NOTE: This is a compilation of the Product plan I assembled with my team for Stanford's Fundamentals of Product Management course. This is our development plan for a product we ideated, and includes everything from user stories, to landing pages, wireframes, and budgetary considerations.

EZPark Product Development plan

Where you want. When you want. How you want.

Team: Team Pending Name

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Problem Definition

Finding an available and affordable parking spot that is close to your destination in an area you're unfamiliar with (e.g. a new neighborhood you've never been to before) efficiently.

Research

Hypothesis

1. Parking is a huge issue for people in large metropolitan areas
2. People who drive frequently are more likely to experience parking pains
3. People who live close to their workplace are less likely to experience parking pains

Research Proposal

Our research comprised of two distinct parts:

1. An online survey was sent out to various people in the Fundamentals of Project Management class, friends, and family.
2. Based on those survey results, we modified the questionnaire to understand the interviewee's experience with parking in depth. This includes understanding how painful of an experience parking is for them and what makes that experience so painful.

Online Survey

Demographics / Psychographics

- What gender do you identify with?
- How old are you?
- What city are you located in?
- What is your annual income?
- Do you frequently use apps on your smartphone?
- Do you own a car?
- How many days out of the week are you driving?

Problem Identification

- How much time do you spend finding parking a week?
- How much money are you spending on parking each month?
- Have you experienced any of the following?
    - Difficulty finding a parking structure
    - Difficulty finding an available spot in a parking structure
    - Not having enough cash for a cash only parking pay station
    - Losing a parking ticket for a parking structure
- On a scale of 1-10 with 10 being the highest, how much of a pain point is parking for you when you have a time constraint (e.g. deadline, appointment, event)?

Current Solution

- Have you used any tools or apps to help you find parking?

Willingness to Pay

- If a parking locator was available, would you use it?
- Would you pay for an app that allows you to find nearby available parking?

In-Person Interview Script

Demographics / Psychographics

- What is your gender, age, location, and occupation/range of income?
- Do you own a car?
- Do you frequently use apps on your smartphone?
- How often do you commute/drive?

Problem Identification

- Can you tell me about your experiences with finding parking? Walk me through the process.
- How much time do you spend finding a parking spot? (give range)
- How much money are you spending on parking each month?
- What is the most difficult part of your experience?

Current Solution

- Have you ever used any tools/apps to help you find parking? If so, what do you use?
- Where do you generally park?

Parking Desires

- What are your top 3 requirements when finding a parking spot?

Willingness to Pay

- If a parking locator was available would you use it? Would you be willing to pay for it?

Results

A live dynamic dashboard is available for the survey results. Filters are available on the right hand side as a multi-checkbox dropdown menu. Multiple filters can be applied at once to filter the entire dashboard.

Our interview results indicate that the amount of days someone drives within a week does not necessarily correlate to how painful parking is for them. Rather, **it is their lack of familiarity**

with the destination that causes the pain. Even if someone drives 5 days a week, parking might not be a pain point if they are already familiar with that area and know where to park or have a spot assigned to them. With that being said, even if interviewees frequently commute to the same location, parking can still be a pain point if there are limited parking spots available and they do not have a spot already assigned to them, People are also more likely to consider parking a pain point when they commute to a new location such as a new restaurant or bar that they want to try out.

Interviewees that do use tools or applications to find parking are currently using a combination of Google Maps and Yelp to locate parking structures. However, Yelp reviews often do not indicate parking prices or attributes (e.g. cash only, non-compacted spots, well lit) and the street view feature is only available on the desktop version of Google apps. As a result, they have to plan out parking in advance. Only one interviewee uses SpotHero, our main competitor. If they are unable to find parking, interviewees will either cancel/reschedule their plans or take an Uber.

Our target audience's top concerns include finding:

1. **Affordable parking**
2. **Parking close to their destination**
3. **A safe area to park in**
4. **Non-compacted spots**

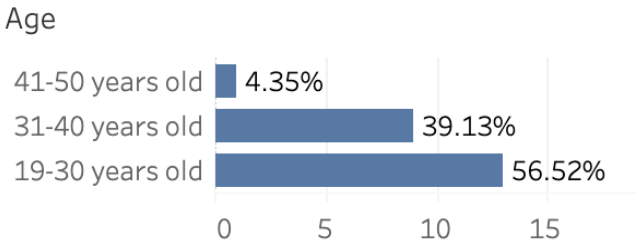
All of our interviewees would use a parking locating tool. However, they aren't willing to pay to download an app, but would be **willing to pay a service fee to reserve spots or use for as credits for different parking structures.**

Target Profile

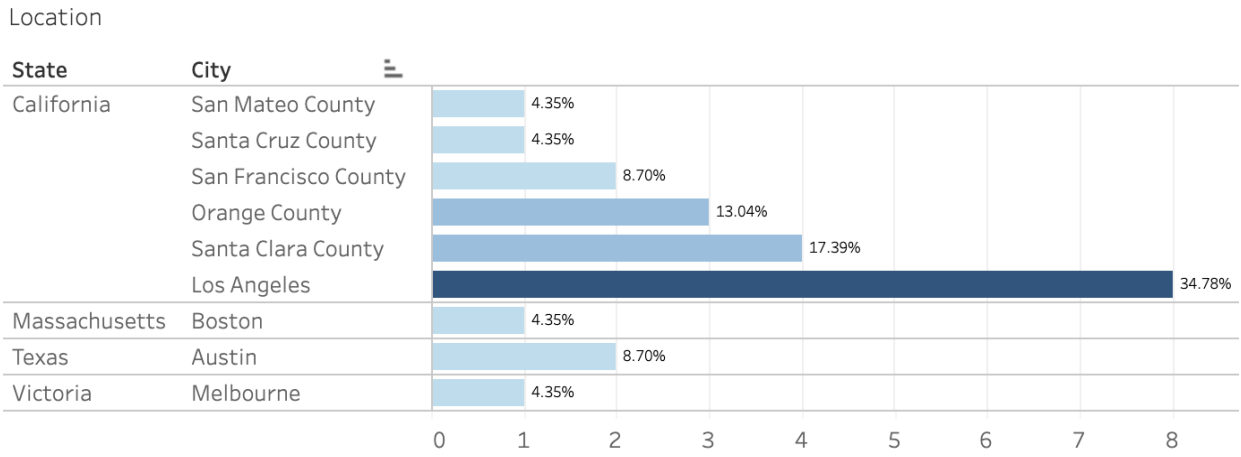
Demographics

Our target demographics are people that are:

- 19-35 years old
- Frequently driving to new areas (e.g. a different city/county, a new restaurant in another neighborhood)
- Living in a densely populated area
- Spending more than $5 on parking each month
- Having difficulty finding parking



Based on our survey results, survey takers between 19-20 years old and 31-40 years old consider parking one of the biggest pain points. On a scale of one to ten with ten being the biggest pain point, 23 (70%) survey takers rated parking at a pain point of seven or higher out of the 33 survey takers that answered the question. Of those 23 survey takers, 56% were between 19-30 years old and 39% was between 31-40 years old. To narrow down our scope, we selected a target audience that was between 19-35 years old.
NOTE: This question was added in late and two survey takers submitted a response before this question was available.



The majority of those survey takers were also from densely populated areas. Los Angeles was the largest region with 10,105,518 people based on the 2018 U.S. Census Bureau. Based on our survey the following ranked parking as a pain of 7/10 or more:

- 100% of survey takers from San Mateo county, Santa Cruz, Orange County, Boston, and Austin
- 73% of survey takers from Los Angeles
- 66% of users from San Francisco county and Santa Clara county

Psychographic Profile (Persona)

Our target persona, Zac, is always up-beat and on the go. He works in a big metro city but lives just outside of it so he travels to work in his car about four days out of the week, works from home on Friday's, and travels to various parts of the city at least one day of the weekend.

During the week, he drives up to work and has to find parking. He usually has his favorite spots but still sometimes struggles. Zac is a responsible worker so he often leaves about 15 to 20 minutes earlier than he needs to so he has time to find a parking spot and isn't late for work.

After work, Zac usually makes at least one more stop before heading home. Sometimes he goes to the gym, yoga or just to a nearby restaurant to hang out with friends and enjoy some delicious food. On the weekend, Zac can be found bouncing between different parts of the city visiting friends and family, going to lunches or running errands.

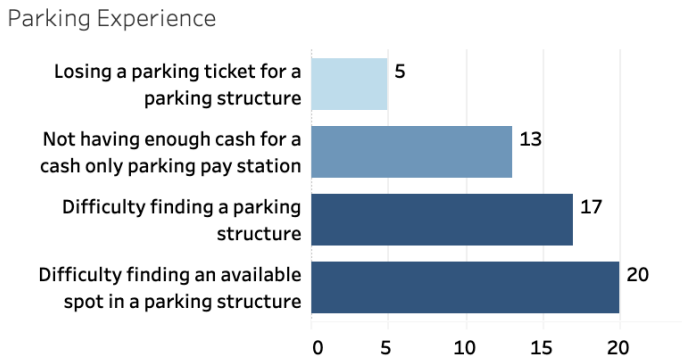
Zac is tech-savvy; he usually is the first of his friends to have the latest gadget or app. He reads reviews online and keeps up with the latest tech and sports news online through news websites, Reddit and Twitter. Zac thinks that there must of course be an app out there to help him with always having to find parking but he has yet to find it.

Current Experience

Zac currently tries to build in time for finding parking whenever he's moving between places and commitments. He knows a few spots that usually have space for him but they're not always open. When Zac arrives at his destination, he begins circling the area looking for street parking. He'll do this for about 10-15 minutes depending on how soon his next appointment is. As he drives around he'll look for parking, have to slow down to try read street signs and understand if he allowed to park there, and consider different spots based on how well his car will fit and how safe he feels parking there.

When Zac finally finds a spot he pays for the street parking and often has to walk a few blocks to get where he needs to go. Sometimes Zac simply can't find a parking spot so he resorts to an expensive parking garage nearby.

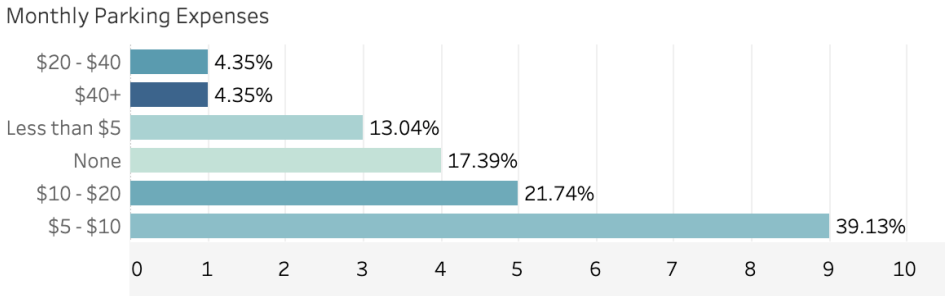
Pain



Of these 23 survey takers that rated the pain of finding parking as a seven or higher:

- 22% have lost a parking ticket to a parking structure before

- 57% have not had enough cash to pay for a parking station that only accepted cash
- 74% have difficulty finding a parking structure
- 87% have difficulty finding an available parking spot

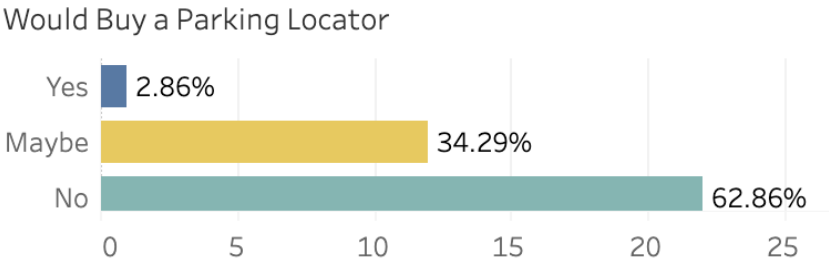


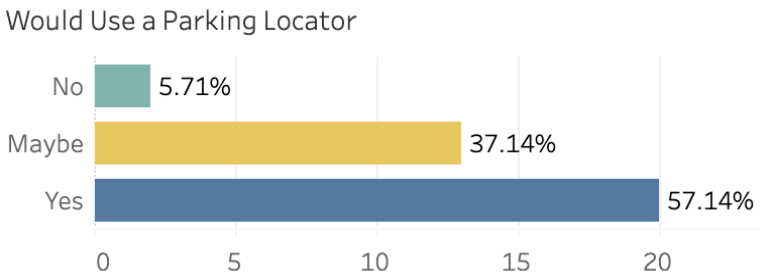
Roughly 83% of the 23 users spend more than $5 on parking each month.

