User Experience Design Project #2:

University of Florida Parking App

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Executive Summary

After doing user research through focus groups, the main problems regarding parking in the University of Florida Campus were identified to be the following: finding parking lot locations close to certain locations, finding information about where they are allowed to park, directions about how to get to certain places and parking lots, finding currently empty parking spaces, finding parking traffic information during events, finding information about metered parking, and finding information about parking lot conditions. An app to deal with these issues was designed. The app has an interactive campus map with highlighted parking lots, with a one tap function on the map which shows the user all parking lots near the tap, with additional information which includes decals required, parking spots currently occupied, and whether scooters are allowed. The user can also choose to get directions to these parking lots, reserve a spot in one of them, or open up a more detailed window which shows more information about a selected parking lot, including parking a lot description with event and conditions information, and user comments about the lot, which serve as pseudo-reviews of it.

User Research

Discussion Guide

Interview Description and Purpose: We are taking a course in User Experience Design. Our project is to plan the User Interface for a mobile application for parking at UF. The purpose of this focus group is to learn about users parking experiences and get users opinions and ideas. We want to find out how to create the best user experience for this parking application.

Easy warm up questions:

1. Do you have a smartphone?
2. About how many different apps do you use daily on your phone?
3. Have you ever used a parking app before?
4. What kind of vehicle do you have?
5. How long have you been going to UF for?
6. Do you have a parking decal?
7. How often do you park on campus?
8. What do you park on campus for?

Main questions:

1. What are your preferences for parking on campus?
2. What is your experience with parking on campus?
    a. If bad experience: Please describe the problems parking that you have.
        i. How persistent are those problems?
        ii. When do they typically occur?
    b. If good experience: Please describe how the experience has been good and if there is anything that could be done to improve it.
3. What factors can you think of that typically affect your parking experience at UF?

User Requirements

These were identified as the main User Requirements after looking over the focus group transcript and discussing what the users said, in order of most important to least important:

1. Finding parking availability, e.g. finding parking lot locations close to certain locations.
2. Parking policy, e.g. information about where they are allowed to park.
3. Directions about how to get to certain places and parking lots.
4. Information about supply and demand of parking lots, e.g. finding actual currently empty spaces.
5. Parking traffic information during events.
6. Information about metered parking spaces.
7. Information about parking lot conditions, e.g. amount of shade, roof or no roof, etc…

User Personas

Chris Anderson

Chris is a PhD student majoring in Computer Science and a Research Assistant to a professor in the Computer and Information Science and Engineering (CISE) department. He lives off-campus.

Chris has an Android phone. He uses the basic functions of many of the apps in his phone but does not use any of their advanced functions.

Motivations:

Want to know which parking lots have free spots near where he has class or is working at, so that he doesn't have to walk a long way and get to his destination early.

A Day in the Life of of Chris Anderson:

Chris wakes up early each morning to go to his classes, jumps in his car, and drives to class. After his first class, Chris goes to the Reitz Union and hangs out with his friends for lunch. After lunch, he would grab a coffee from Starbucks and go back to his lab in the CISE building for some rest. He browses online and listens to some music before he goes back to work. Later in the evening, he goes to the lab, where he sometimes works late hours. When he leaves the lab at night, he doesn't want to have to worry about his safety while walking back to the car. After Chris gets home, he studies for a bit and then relaxes before going to bed.

Guillermo Rodriguez

Guillermo is a Masters student majored in Chemical Engineering. He lives off-campus.

Guillermo uses an iPhone and he doesn't use many apps in his phone.

Motivations:

Guillermo usually parks at UF after hours and on the weekends. Since he often runs into full parking lots, Guillermo would like to know about alternative parking locations around the area. On the weekends he would like to know what events may affect his parking ability.

