Applications	●				
 Management					
 Transactions					
 Banking					
<b>Garage on Wattie St</b>					
[AT LEAST 24 HOURS NOTICE REQUIRED to organise access] Parking SLOT CBD! Covered Car Parking Ultimo. Available NOW!					
 615 m	\$5.00/hr				
<b>Parking Lot on Trafalgar St</b>					
Parking spot in a private set up right next to Petersham train station.					
 3.94 kms	\$2.00/hr				
<b>Parking Lot on John St</b>					
Off-street, people around most of the time					
 3.97 kms	\$1.00/hr				
<b>Parking Lot on Kent St</b>					
800m walk to Neutral Bay Station. 700m walk to St Peters Station. 500m from King Street but a couple of streets back so away from main foot traffic.					
 2.01 kms	\$2.00/hr				



PARK IT		Admin	Consumer	Provider	Account
 Applications	•				
 Management					
 Transactions					
 Banking					
<b>Garage on Wattie St</b>					
[AT LEAST 24 HOURS NOTICE REQUIRED to organise access] Parking SLOT 080 Covered Car Parkings Ultimo. Available NOW!				<a href="#">View Current Booking</a>	
 415 m	\$9.00/hr			<a href="#">View Past Bookings</a>	
<b>Parking Lot on Trafalgar St</b>					
Parking spot at a private lot right next to Petersham train station.				<a href="#">View Current Booking</a>	
 3.14 kms	\$2.00/hr			<a href="#">View Past Bookings</a>	
<b>Parking Lot on John St</b>					
Off-street, people around most of the time				<a href="#">View Current Booking</a>	
 5.17 kms	\$1.00/hr			<a href="#">View Past Bookings</a>	
<b>Parking Lot on Kent St</b>					
500m walk to Newtown Station 700m walk to St Peters Station 300m from King Street but a couple of streets back so away from most foot traffic				<a href="#">View Current Booking</a>	
 2.01 kms	\$2.00/hr			<a href="#">View Past Bookings</a>	



The screenshot shows the PARK IT dashboard with the following sections:

- Applications**: Shows 1 application.
- Management**: Shows 14 management tasks.
- Transactions**: Shows 1 transaction.
- Banking**: Shows 1 banking entry.