Current Solutions

- Plan ahead by looking on Google Maps or Apple Maps for parking garages near the destination. Click to either view their website (if available) for pricing information or call the garage to see if they have space and how much it will cost.
- Use Google Street View or Apple's Look Around features to look for street parking near the destination. Try to look at the signs to see what limits are imposed on the parking spots.
- SpotHero

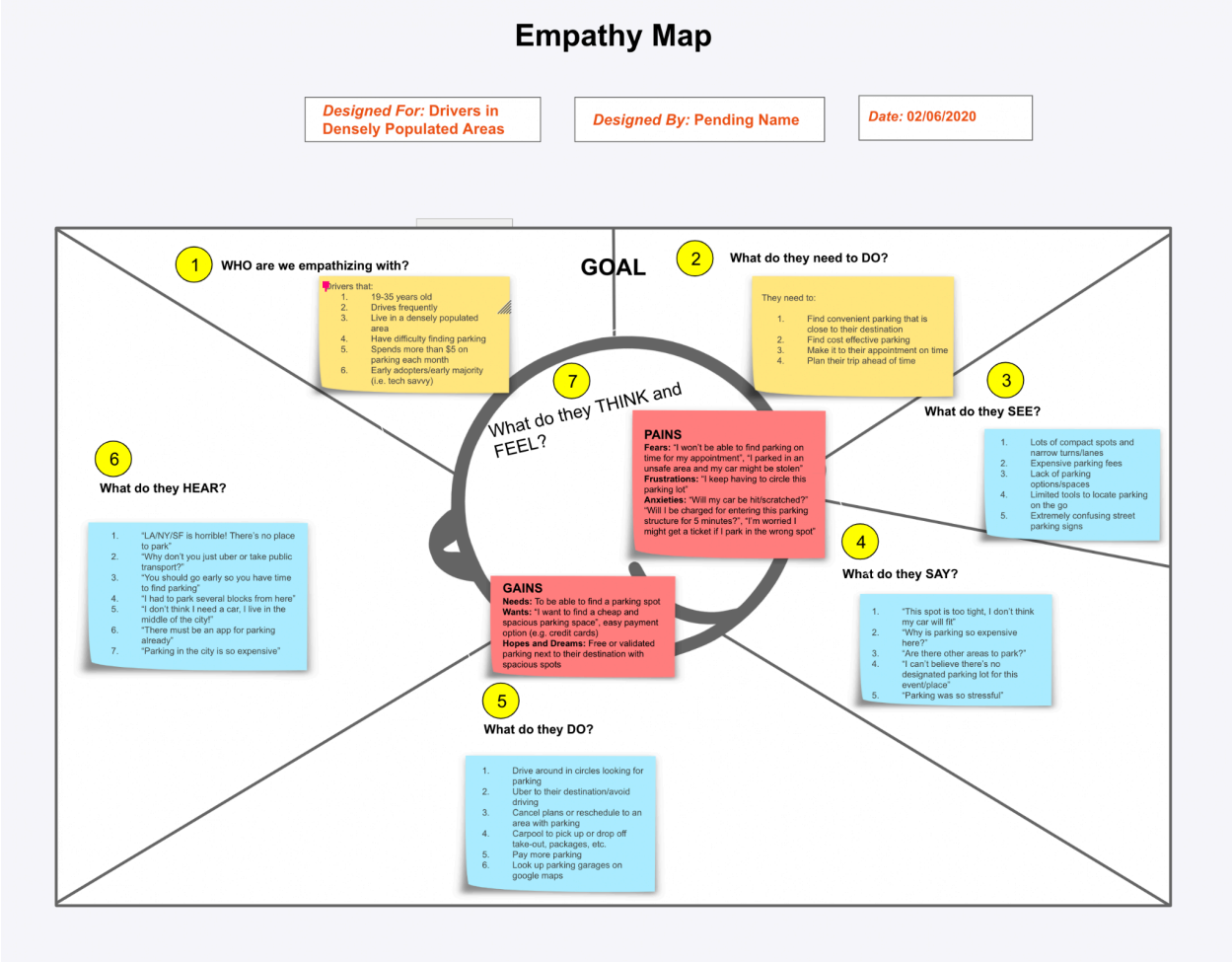
Value





Out of all the survey takers, 63% would not buy a parking locating tool. However, 57% of them would use a parking locating tool if it was available. This indicates that customers would not be willing to pay to download the app. In our sit down interview sessions, interviewees were willing to pay a reasonable price for a solution in terms of paying a monthly fee for parking garage credit or a service fee to reserve a spot (5-10% per parking reservation).

Empathy Map



WHO are we empathizing with?

Drivers that:

1. 19-35 years old
2. Drives frequently
3. Live in a densely populated area
4. Have difficulty finding parking
5. Spends more than $5 on parking each month
6. Early adopters/early majority (i.e. tech savvy)

What do they need to DO?

They need to:

1. Find convenient parking that is close to their destination
2. Find cost effective parking
3. Make it to their appointment on time
4. Plan their trip ahead of time

What do they SEE?

1. Lots of compact spots and narrow turns/lanes
2. Expensive parking fees
3. Lack of parking options/spaces
4. Limited tools to locate parking on the go
5. Extremely confusing street parking signs

What do they SAY?

1. “This spot is too tight, I don’t think my car will fit”
2. “Why is parking so expensive here?”
3. “Are there other areas to park?”
4. “I can’t believe there’s no designated parking lot for this event/place”
5. “Parking was so stressful”

What do they DO?

1. Drive around in circles looking for parking
2. Uber to their destination/avoid driving
3. Cancel plans or reschedule to an area with parking
4. Carpool to pick up or drop off take-out, packages, etc.
5. Pay more parking
6. Look up parking garages on google maps

What do they HEAR?

1. “LA/NY/SF is horrible! There’s no place to park”
2. “Why don’t you just uber or take public transport?”
3. “You should go early so you have time to find parking”
4. “I had to park several blocks from here”
5. “I don’t think I need a car, I live in the middle of the city!”
6. “There must be an app for parking already”
7. “Parking in the city is so expensive”

What do they THINK and FEEL?

<u>PAINS</u>

Fears: “I won’t be able to find parking on time for my appointment”, “I parked in an unsafe area and my car might be stolen”

Frustrations: “I keep having to circle this parking lot”

Anxieties: “Will my car be hit/scratched?” “Will I be charged for entering this parking structure for 5 minutes?”, “I’m worried I might get a ticket if I park in the wrong spot”

GAINS
Needs: To be able to find a parking spot
Wants: "I want to find a cheap and spacious parking space", easy payment option (e.g. credit cards)
Hopes and Dreams: Free or validated parking next to their destination with spacious spots

User Stories

Priority	User Stories	Category
1	As a parker, I want to find parking that is close to my destination so I don't have to walk far	Needs
2	As a driver, I want to be able to find cheap parking so that it doesn't impact me financially	Needs
3	As a parker, I want to find a parking spot quickly so I don't miss my event/appointment	Needs
4	As a parker, I want to find a safe location to park in so that my car does not get broken into	Needs
5	As a parker, I want to reserve a parking spot so that one is available by the time I get there	Needs
6	As a parker, I want to identify the number available spots before I enter a parking structure so that I know which garages are full	Wants
7	As a parker, I want to find spacious parking so that my car doesn't get scratched up	Wants
8	As a parker, I want the process to be devoid of stress so that it doesn't disrupt my day	Wants
9	As a parker, I want to find parking garages that offers an easy payment option (paying via app or credit card) so that I'm not restricted to where I can park	Wants
10	As a parker, I want to identify available facilities within a parking structure so that I am well informed and my needs can be addressed	Wants
11	As a parker, I want a rewards program so that I can earn points and rewards from parking in the same garage frequently	Wants

Hypotheses

We asked our interviewees for their top three requirements when finding parking. Parking cost and location were the top two requirements for our interviewees across the board. To identify

the third requirement, we conducted A/B testing on our landing page. In total, three different variants were used to test each of the following hypotheses:

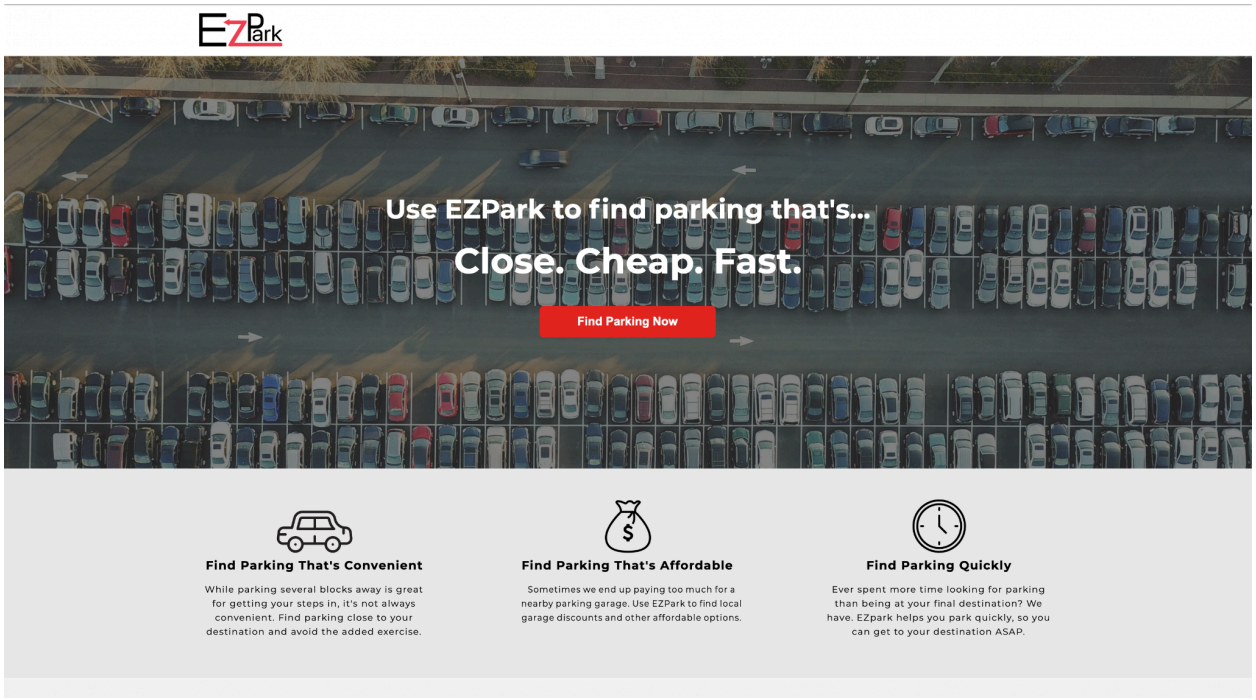
- **Hypothesis 1:** Potential users value finding a parking spot quickly more than the safety of their parking location and the ability to reserve a parking spot.
- **Hypothesis 2:** Potential users value the safety of their parking location more than the ability to reserve a parking spot and finding a parking spot quickly.
- **Hypothesis 3:** Potential users value the ability to reserve a parking spot more than the safety of their parking location ad finding a parking spot quickly.

Landing Pages

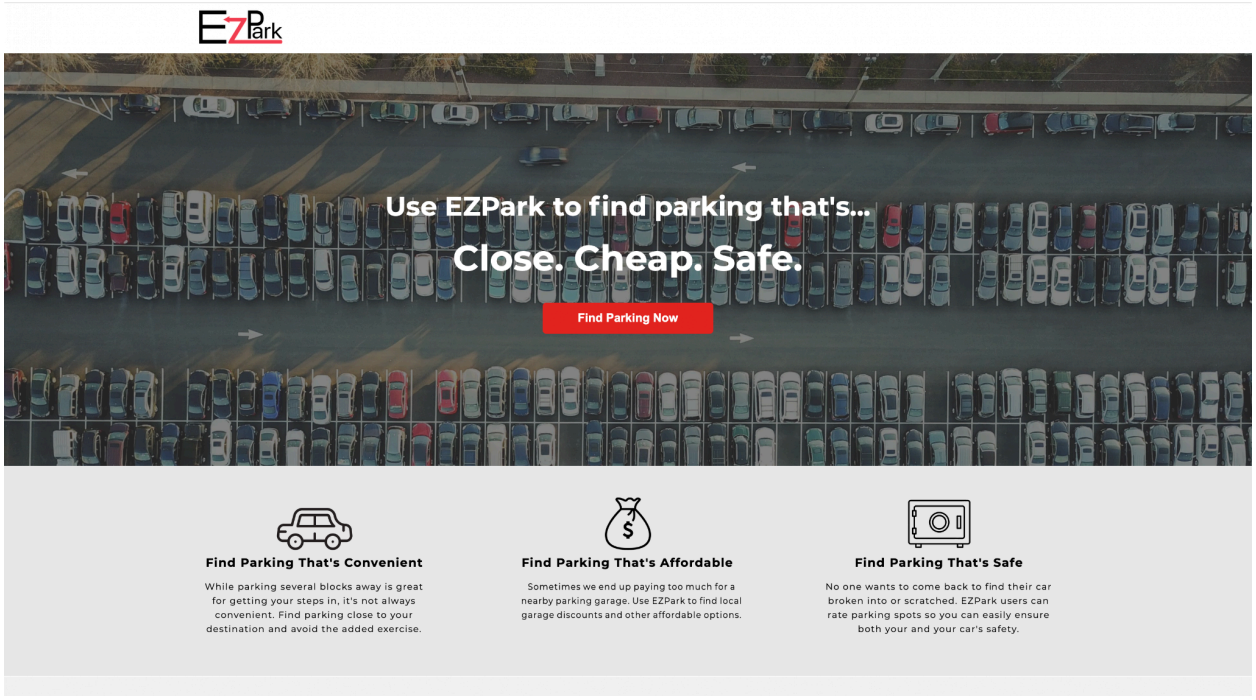
See the landing page here (will be deactivated by 2/24): http://unbouncepages.com/ezpark/
We created three variants to A/B test based on our hypotheses with the following subheadings:

- **Hypothesis/Variant 1:** Use EZPark to find parking that's... Close. Cheap. **Fast.**
- **Hypothesis/Variant 2**: Use EZPark to find parking that's... Close. Cheap. **Safe.**
- **Hypothesis/Variant 3**: Use EZPark to find parking that's... Close. Cheap. **Reserved.**