A Day in the Life of of Guillermo Rodriguez:

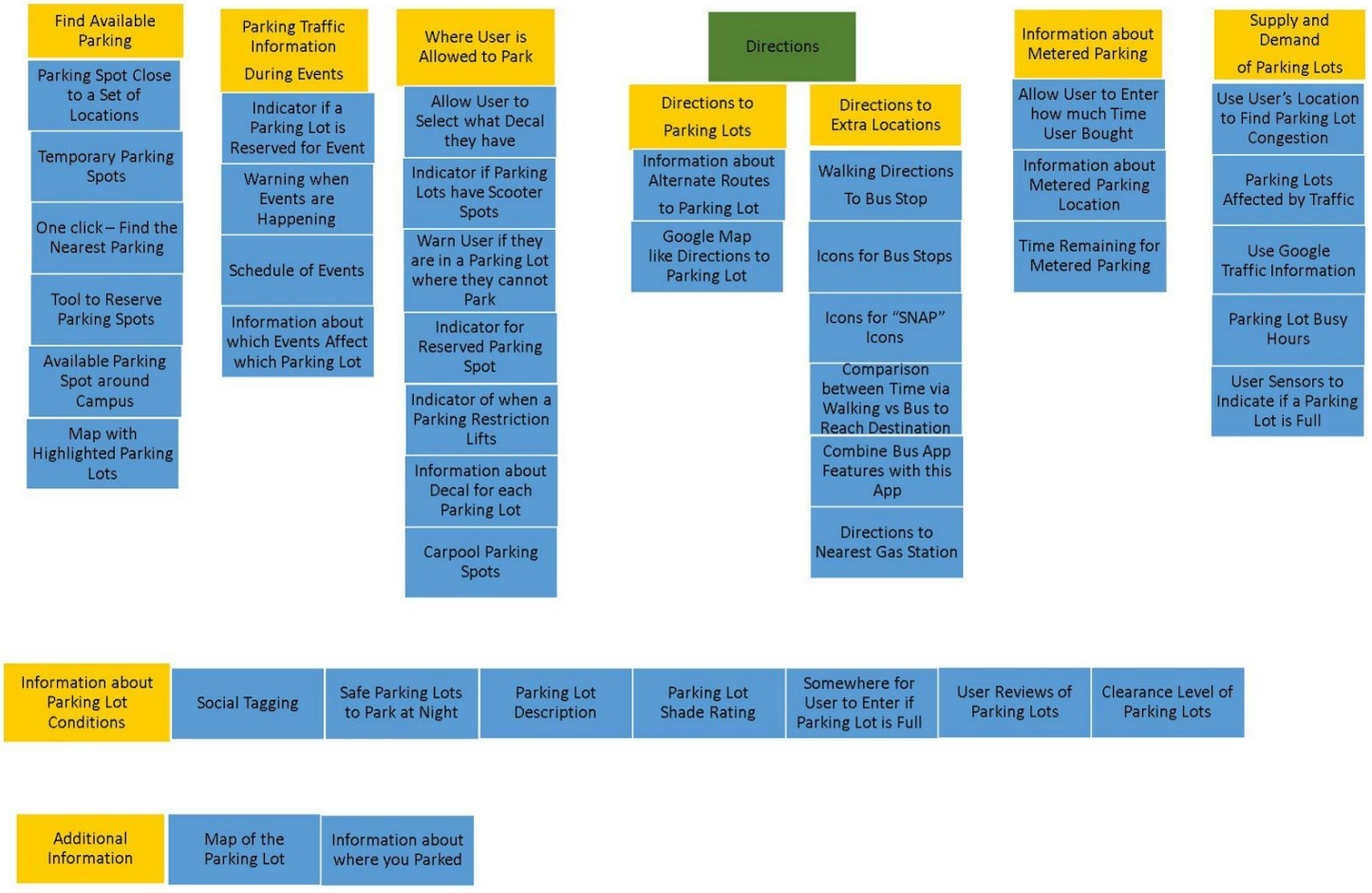
Guillermo wakes up late morning, stops by Einstein Bagel Brothers for a morning coffee, and goes to his classes around noon. Then he goes for lunch with friends at the Fresh Food Company. After he finishes eating, Guillermo does homework at the Fresh Food Company. After he finishes his homework, Guillermo takes the bus back home. Later, he drives back to campus after the restrictions lift. Once a week, Guillermo has a club meeting that he attends in the evening. When he doesn't, he goes to one of the recreation centers to work out. After working out, he typically goes to the library to study before going back home. Guillermo is a tennis player and on the weekend he comes to train on campus. On the weekend it's easy for him to find parking, except when there are events which disrupt his normal parking arrangements.