**Banking Dashboard**  
1:40 PM at 4th March 2022

Earnings today	Earnings this month
\$74.00	\$1023.00

Earnings this week	Earnings year to date
\$402.00	\$6012.00

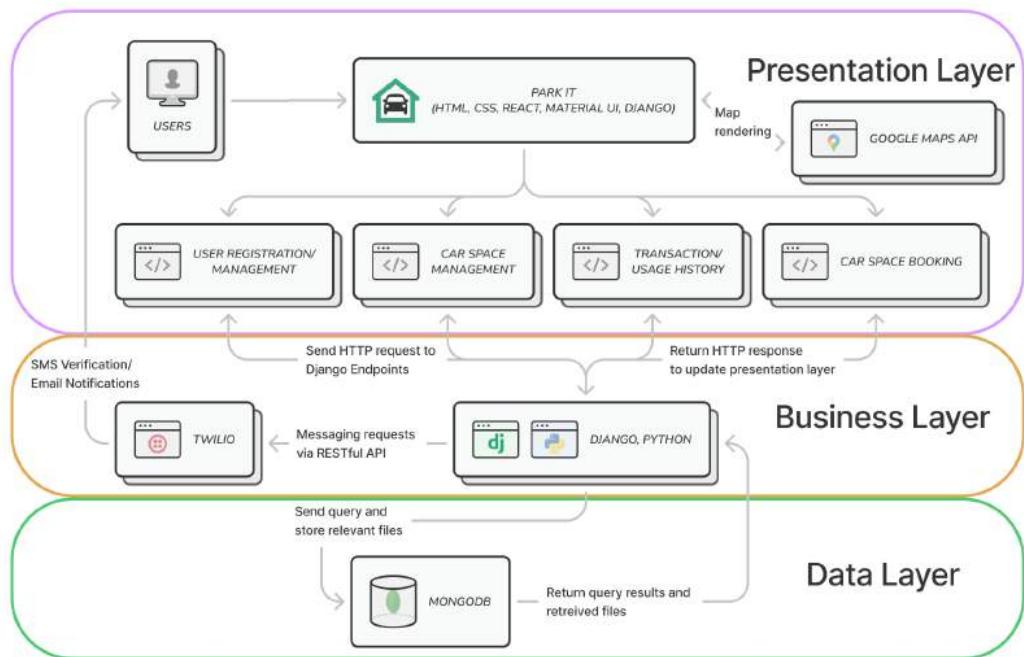
**Earnings by month**

**Bank Account Details**  
052-4095-8723

**Change**

# The system architecture

## System architecture diagram



## Presentation layer

Park It's users interact with our platform via our web application which we have built using React and written in HTML. Our web application is styled with CSS and Material UI. Any changes and actions performed by users will then be sent to a Django endpoint in our business layer. Conversely, if the frontend of our system needs to be updated to reflect a changed state, HTTP responses will be sent back to the presentation layer to be displayed to the user.

## Business layer

Our business layer will be written in Python and is responsible for implementing the core functionalities. This includes implementing the endpoints necessary for sending and receiving HTTP responses via Django as well as communicating with our data layer. Additional functionalities like emailing users and sending SMS verification texts will be handled by Twilio. PyMongo will be responsible for sending queries to MongoDB and processing the returned search results for the presentation layer.

## Data layer

Our data layer will utilise MongoDB to manage persistent data including accounts, transactions, availability and bookings among others. Interfacing with the business layer will be handled by PyMongo, and queries will be returned from the data layer to the business layer to be processed.

## Technologies/Languages

### Front-end

**HTML** will be the language used to display the pages of the web application.

**CSS** will be used to style the web application.

**React** will be used to render the user interface and UI components.

**Material UI** will be used to provide UI components for the web application.

**Django** will be the web framework used to connect the presentation and business layers.

### Back-end

**Python** will be used to write the backend and will handle the implementation of the business logic of the web application.

**PyMongo** will be used to interface with the data layer and interact with the databases and return the results of database queries.

## Database

**MongoDB** will be used to handle persistent data and return queries to the business layer for processing.

## Third-party functionality

**Twilio** will be used to handle email and SMS services, including for verification purposes.

**Google Maps** will be used to render dynamic maps and calculate distances between locations to find nearby car spaces.

## Actors

### Users

Users register accounts to use the service and are effectively a superclass of the other user types (Consumer, Providers and Administrators). The general functionality of the user is to manage their account and monitor transaction and usage history. It is important to note that every User has both Consumer and Provider functions available to them, and also Administrator functions with the proper authentication. This is so only one unified account is needed to access Park It's full functionality.

### Consumers

Consumers are a subclass of Users and their primary functionality is to search for and then rent car spaces. Consumers are able to add car spaces to their favourites list, and leave reviews on car spaces they have previously rented, both in the form of a rating and a written review.

### Providers

Providers are another subclass of Users and their primary functionality is to create and manage listings for their car spaces to be rented out by Consumers. Providers are also able to update their listings and communicate with Consumers in order to ensure a high level of service.

### Administrators

Administrators have elevated permissions and their primary functionality is to manage the platform. Administrators can for example modify or delete car space listings, and monitor all transactions and system usage history to ensure the system is running correctly.

## References

NRMA & DIVVY (2019). *Smarter Parking.*

<https://www.mynrma.com.au/-/media/documents/smarter-parking.pdf>

PARKHOUND (2022), Parkhound

<https://www.parkhound.com.au>

SHARE WITH OSCAR (2022), Share with Oscar

<https://www.sharewithoscar.com.au>