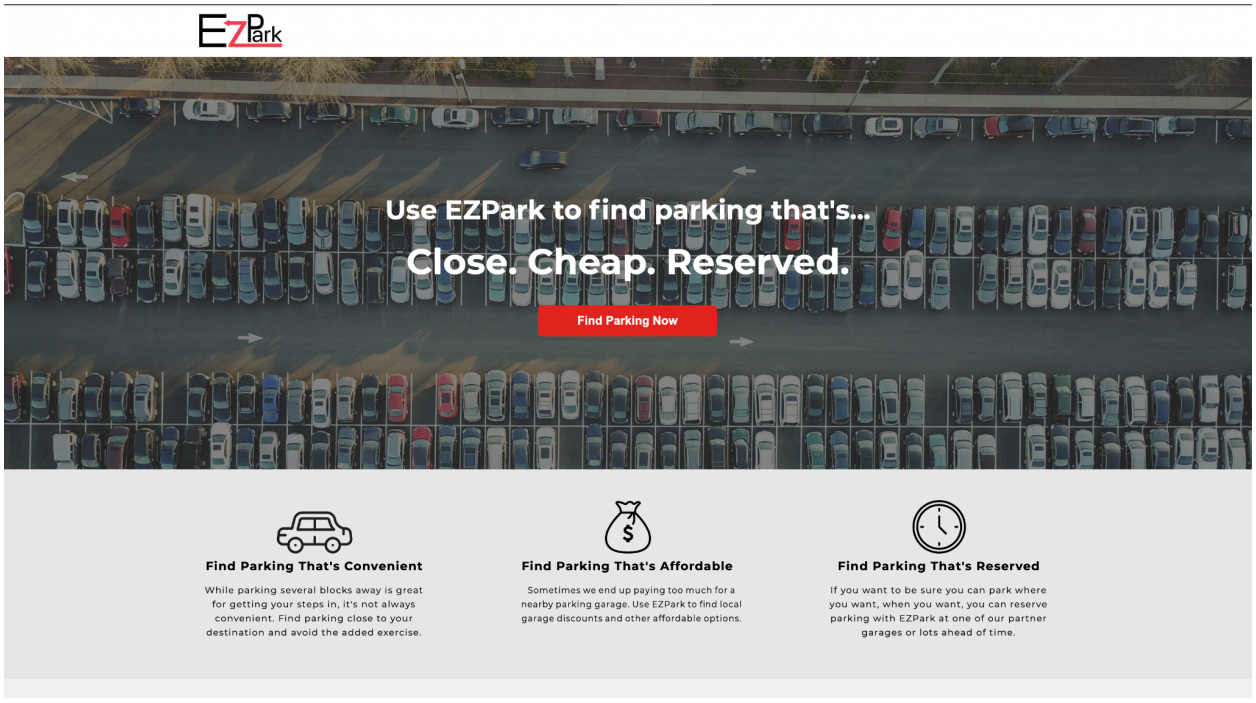
Variant 1



Variant 2

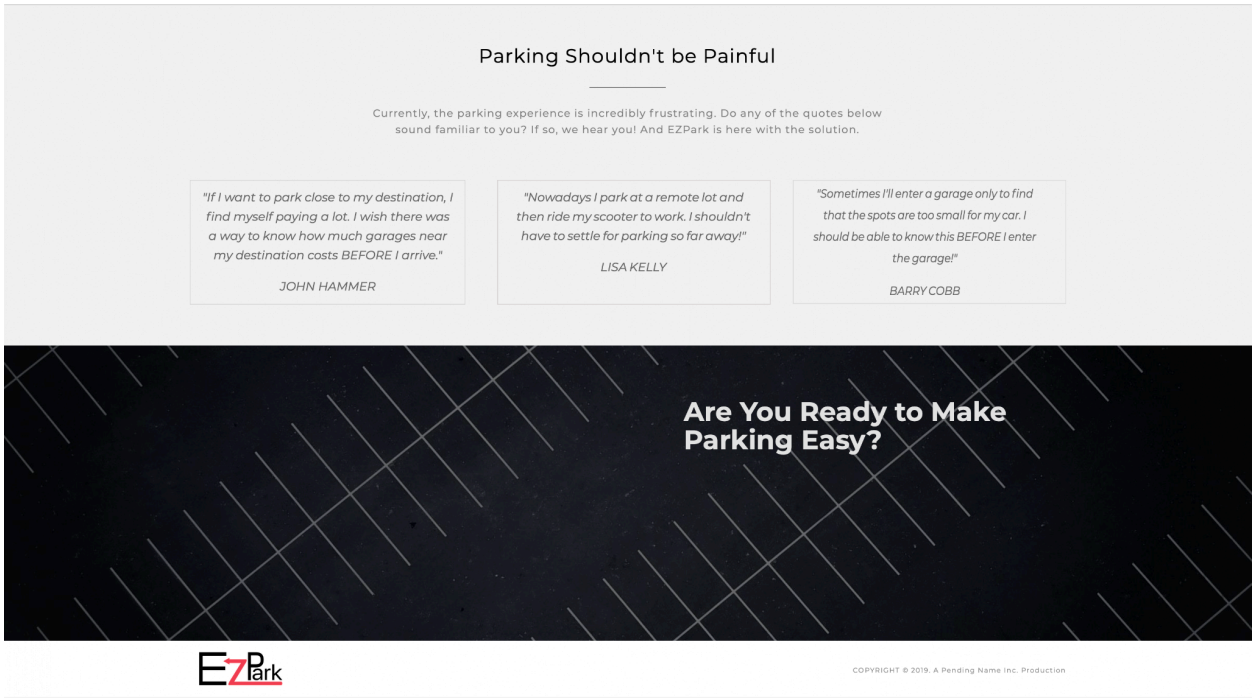


Variant 3



Second Portion of the Landing Page

This section is identical across all of the variants.

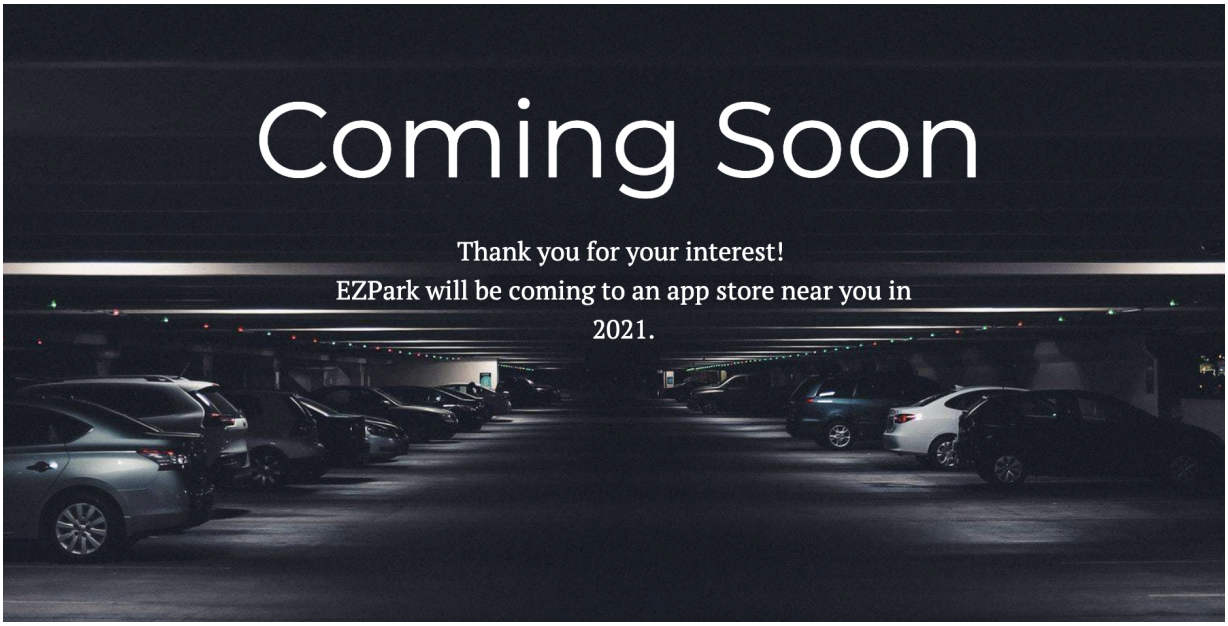


Call-to-Action

We originally used a form to capture visitor email addresses as our call-to-action response. However, after 58 unique visitors and zero conversion, we decided to pivot and redesign our landing page. We believe this could be due to privacy concerns as users are becoming more cognizant of how their data is being collected, analyzed, and sold by third-party distributors. We were also a new company without a notable reputation or customer reviews.

In our final test run, we measured clicks to the “Find Parking Now” button to gauge visitor interest in order to calculate a conversion rate. When visitors click on the call-to-action button, they are re-routed to a page indicating that the product is coming soon. This helped increase visitor conversions.

Coming Soon Page



Promoting the Landing Page

We ran a Facebook campaign based on our target audience. The following criteria were selected:

- Location:
  - San Francisco (+25 mi)
  - Boston (+25 mi)
  - Los Angeles County
- Age:
  - 18-35
- Exclude:
  - Interests: Bus, Public transport or Train
- People Who Match:
  - Interests: Car rentals, Bars, Food, Parking or Travel technology
  - Behaviors: Technology early adopters or Commuters

We excluded people who were likely to use public transport and included people who were interested in “Bars” and “Food” because:

1. People interested in public transport are less likely to drive and thus less likely to need a parking solution.
2. Based on our interview results, parking becomes more painful when the potential user is driving to a *new* place. As a result, we selected “Bars” and “Foods” as part of the audience criteria since people are more likely to drive and try a new restaurant or bar as opposed to driving to a new grocery store or doctor’s office.

Results of A/B Testing

Variant	Visitors	Conversions	Conversion Rate
Variant 1	30	4	13.33%
Variant 2	28	1	3.571%
Variant 3	20	1	5%
Total	78	6	7.69%

Winner: Variant 1 - Use EZPark to find parking that's... Close. Cheap. **Fast.**
It is clear from the results that:

- Hypothesis 2 was wrong
- Hypothesis 3 was wrong

Instead, potential users value finding a parking spot quickly more than the safety of their parking location and the ability to reserve a parking spot.

Customer Acquisition Cost

Cost of Ad Campaign:	$30
Number of Conversions:	6
Customer Acquisition Cost:	**$5** per acquisition

Customer Long Term Value

LTV = ARPU + (1/Churn)
Churn = 1 - Retention Rate

Assumptions:

- Customers spend at least $5 per month on parking
- 10% service fee per transaction (i.e. reserving a parking spot, paying for parking through the tool)
- 30% retention rate

Churn = 1 - 30%
=70%
ARPU = $5 per month x 12 months x 10%
= $6
LTV = $6 + (1/0.7)

= $7.43

Net Customer Value

Customer Acquisition Cost:	$5
Customer Long Term Value:	$7.43
Net Customer Value:	**$2.43** per user

Usability Testing Plan

Hypothesis

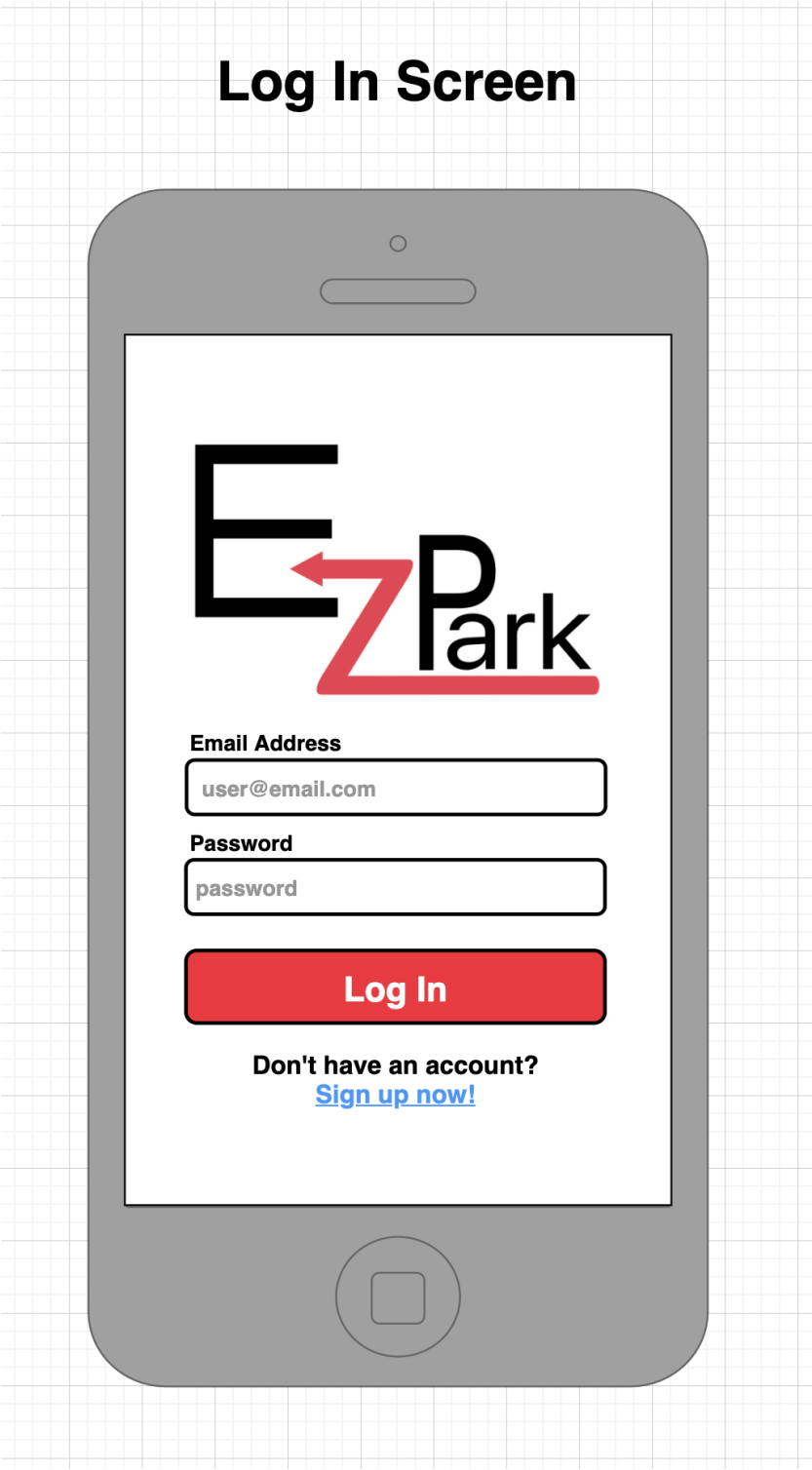
Users care the most about parking distance, cost, and the ability to reserve a parking spot.