Brainstorming

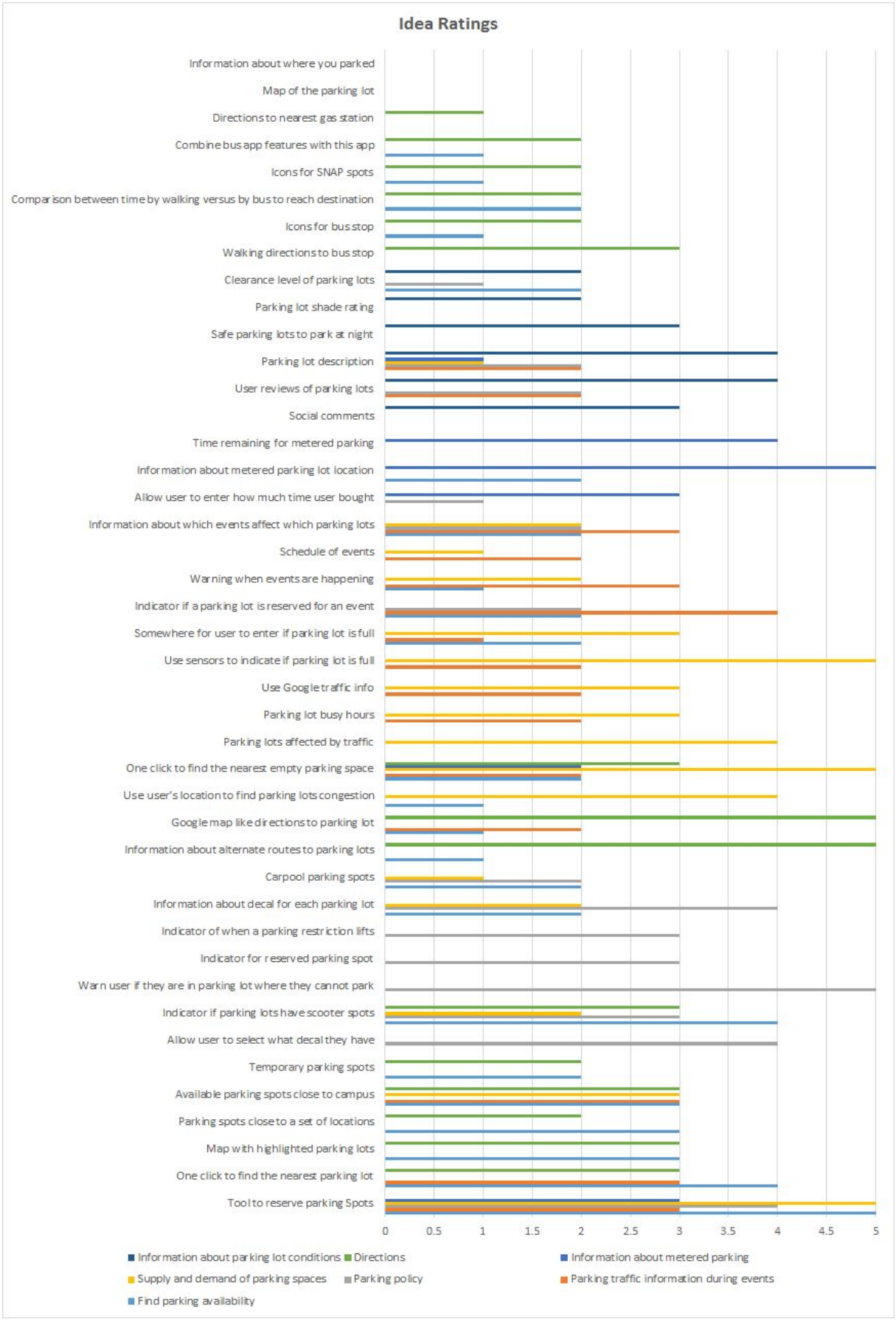
Brainstorming Process

After developing the user personas and walking the data, the team held a brainstorming session to generate design ideas for the parking app. Using the ideas, the team developed an affinity diagram and rated each idea based on how well they meet each user need. Afterwards, the ideas were refined and merged to create the final set of features. The artifacts for each step of the brainstorming process are presented below.

