

SW Engineering CSC648/848 Spring 2019

The Garage

Group 06

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Milestone 1

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Revisions					
Revision	Description	Date	Author	Checked By	Approved By
A	Initial Design	2/27/2020	Group 06	-	-

Executive Summary

The Garage is an application that brings a revolutionary approach to the way we look for park. One of the most frustrating tasks for many individuals, especially those that live in densely populated areas, is finding parking near your destination. Parking, whether that be at work, hitting The City for a night out, or in your own neighborhood, can seem like a daunting task when there simply isn't enough parking to go around. Both public and private sectors have taken advantage of this parking crisis with cities increasing the number of meters that rely on coins; an inconvenient form of payment for most, or privately owned parking structures that charge outrageous prices.

The Garage aims to bring new resources to this need by offering a database of private parking spots, specifically privately owned garages or driveways. Allowing users to go onto our web application, view all the spots that are listed near their destination, then select the parking spot that meets their needs (i.e. availability, vehicle size, and time). What makes our application unique is that it also allows for users make use of their own garage or driveway parking for rent. This allows us to continue to grow our inventory of parking spots, while allowing our users to make some money and meet their parking needs.

Main Use Cases

User Categories

Hosts

A Host can create Parking Spots at their Occupancy; which they can Rent to Guests who wish to Rent their Parking Spots. A Host has an interest in generating income by Renting their Parking Spots in their Occupancy. Hosts will need to possess general skills needed to manage an online account. A pain point for Hosts will be in creating and configuring their Parking Spots. Hosts may need to Cancel Reservations and will rely on online payment services in order to collect payment. An additional pain point for Hosts will be unblocking Blocked Parking Spots.

Guest

A Guest can Search for Available Parking Spots in a given location. Guests can Reserve and Agree to pay the Rental Fee for the time their Vehicle occupies the Parking Spot. A Guest has an interest in procuring reliable Parking in their selected location. A pain point for Guests is that Parking Spots that are Occupied will not be available for Reservation. Additional pain points for Guests is finding that the Parking Spot that they Reserved is Blocked. Guests will need to update the Status of a Parking Spot to Blocked and find alternative parking. A Guest will need to possess the general skills needed to create an online account as well as submitting Payment online.

User Registration

A User can create an account from the homepage. The user will select the category of Account they wish to create. The Account types include Hosts and Guests.

Creating Parking Spots at an Occupancy

A Host can create Parking Spots in their Occupancy. The Host can set the Rental Rate for each Parking Spot.

Configuring a Parking Spot

A Host is able to Configure each Parking Spot in their Occupancy by setting the Rental Rate and the Vehicle Categories that can Occupy the Parking Spot.

Configuring a Vehicle

A Guest is able to Configure a Vehicle. This includes the Vehicle size and methods for identifying the Vehicle.

Viewing the Parking Spot Status

A Host is able to see the Status of the Parking Spots in their Occupancy. The Status of the Parking Spot can include: Available, Reserved, Occupied, Blocked.

Cancelling a Reservation

A Host who wishes to Cancel a Reservation can do so by going to the Parking Spot and updating the Status of the Parking Spot to Available or Blocked.

Finding a Parking Spot

A Guest is able to Search for Parking Spots by providing a location on a map.

Reserving a Parking Spot

A Guest is able to Reserve an Available Parking Spot for their use. When the Guest arrives at the Parking Spot, the Rental Rate is applied until the Guests checks-out of the Parking Spot.

Changing the Status of a Parking Spot to Blocked

A Guest can change the Status of a Parking Spot that they have Reserved to Blocked; If they find that the Parking Spot is not Available when they attempt to Occupy the Parking Spot.

Checking out of a Parking Spot

A Guest is able to Check-out of the Parking Spot that they have Occupied by Checking-out of the Parking Spot in the Application.

Requesting Payment

A Host is able to request payment from a Guest via the Application.

Submitting Payment

A Guest is able to submit payment for their use of a Parking Spot to the Host online by using an online payment service. e.g; PayPal

Submitting a Rating

Hosts and Guests are able to submit a Rating for each Reservation

Viewing the Fees Owed

A Guest is able to view a report of the current fees owed to Hosts

Viewing the Rental Fees that are Due

A Host is able to view a report of the current Rental fees that are due from Guests

Use Case Diagram



Main Data Items and Entities

Occupancy

A location on a map that has been created by a Host to offer Parking Spots for rent

Parking Spot - The measure of what the app is selling. This indicates a place where the driver can park their car.

Available - a parking spot that is available for reservation.

Occupied - a parking spot that has been reserved by a different user.

Reserved - a parking spot that has been booked by the current user.

Blocked - a parking spot is blocked and cannot be occupied

Vehicle

Any automobile of a supported size. This can include different sub-categories that indicate the size of said vehicle.

Categories

Motorcycle - an automobile with two wheels.

Compact - a smaller automobile that will fit in tighter spaces. (Volkswagen Jetta)

Full Size - a standard size automobile. (Toyota Camry)

SUV - larger automobiles that require more space (Chevrolet Suburban)

Status

Parked - Vehicle has arrived at the designated parking spot during their allotted time frame

In transit - Vehicle is not currently in their designated parking spot during their allotted time

Overstaying - Vehicle is in a designated parking spot past allotted end time

Waiting - Another vehicle is currently in the same designated parking spot

Users

All users of The Garage. Each sub-classification is not mutually exclusive from others, meaning a user can be both a Host and a Guest.

Host - a user that posts a parking spot for reservation by Guests. This user has privileges to create parking spot listings, edit parking spot listings, and report Guests.