Questions

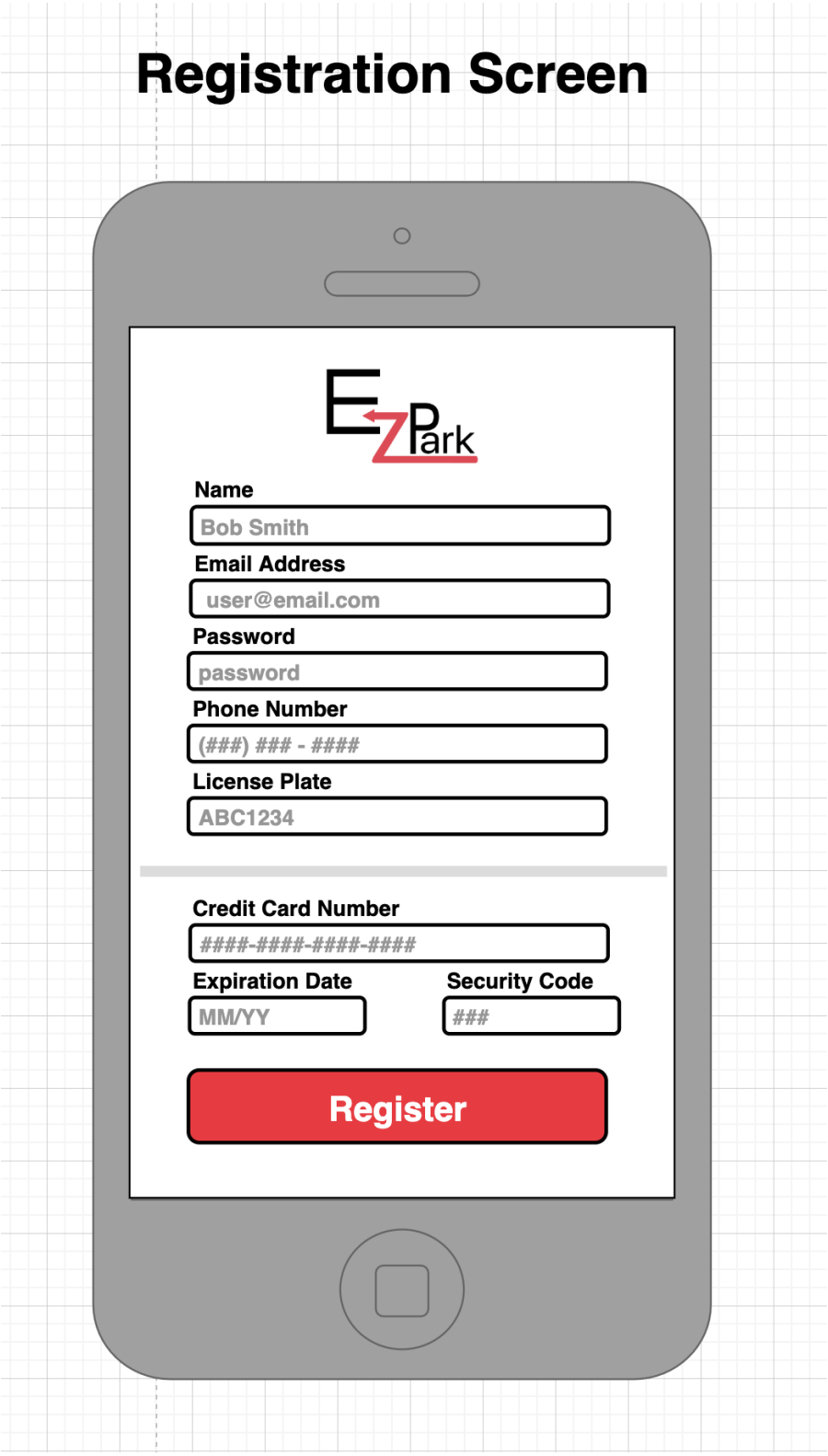
1. What parking garage are you interested in based on your search results?
2. Let's say you used this app to find a garage near your destination, if you return to the same spot, will you use the app or will you drive directly to the same parking garage spot?
3. What don't you like about the different screens/was anything confusing?
4. What improvements/features would you like to see?
5. What do you think about the process of reserving a spot?
6. What do you think about the process of searching for a garage?
7. How do you feel about the way results are displayed?
8. What is your preferred default search settings (e.g. sort by cost, distance)?

Original Wireframes

Log In Screen



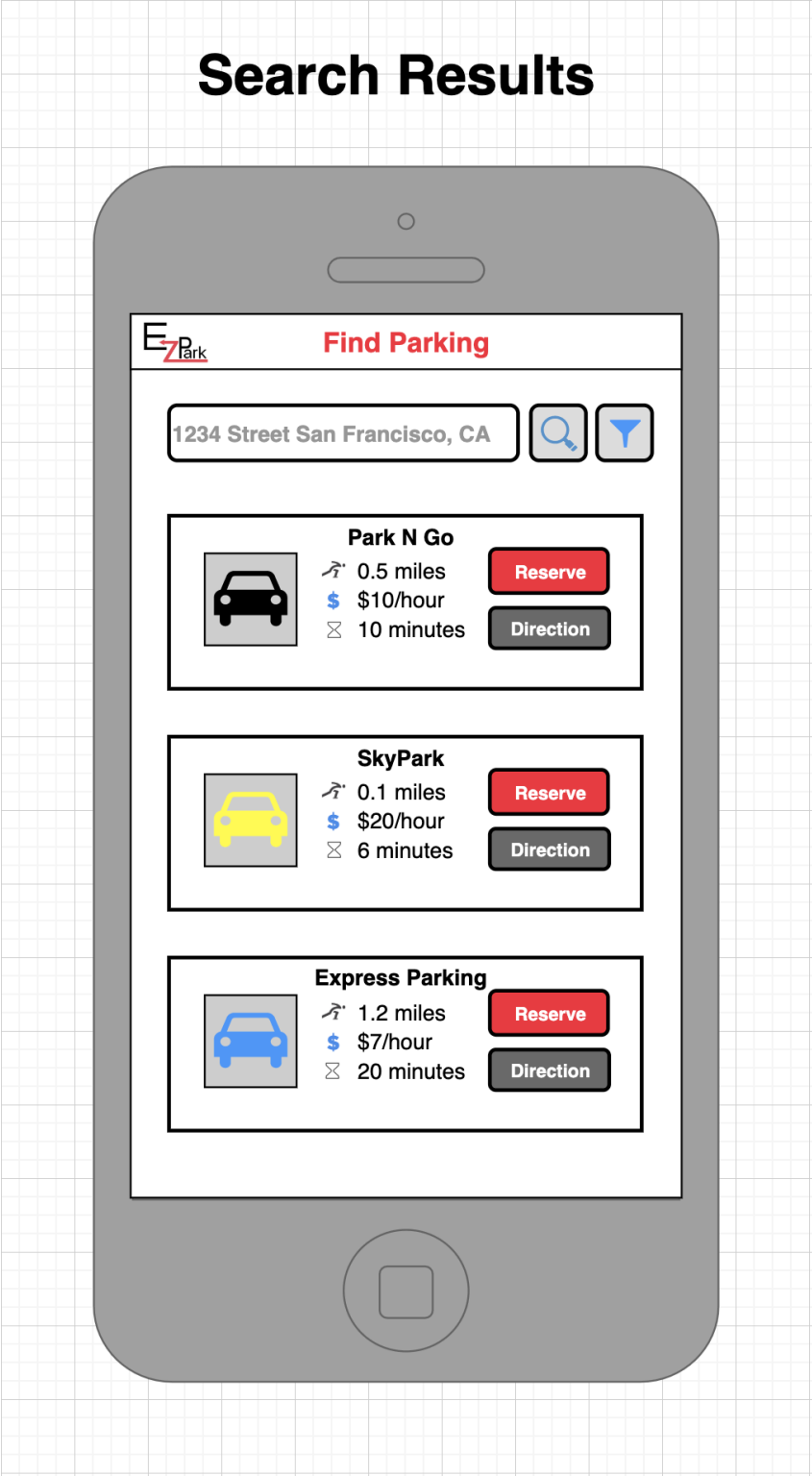
Registration Screen



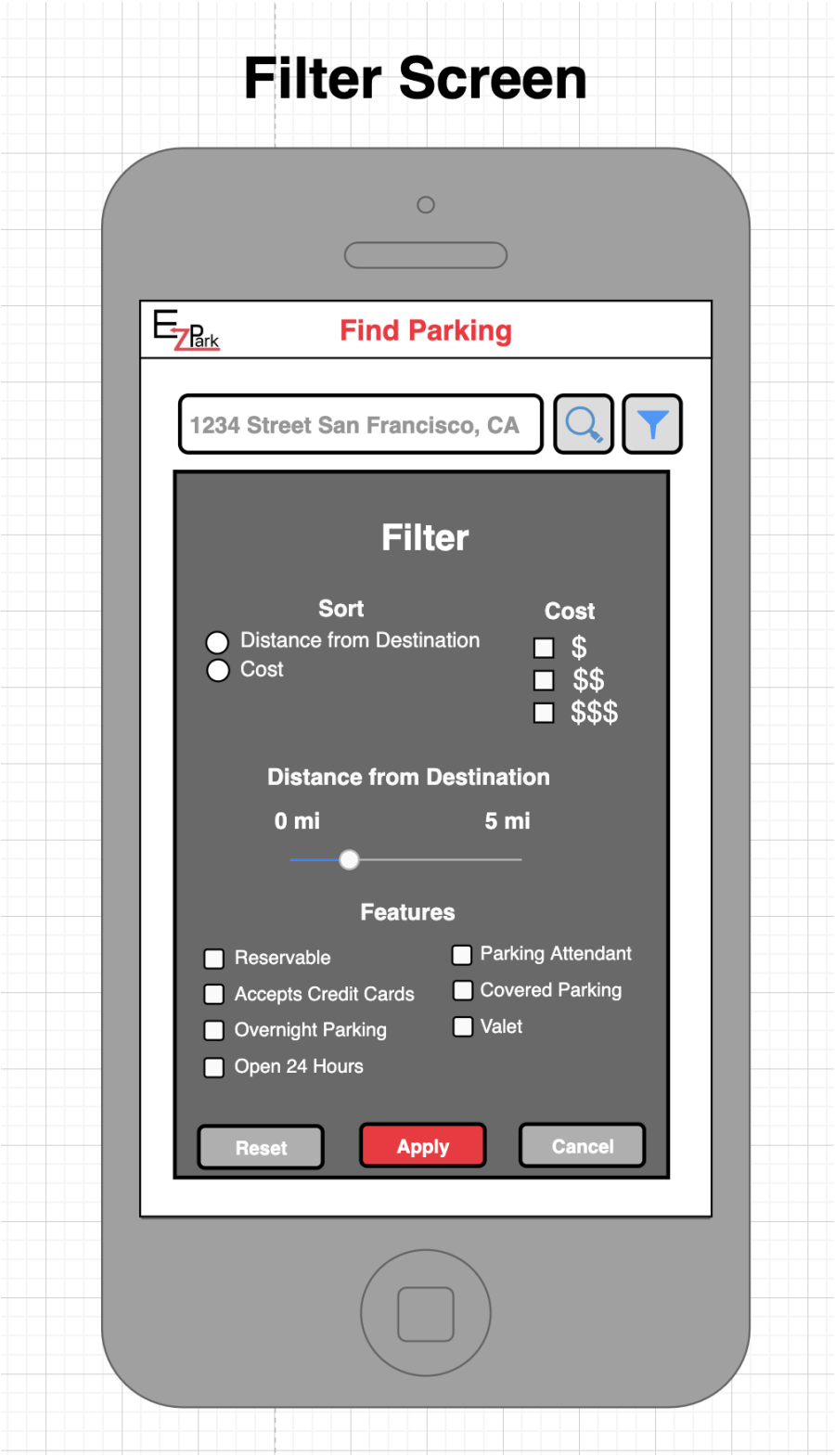
Home Screen


Home Screen
EZPark
Find Parking
Address
Where You Want.
When You Want.
How You Want.