Affinity Diagram



User Need Ratings



Ideas After Refinement

The team evaluated the design ideas based on the ratings and removed many ideas with low user need ratings, because they did not meet user needs well. However, a few ideas with low ratings were included because they were easy to implement and they meet user needs not brought up during user research.

After merging design ideas, the final list of app features for the app are as follows:

1. App will contain embedded google map of campus and areas around campus. Extra features will be added to this map.
2. Parking lots in and close to campus will be lightly highlighted in the map.
3. A single press on the map outside of a parking lot will result in the strong highlighting of close by parking lots, with number of empty parking spaces in each lot displayed on the map.
4. Google traffic info will be used on the map to show how heavy the traffic is around the parking lot, and to show how many people may be looking for parking spaces around in the area.
5. If a parking lot on the map is clicked, it will show information about it. A number will indicate the number of empty spots out of the total number of spots, an icon will indicate if it has scooter parking, and another icon will indicate the decal required. A prominent button titled “Reserve” at the top can be used to look for spots to reserve in the lot. A button titled “Directions” will be present that you can press to get google map directions to the lot. There will be another button titled “More” that will open a window with more detailed information about the parking lot, including a description of the parking lot conditions, information about when the decal restrictions lift if ever, information about if a parking lot is reserved for an event, comments by other users about the parking lot ,and button to reserve a parking spot in that parking lot..
6. In addition to clickable, highlighted parking lots, the map will also have clickable bus stop icons which you can click to get walking directions to it, along with an ETA estimate of how long it would take to walk there.
7. At the top of the app there will be an options menu where the user can select the decal they have. The app will automatically warn the user if the user is in a parking lot where their decal doesn’t work, at a time where the parking restrictions are being enforced.
8. The options menu will have another option to mark a location as a spot where you parked, which will leave a permanent GPS marker icon on your current location on the map, until you remove it.
9. The map will also show metered parking icons on the locations of metered parking spots. These icons will be clickable, which will make an option to select how much time you have left at that metered parking spot available. This time will count down and warn you when your time is almost up.
10. The options menu at the top will have options to turn on and off certain icons on the map, so that it is not too cluttered. The default status will be for highlighted parking lots to be on, and bus and metered parking icons to be off.

Scenarios and Storyboards

Scenarios

Scenario 1

Name: Chris Anderson

It is the first day of the semester for Chris and he wants to make a good impression on his professors by showing up to his classes on time. He is driving on the way to school and stops at a red light. Chris picks up his phone and opens up the app. He needs to find a parking spot on campus quickly before the light changes. Chris clicks on the map near Bryan Hall and the app pops out two parking lots near it. When Chris originally installed the app, he selected the parking decal he bought before the semester began. The app only pops out the parking lots with the decal that Chris previously selected in the app. The app indicates one of the lots is full, so Chris skips it, clicks on the available parking lot, and selects the Directions button. The app starts giving Chris directions to the parking lot right before the light turns green. Using the app, Chris drives to the parking lot. After parking, Chris quickly marks where he parked using the Options menu in the app so he can find his car after class. Thanks to the app Chris makes it to class early.

Scenario 2

Name: Guillermo Rodriguez

Guillermo is driving to his usual parking lot on campus in order to go to play tennis. However, he notices there is an unusual amount of traffic on campus. Guillermo guesses there must be an event going on today. He pulls out his phone and opens up the app. He clicks on his usual parking lot, selects the More button, and it indicates it is reserved for an event today. To resolve his dilemma, Guillermo clicks near the tennis court on the map and it highlights other nearby parking lots. He checks if any of them are not reserved for the event and selects one of the available ones. Guillermo clicks the Directions button and the app starts navigating him towards the parking lot. The app indicates there is heavy traffic along the default route. Guillermo clicks on an alternate route which avoids the heavy traffic. The app quickly navigates him to the parking lot, allowing him to make it to tennis practice on time.