Guest - a user with a registered vehicle that is looking for a parking spot. This user has privileges to access the database to search for parking spots, report parking spots, and reserve parking spots.

Admin - a user with moderation privileges. This user has the capability to take action on hosts, Guests, and parking spots. Given the nature of this role, this will likely only consist of *Garage* employees.

Rating - the credibility of any registered user using *The Garage*.

Web Application

The visual presentation of *The Garage*.

Listing - the visual representation of the parking spot posted by a host.

Time Table - a visual representation of the reservation availability.

Functional Requirements

Users

1. The system shall send a Confirmation email when a user signs up.
2. The system shall enable users to view a report of rental fee income.
3. The system shall enable users to view a report of fees.
4. The system shall enable the user to reset their password.
5. Users shall be able to create an account.
6. Users shall be able to sort listings by price, distance, and availability
7. The system shall enable users to edit their own information.
8. Users shall be able to search a location and view available spots nearby
9. Users shall be able to click on a listing to open a drop-down menu listing additional information about the listing

10. Users shall be able to filter the search result based on price range, distance, vehicle size and availability.

Guests

11. Guests shall receive an confirmation email when they have Reserved a Parking Spot.
12. Guests shall be able to extend more time for parking.
13. Guests shall receive an alert when the end time is approaching.
14. Guests shall be able to interact with the parking spot's respective time table during reservation.
15. Guests shall be able to manage vehicles under their account
16. Guests shall be able to view previously booked spots, allowing to review dates, times, and payment summaries
17. Guests and Hosts shall be able to rate each other upon different criteria (i.e. spots actual availability, safe/security of spot, experience)
18. Guests and Hosts shall be able to cancel the parking spot booking.
19. Guests and Hosts shall be able to message each other regarding the booked parking spot

Hosts

20. Hosts shall be able to upload their own available parking spots for a fee
 21. The system shall be able to verify the parking spot Host's Information(i.g. ID, driver license)
 22. Hosts shall be able to upload pictures of their parking spot listing
 23. Hosts shall be able to adjust the pricing of their parking spot
 24. Host shall be able to change the availability status of a parking spot
 25. Hosts shall be able to remove their own listings from the database
 26. Hosts shall be able to set user viewing restrictions based on rating. I.e. A user with a 3.5 star rating looks for a parking spot, but cannot see Jim's listing, as he set his spot to only be visible to people with a 4 star rating or above.
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Non-Functional Requirements

1. The system shall charge the user if they overstay.
2. The system will not process passwords without a set strength.

3. The system will not allow the user to proceed with account creation until requirements are met
 4. The system will prompt the user as to which requirements are not met during form filling
 5. The system will not record the user's location if permission is not granted
 6. The system will not record the user's payment information if permission is not granted
 7. Users under 18 will not be able to reserve parking spots
 8. Users can pay for parking through paypal
 9. When payment information submitted by the user is wrong, the system will hold the reserved parking spots for the user for 30 min.
 10. Users can get discounts by entering promo codes
 11. All monetary amounts must be accurate to two decimal places
 12. Password shall never be viewable at the point of entry or at any other time unless prompted
 13. The system will not allow hosts to access users' payment methods.
 14. The system will not allow guests to change hosts' fee amount.
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Competitive Analysis

Feature	Spot Hero	BestParking	ParkMe	The Garage
pricing	\$13.00/hr	\$30.00/hr	\$10.00/hr	\$10.00/hr
weakness	Mix public and private parking	Mix public and private parking	information is not updated in time	Low user base
strengths	There are mobile applications , users are more convenient	A large number of parking lots, Users can have more choices	Cheap price	Cheaper prices, more safety, and your parking space is closer to your destination
Social media	Google promotion	Google promotion	Google promotion	instagram, twitter.

As listed in the above chart, *The Garage* offers lower prices and more security than its competitors. At the same time, the parking spots we offer are similar to Airbnb's private rental rooms but more convenient than public parking lots. In other words, as long as there are people living near your destination, we can guarantee the highest parking convenience. An advantage over our competitors lies in private car parking which is safer than public parking. Our weakness is that we have a smaller user base than the other three sites. Therefore, early publicity and word of mouth is particularly important. But for this shortcoming, we have an advantage compared to other sites. The campus should be our potential service objects since our team members are SFSU students. Because of this, we fully understand that convenience and affordability are crucial to the success of a college student's career. Our competitors do not understand the struggle of finding a parking spot or risk being late to class by parking far away.

We connect with our users because we are our users.

High Level System Architecture and Technologies Used

Server Host: Amazon Elastic Compute Cloud (Amazon EC2) t2.micro

Operating System: Ubuntu Server 18.04.3 LTS

Database: MySQL 14.14 Distrib 5.7.29 for Linux

Web Server: nginx 1.14.0

Server-Side Language: Javascript

Additional Technologies:

Javascript Library: jQuery 3.4.1

IDE: IntelliJ

Web Analytics: Amazon Kinesis Data Analytics

Team Member Responsibilities

Ray Rees Jr	Team Lead Document Master Front-end Team Member (Primary)
Brad Peraza	Frontend Lead
Jiahong Zhan	Backend Lead

	Front-end Team Member
Mesoma Esonwune	Github Master Back-end Team Member Front-end Team Member (Primary)
Roshni Varghese	Front-end Developer (Primary)
Joel Samaniego Campos	Database Master Backend Team Member (Primary) Front-end Team Member

Checklist

Status	Description
Done!	Team found a time slot to meet outside of the class
Done!	Github master chosen
Done!	Team decided and agreed together on using the listed SW tools and deployment server
Done!	Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing
Done!	Team lead ensured that all team members read the final M1 and agree/ understand it before submission
Done!	Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)