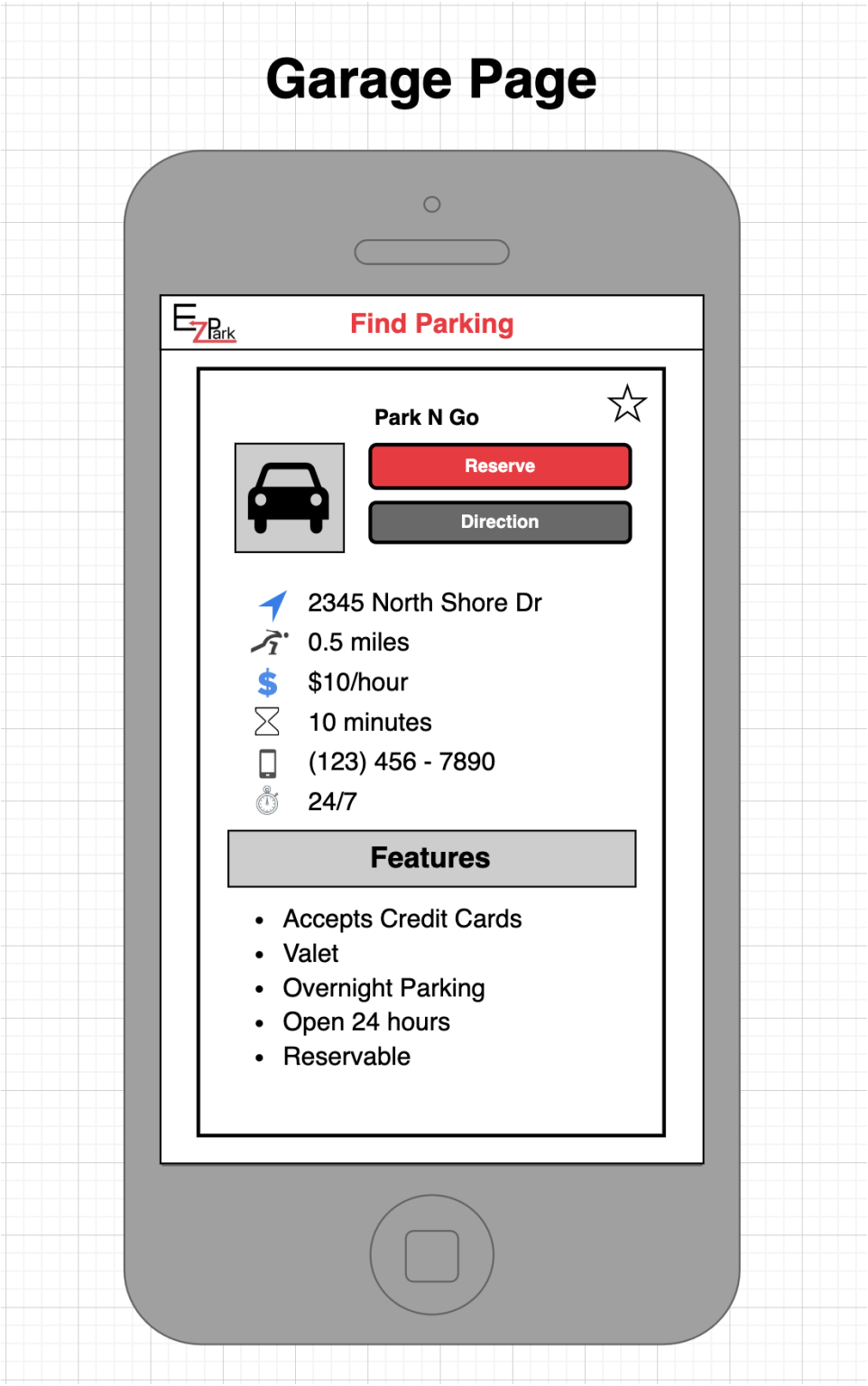
Search Results



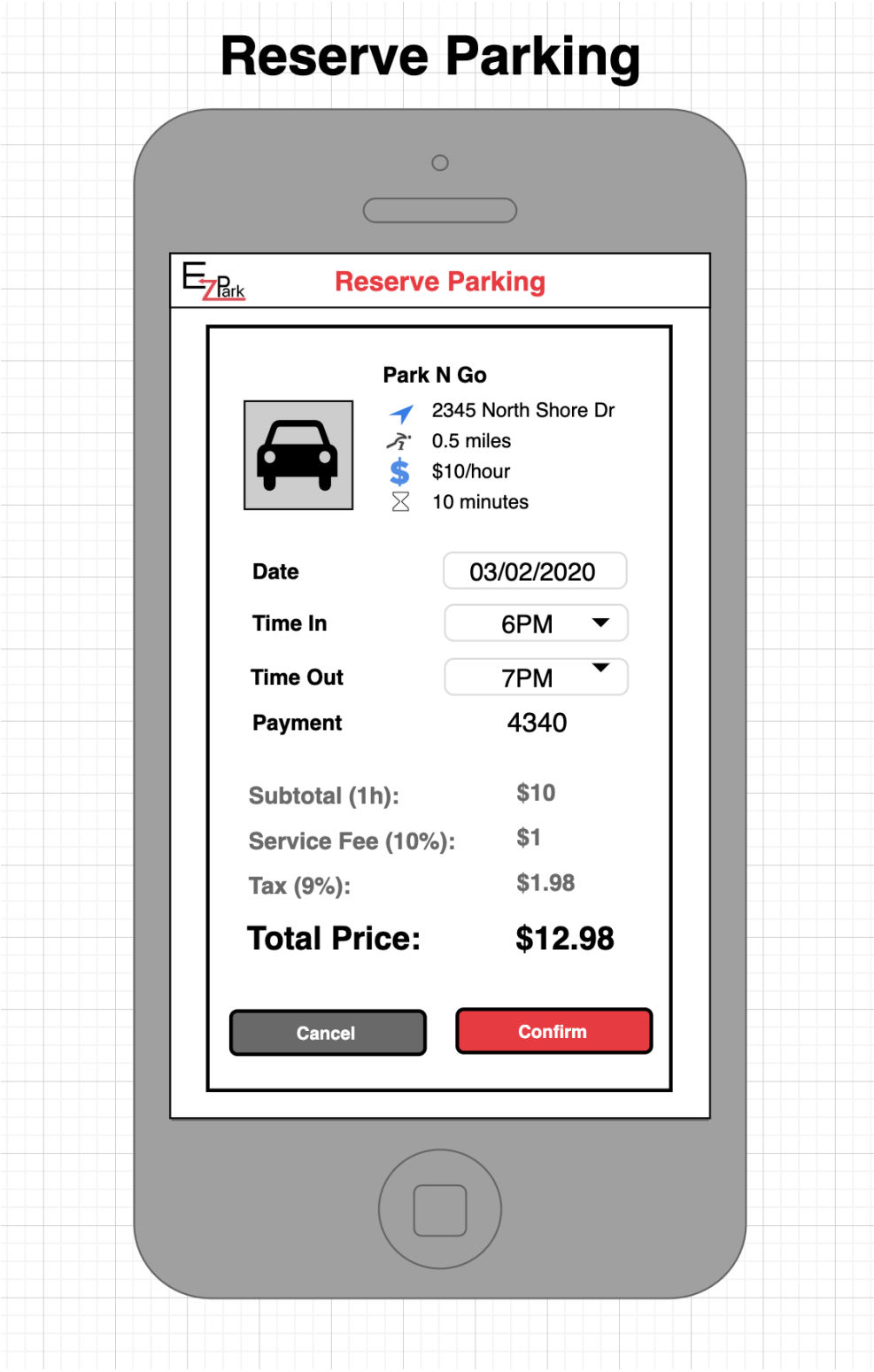
Filter Screen



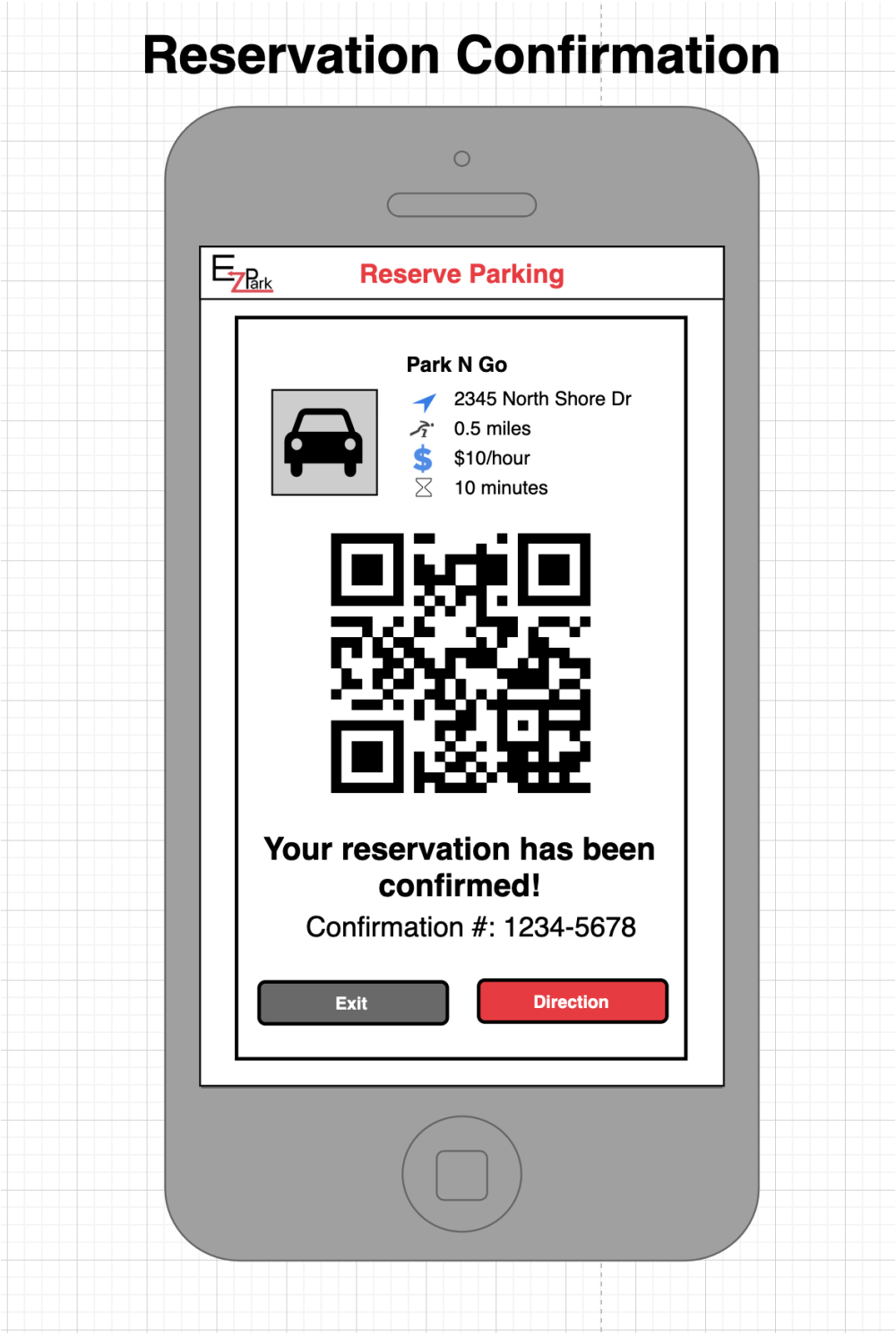
Garage Page


Garage Page
EZPark
Find Parking
Park N Go
Reserve
Direction
2345 North Shore Dr
0.5 miles
$10/hour
10 minutes
(123) 456 - 7890
24/7
Features
Accepts Credit Cards
Valet
Overnight Parking
Open 24 hours
Reservable

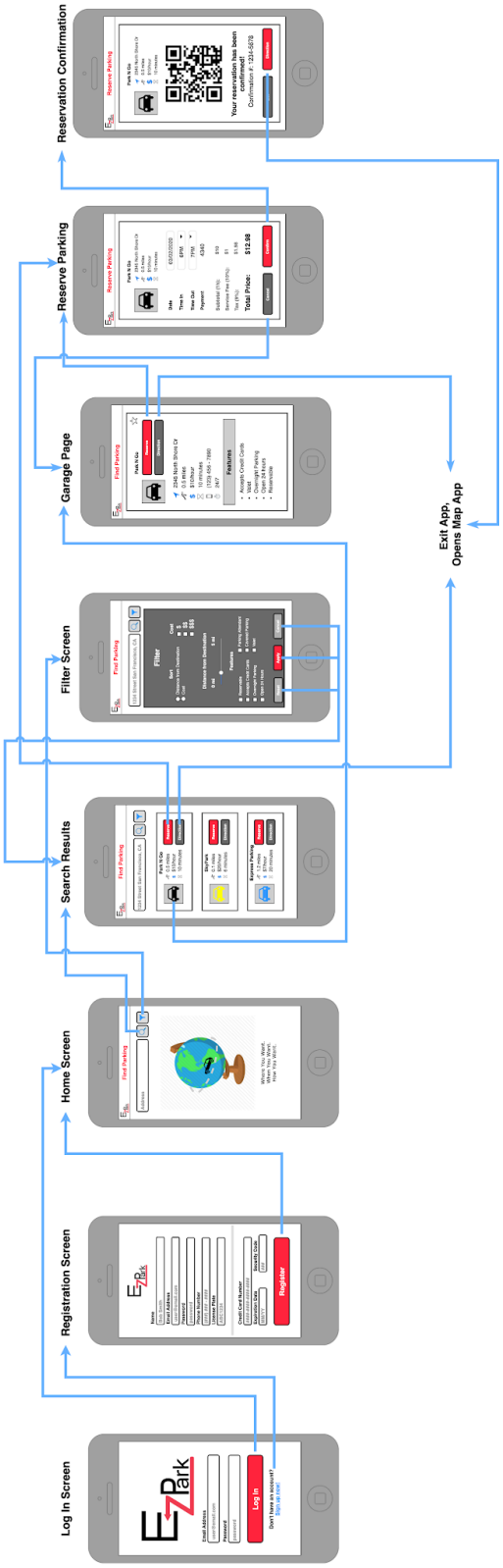
Reserve Parking Page



Reservation Confirmation Page



Flow Diagram



Problem Areas to Fix

Several changes were requested through our user interviews. Ultimately, we decided to prioritize these based loosely on the RICE model:

1. **Reach**: How many of the users that were interviewed requested a particular change.
2. **Impact:** How many times did users mention the requested changes during their interviews.
3. **Confidence:** How much did we think the desired changes would actually make an impact.
4. **Effort:** How much effort would it take for us to make the changes to our existing wireframes given a limited amount of time before the assignment was due.