Scenario 3

Name: Guillermo Rodriguez

Guillermo typically does not drive to school during regular hours. However, today is an exception because he has an exam he is running late for. He decides to take his car because he does not want to wait for the bus. Since he does not have a decal, he will have to park at a metered parking spot. So he brings up the app, goes to the Options menu at the top of the app and enables the metered spot icons on the map. Then he looks for a metered icon near the Chemical Engineering building where his test is, selects it, and clicks the Directions button. The app navigates him to the metered spot and he parks at it. Guillermo puts money into the parking meter and selects the metered parking icon again. He then clicks the Enter Time button to record the time that he bought on the meter, and the app starts counting down the time left. It will warn him when the time is almost up. Guillermo goes to the exam and has time to finish it.

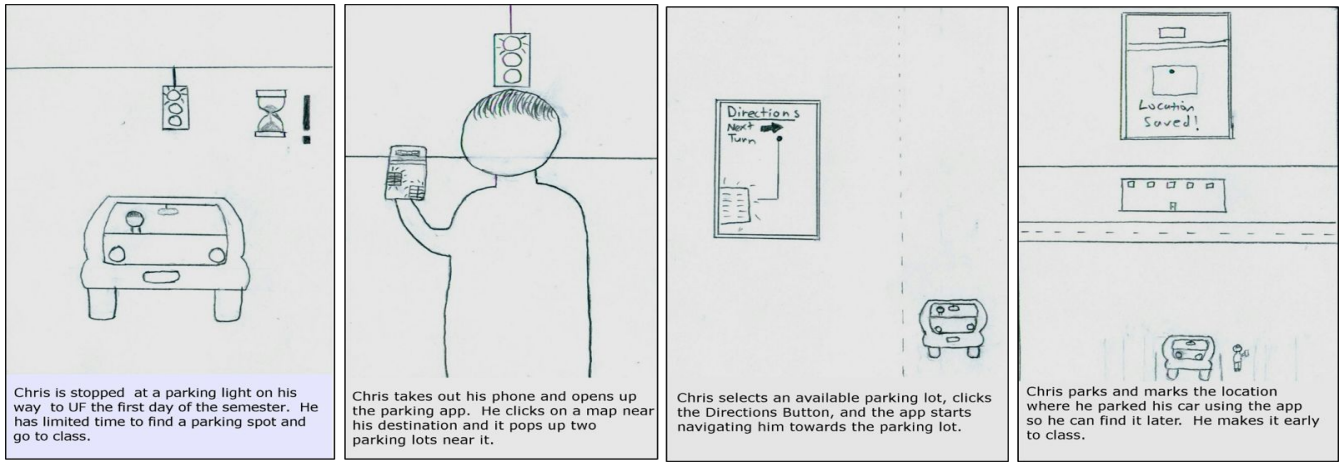
Scenario 4

Name: Chris Anderson

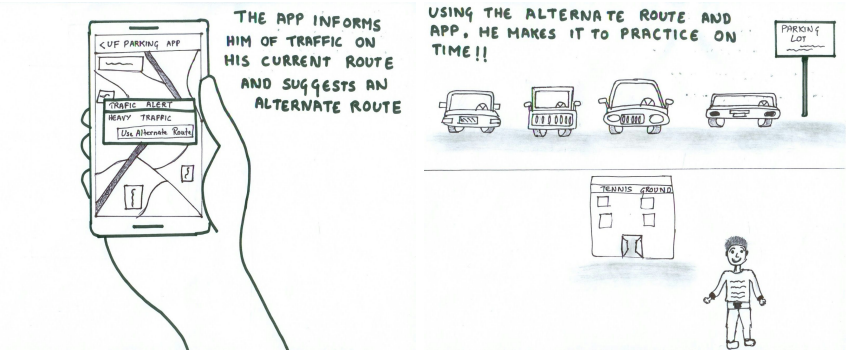
The CISE department recently hired a lot of new graduate students to work in the labs for a new large project that has been started. Chris works as a research assistant in one of those labs and has noticed increased competition for the parking spaces. So, he decides to reserve a parking spot for himself so he does not have to fight to find one. Chris owns a huge truck, so he wants to find a lot with wider spaces. He opens up the app and individually clicks on several lots near the CISE department. At each lot, Chris uses the More button to view the lot descriptions and see which ones have wider spaces for trucks. While he is browsing, Chris absentmindedly clicks on a lot that requires a decal that he does not have. The app warns him that he is looking at a lot that he does not have the decal for in order to prevent him from accidently reserving a spot there. Chris wants to have the freedom to take the bus if he needs to, so he also turns on bus stop icons under the Options menu, and sees which parking lot has a nearby bus stop. After he has considered all of these variables, Chris selects a parking lot he likes and reserves a spot using the Reserve button. N,ow, Chris does not have to fight for a parking space when he goes to the lab.