Priority	Change Request
1	Offer a map view for search results
2	Allow access to the search and garage information pages before requiring sign up / log in
3	Make the payment page clearer by explaining the payment option selected
4	Show user reviews for garages on the search results and garage details pages
5	Offer operating hours as a filter for search results
6	Provide more details on the reservation confirmation page that explains how to use the QR code to enter/access your parking
7	Ask for payment only at the time of reservation
8	Make parking reservations possible across days (from 10PM on Day 1 to 6AM on Day 2 for example)
9	Add a map in the Garage information page
10	Reduce the amount of information needed to make a reservation (specifically license plate information)
11	Remove hourglass and time from parking to destination as its confusing

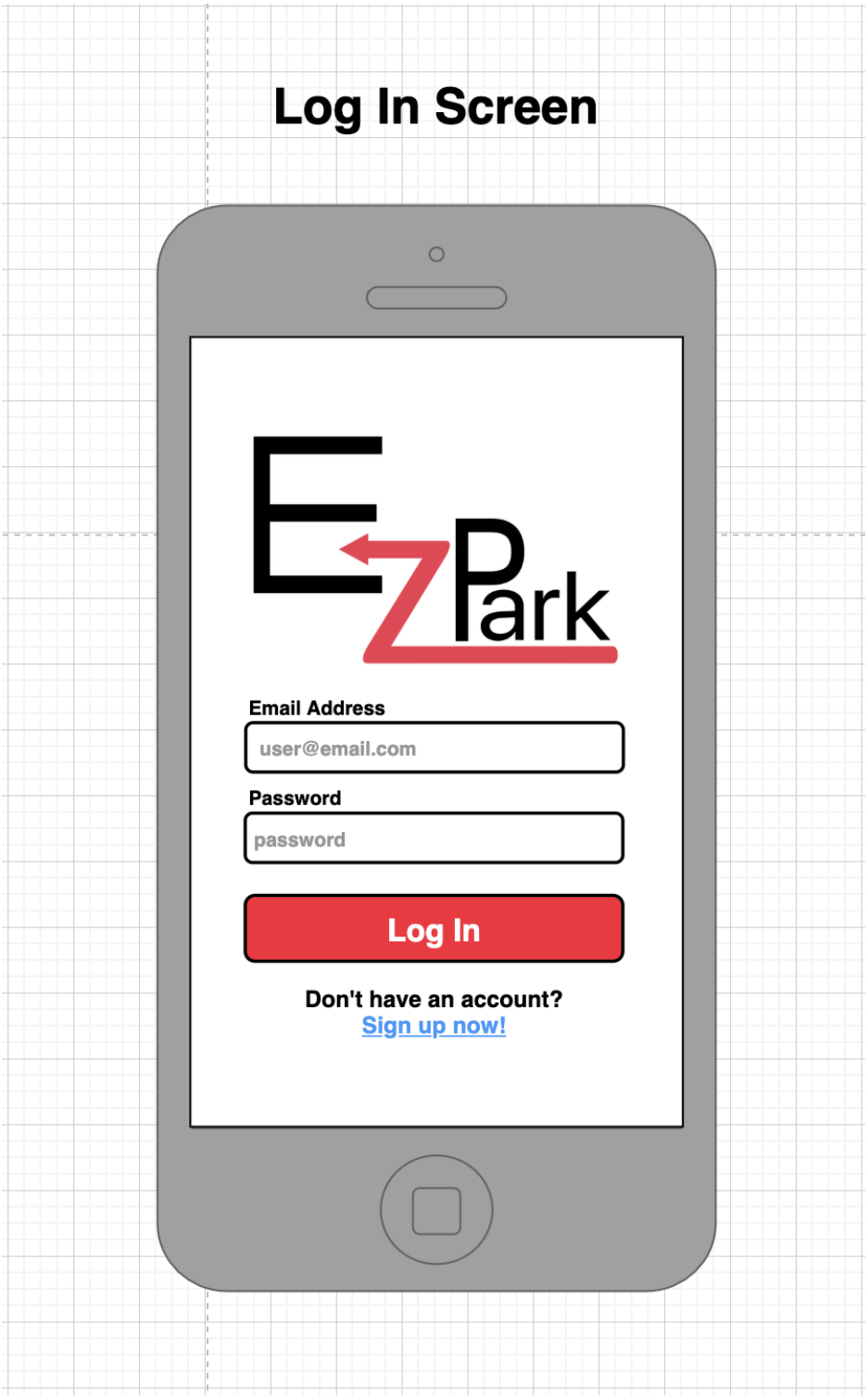
Other requests not prioritized:

- See past and current reservations
- Additional Payment Options - Apple/Google Pay
- Additional Payment Options - Preloaded Payments
- One-time payment / pay as a guest
- Send reservation information over SMS

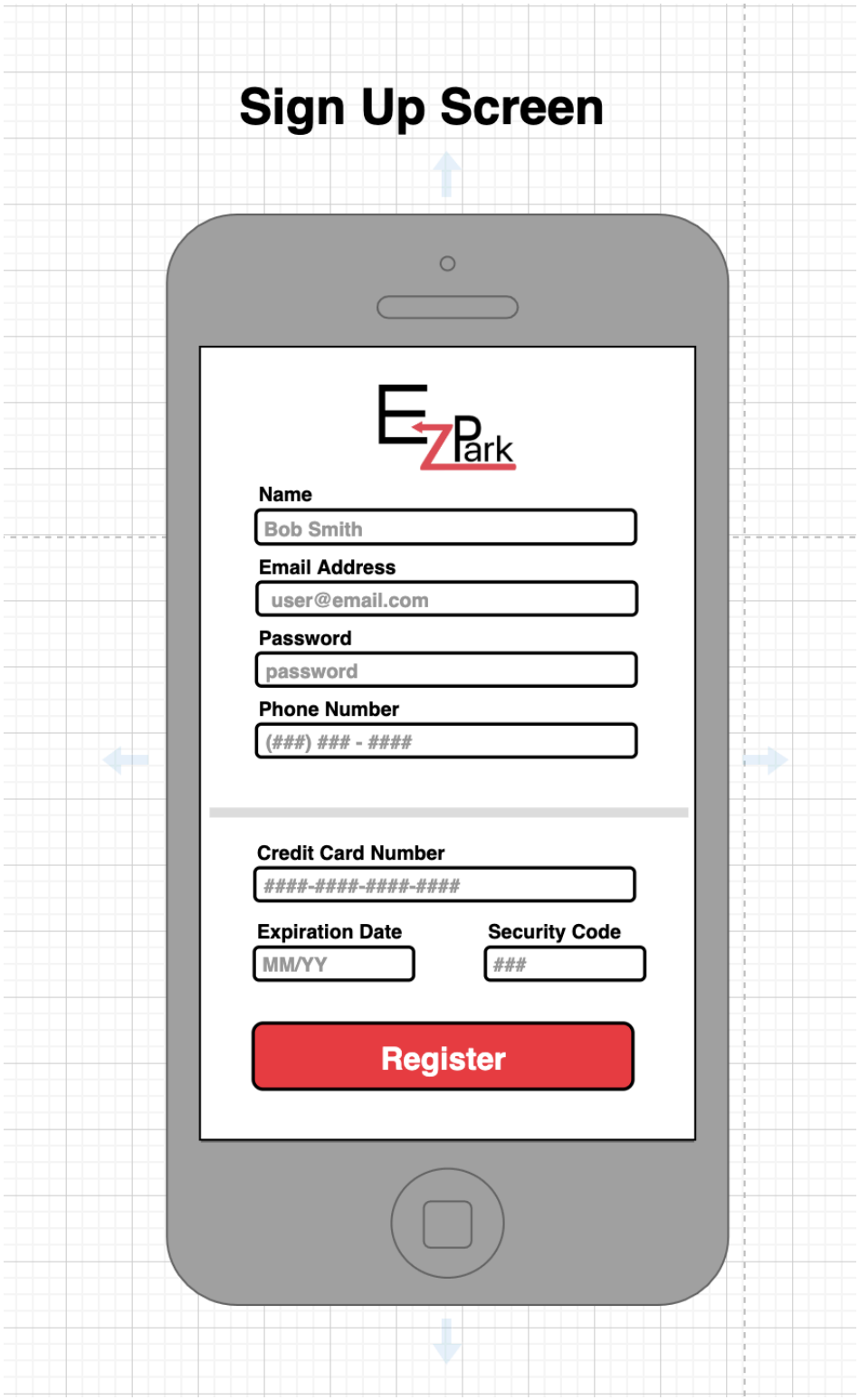
- Search bar should say "street name" or "city" or "point of interest"
- Current location as search option
- Saving filter selections
- More log in options (Sign in with Apple, Google, Facebook, Twitter, etc.)
- Export QR code to Apple Wallet
- Ability to share QR code
- Ability to edit reservation (change time, cancel reservation)
- Default filter for closest garage to destination
- Indicate phone number on registration must be a mobile number so users can get SMS alerts
- Distinguish between lot parking, street parking, garage parking

Adjusted Wireframes

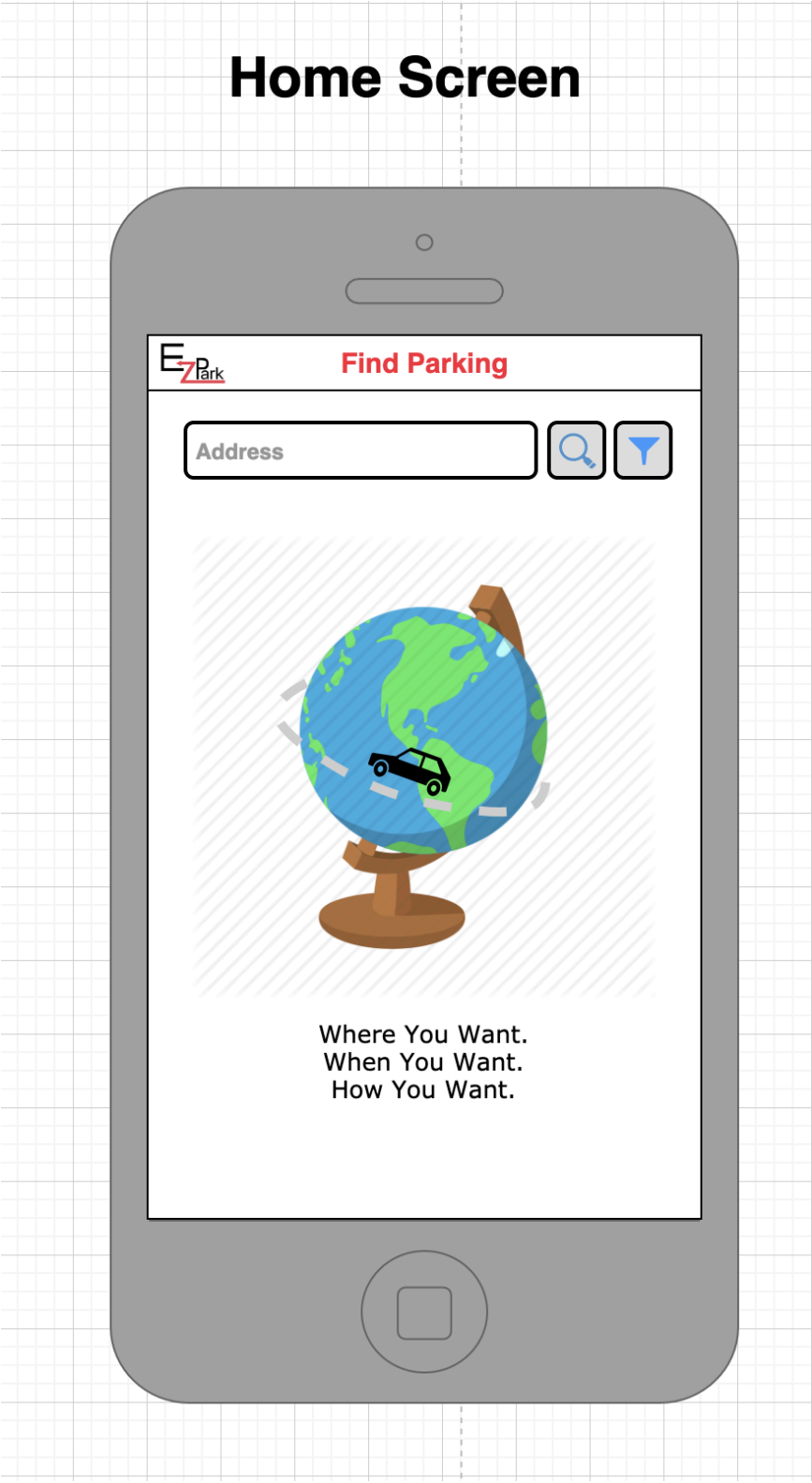
Log In Screen



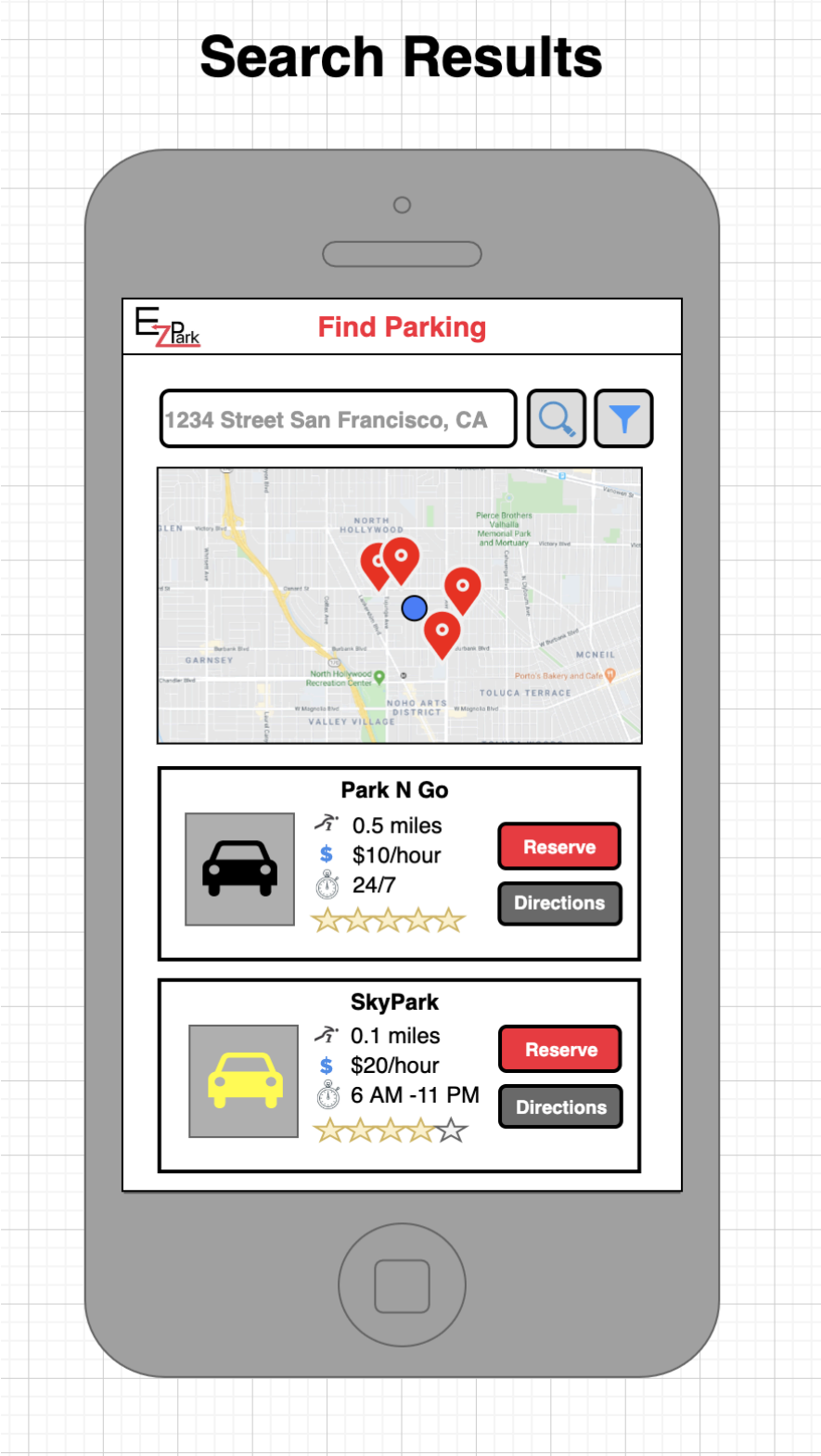
Registration Screen



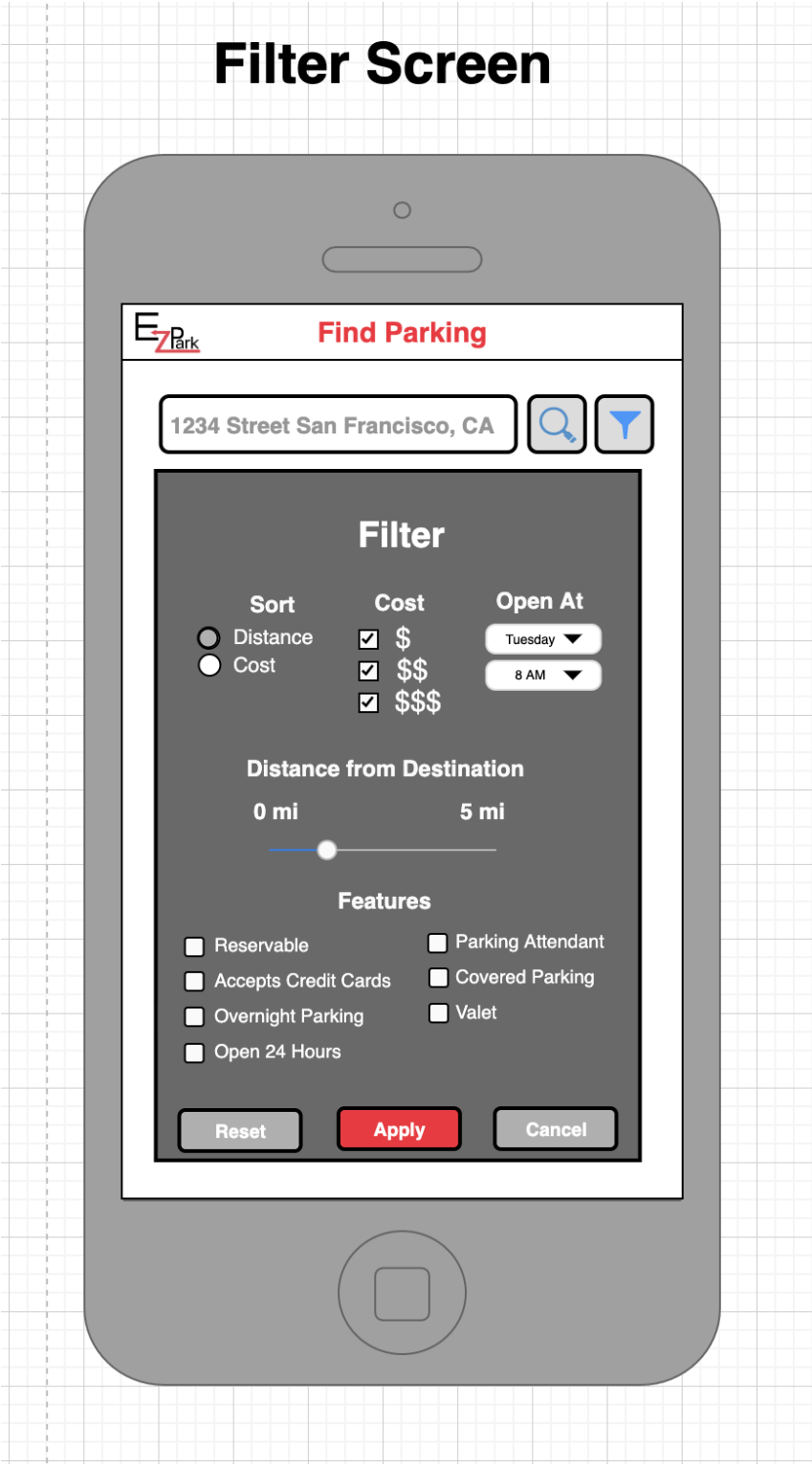
Home Screen


Home Screen
EZPark
Find Parking
Address
Where You Want.
When You Want.
How You Want.

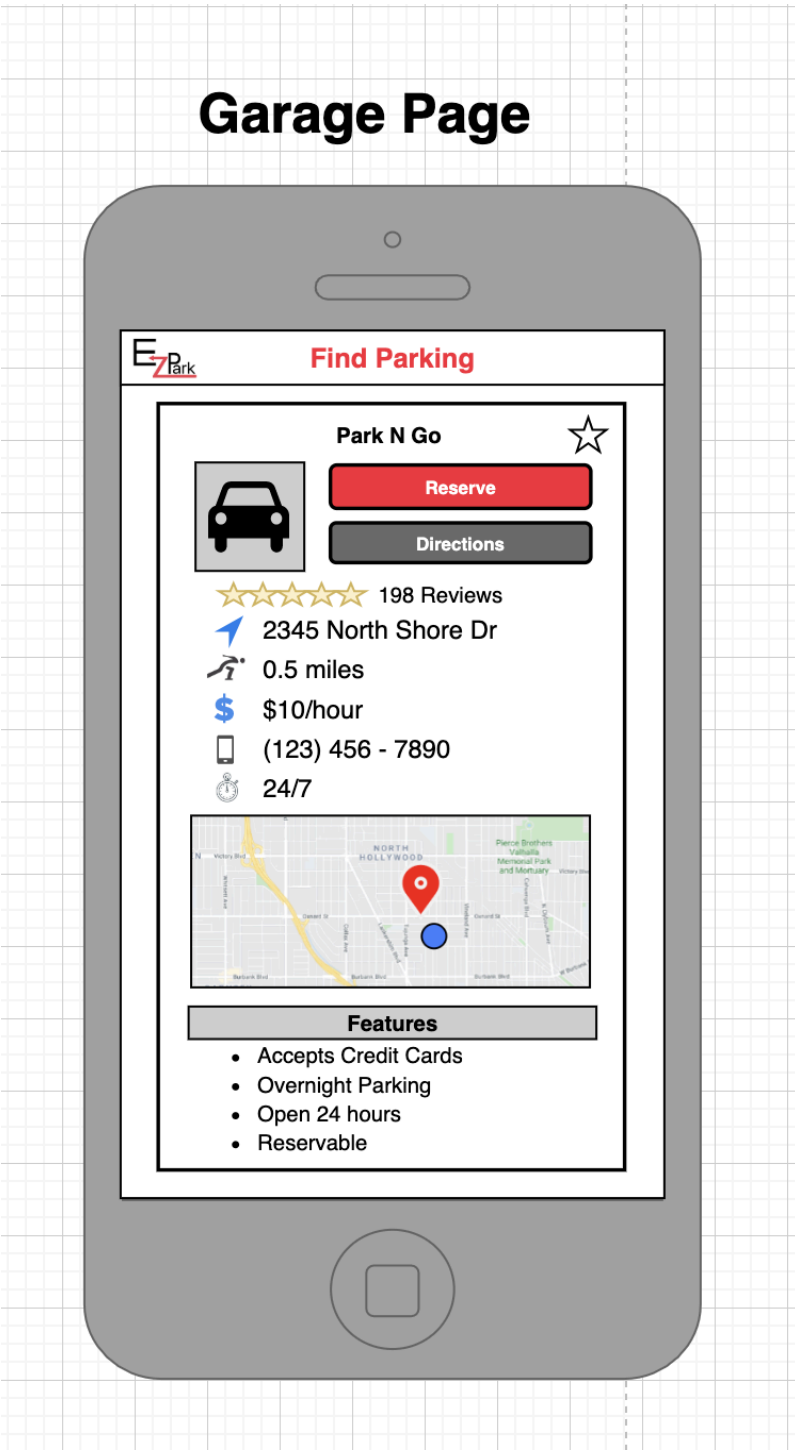
Search Results



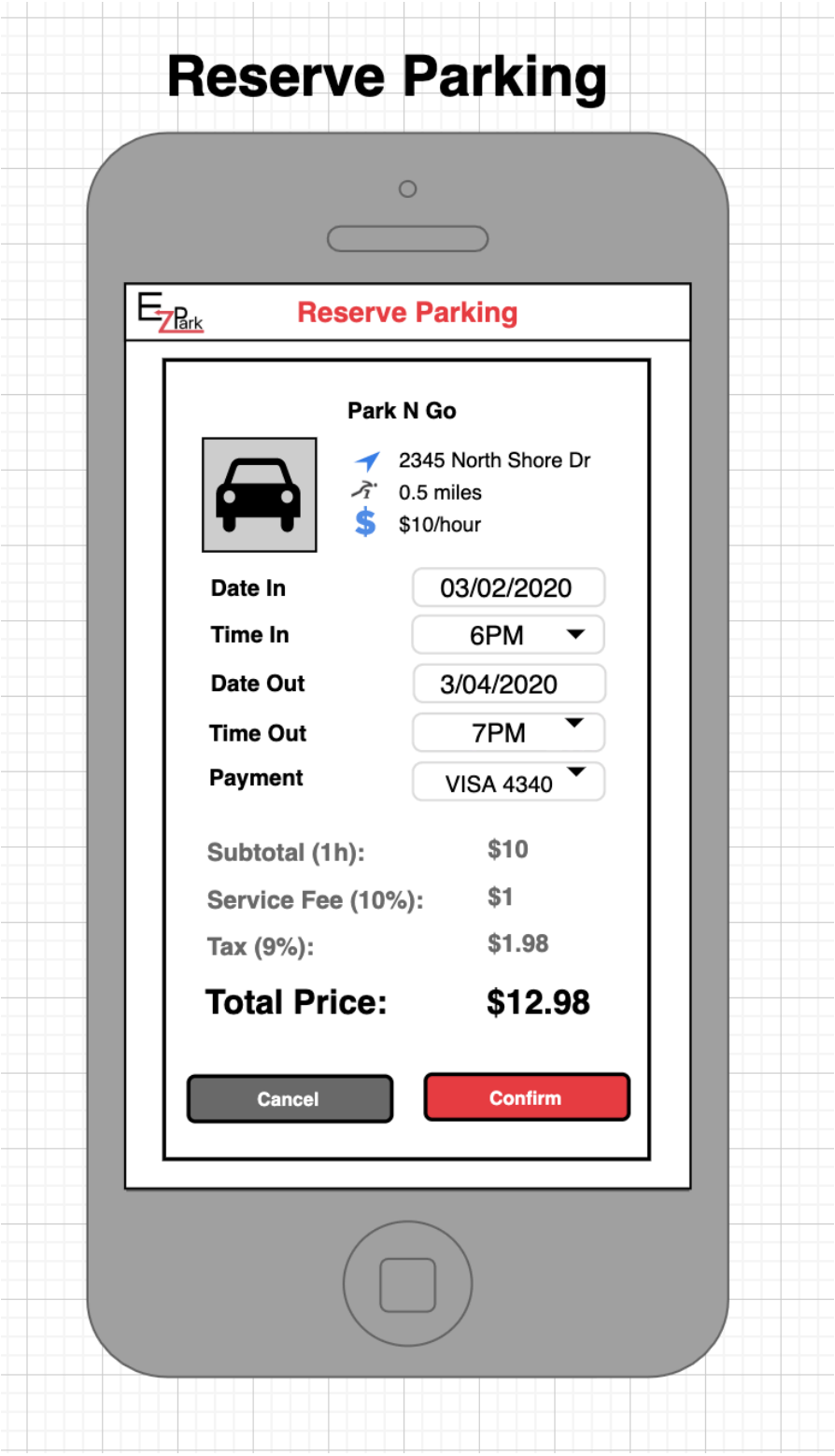
Filter Screen



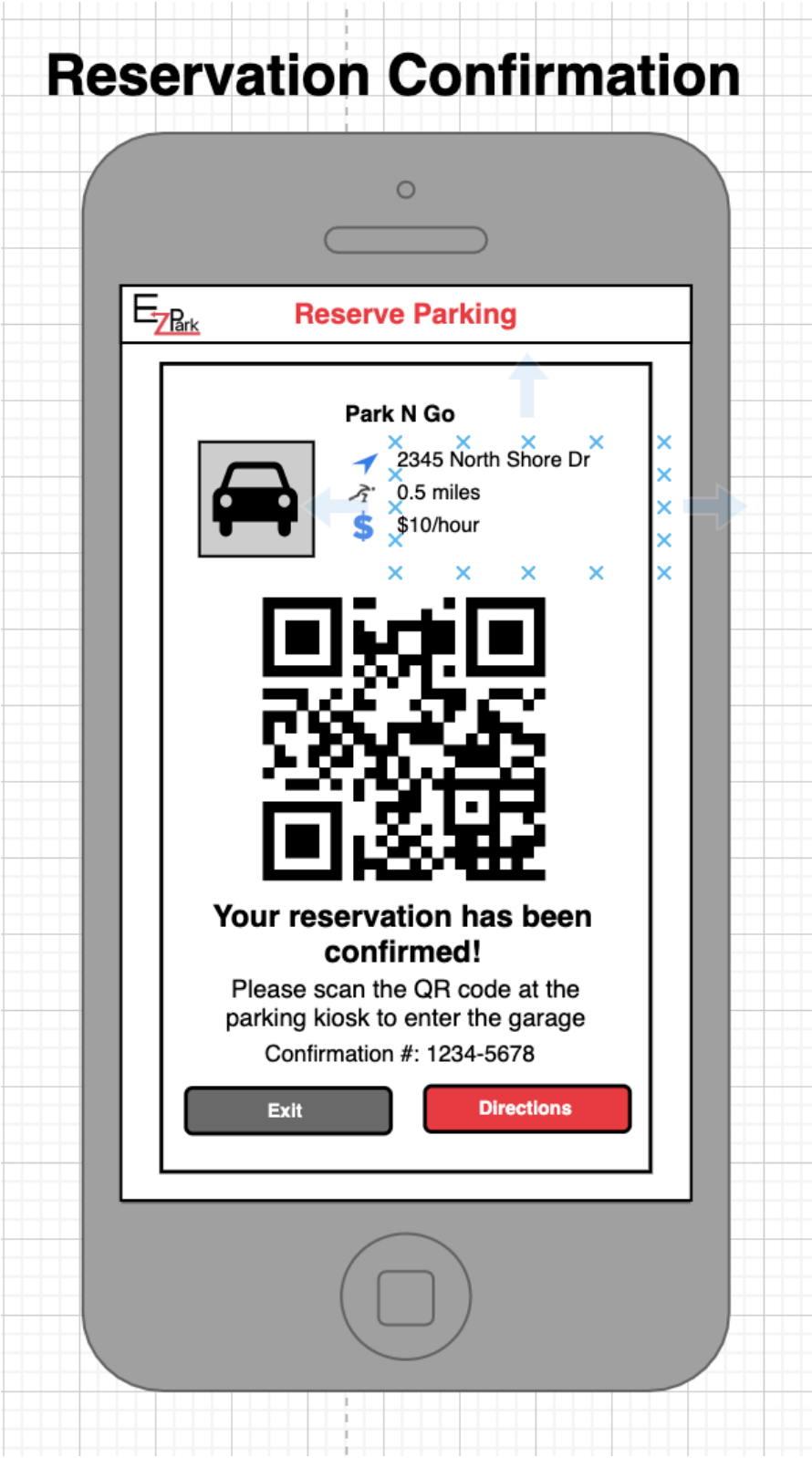
Garage Page


Garage Page
EZPark
Find Parking
Park N Go
Reserve
Directions
198 Reviews
2345 North Shore Dr
0.5 miles
$10/hour
(123) 456 - 7890
24/7
Features
Accepts Credit Cards
Overnight Parking
Open 24 hours
Reservable

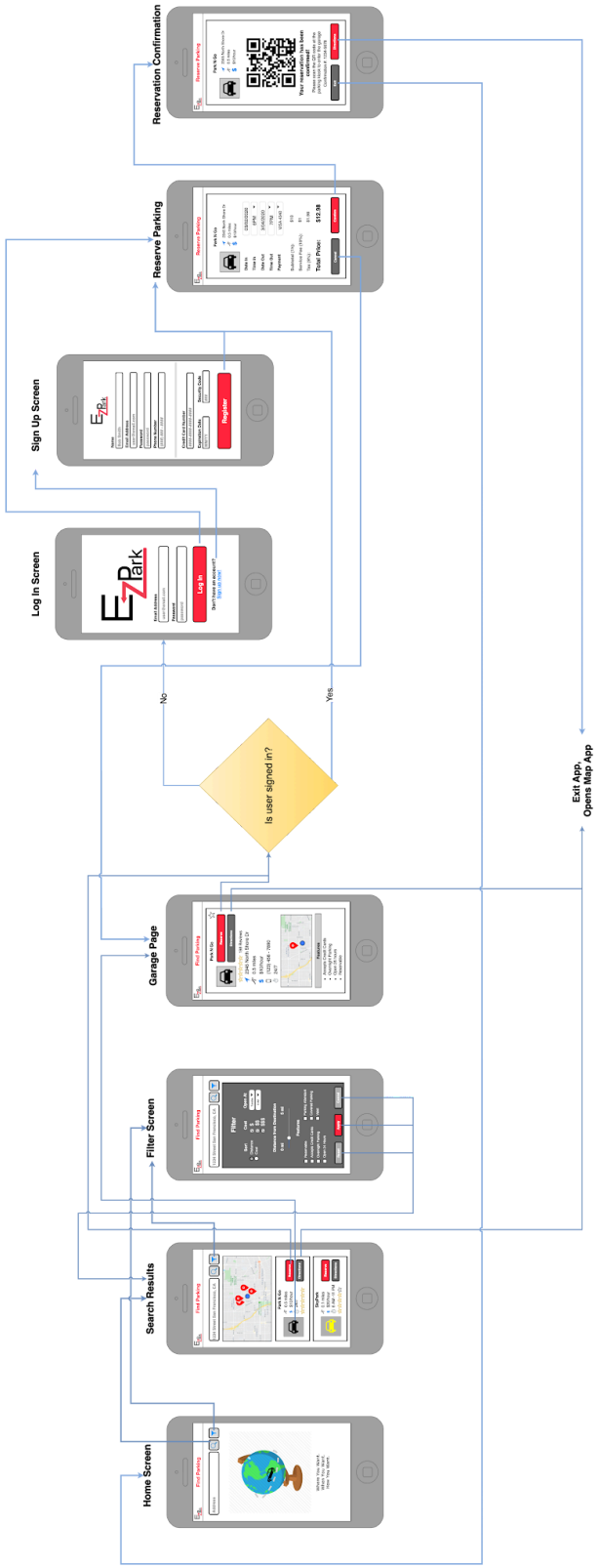
Reserve Parking Page



Reservation Confirmation Page



Flow Diagram



Product Vision

Park where you want, when you want, how you want.

Product Roadmap

Prioritization

Considering the feedback from user interviews combined with a list of preliminary work needed to develop the initial app shown in the first wireframes, we established a list of initiatives that would need to take place for the app to be developed. We, again, prioritized these based loosely on the RICE method:

1. **Reach**: How much of our user base would list a particular feature as necessary to use the app or highly desirable.
2. **Impact:** How much did we believe each feature or initiative would improve the average user's experience or NPS for the app.
3. **Confidence:** How confident we were in the feature and our estimations
4. **Effort:** How much effort would it take for us to make the changes to our existing wireframes given a limited amount of time before the assignment was due.

Themes

We established four major pillars for our app development and prioritization:

1. **Optimize Parking**: This is the central pillar for the product as defined in the product vision. These are features that help users park where they want, when they want and how they want.
2. **Business Growth**: Which features would contribute to a growth in our user base.
3. **App Usability**: Which features would make the app more enjoyable to use.
4. **Payment**: Another pillar that was made clear from our interviews was that users want to have a multitude of different payment options available. These features help satisfy those desires.
5. **Customer Retention:** These features will allow customers to interact with the product, form a community, and build customer loyalty.

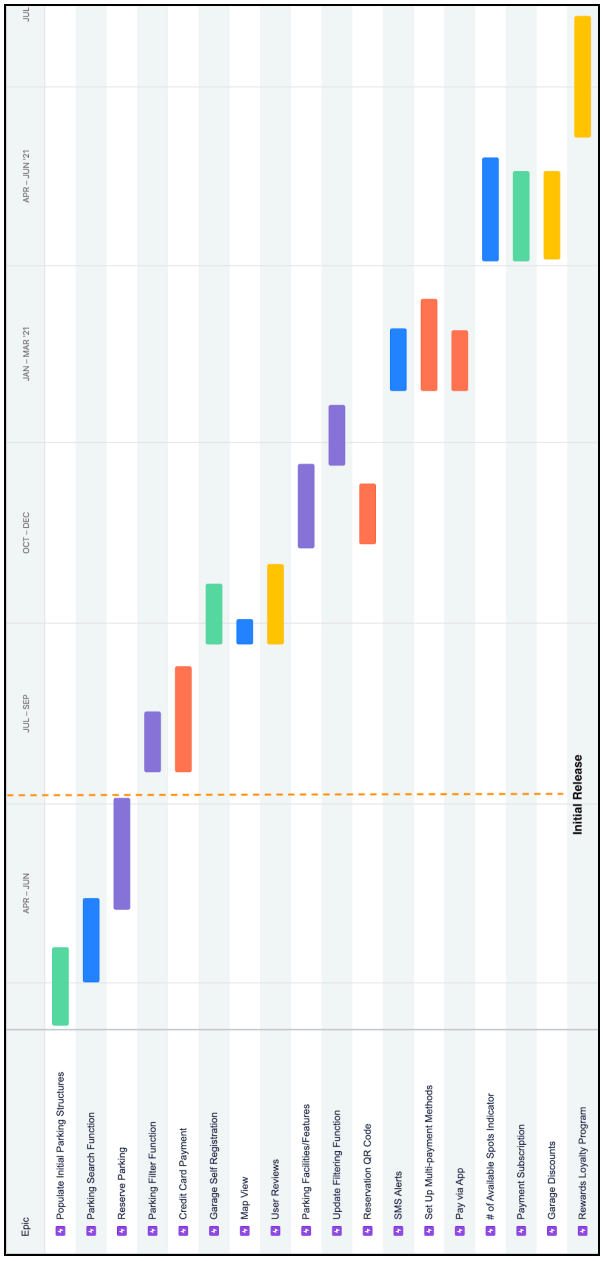
Initiatives

Priority	Initiative	Theme	Days Allocated
0	Populate initial parking structures	Business Growth	38
1	Parking search function	App Usability	43
2	Reserve parking function	Optimize Parking	60
Initial Release of MVP			
3	Parking filter function	App Usability	30
4	Credit Card Payment	Payment	52
5	Garage self-registration	Business Growth	30
6	Map view	App Usability	12
7	User reviews	Customer Retention	40
8	Parking facilities/features	Optimize Parking	42
9	Update filtering function	Optimize Parking	30
10	Reservation QR code	Payment	30
11	SMS alerts	App Usability	30
12	Set up multi-payment methods	Payment	45
13	Pay via app	Payment	30
14	# of available spots indicator	App Usability	52
15	Subscription Payments	Business Growth	45
16	Garage discounts	Customer Retention	45
17	Rewards loyalty program	Customer Retention	60

Our initial release is geared towards launching the absolute minimum required to solve the problem of finding parking. This includes the ability to search for a parking structure close to your destination and reserve parking spots. In this initial release, the reservation feature will not feature a pre-paying component through the app. Instead, users will be able to reserve a spot and pay once they check into the parking location.

Other releases will include 2-3 features at a time.

Roadmap


Epic
APR – JUN
JUL – SEP
OCT – DEC
JAN – MAR '21
APR – JUN '21
JUL
Populate Initial Parking Structures
Parking Search Function
Reserve Parking
Parking Filter Function
Credit Card Payment
Garage Self Registration
Map View
User Reviews
Parking Facilities/Features
Update Filtering Function
Reservation QR Code
SMS Alerts
Set Up Multi-payment Methods
Pay via App
# of Available Spots Indicator
Payment Subscription
Garage Discounts
Rewards Loyalty Program
Initial Release