Storyboards

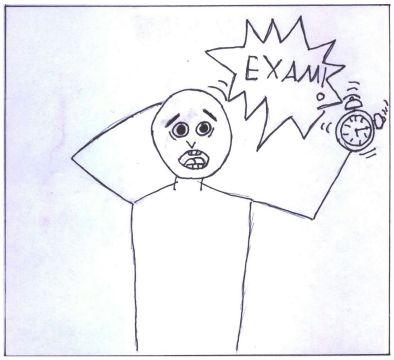
Scenario 1



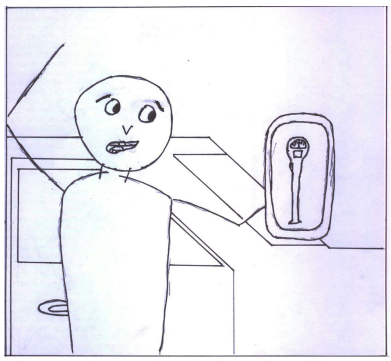
Scenario 2



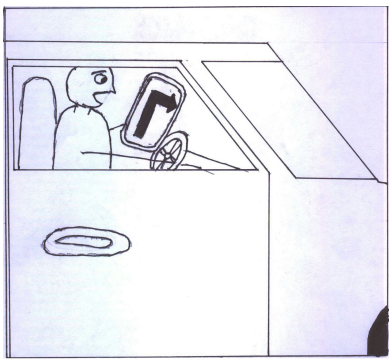
Scenario 3



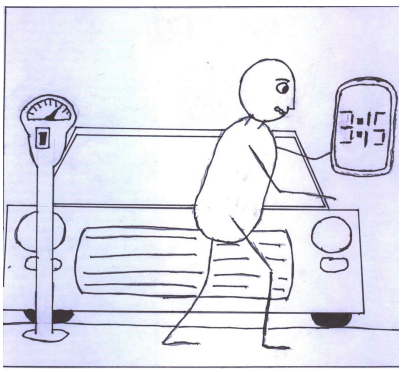
Guillermo does not typically drive to school during regular hours, but today he has no choice because he is late for an exam.



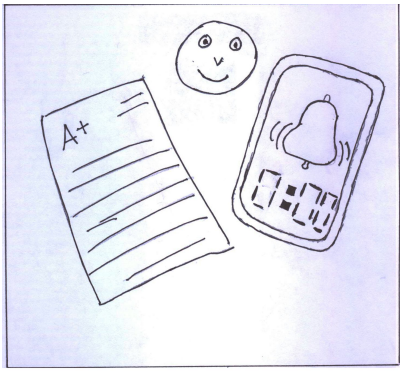
Since he does not have a decal, he will have to park at a metered parking spot. Using the app, he finds one close to where his exam is.



He then uses the app to get the directions to the metered parking spot and navigate to it.

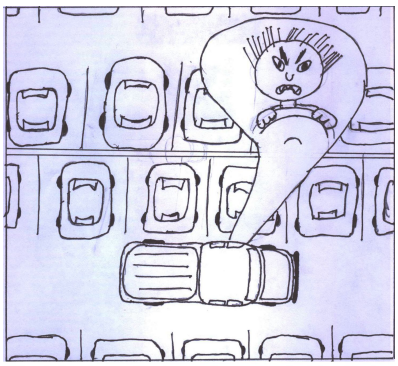


After parking, Guillermo enters the metered parking time he bought into the app, which starts counting down from there.

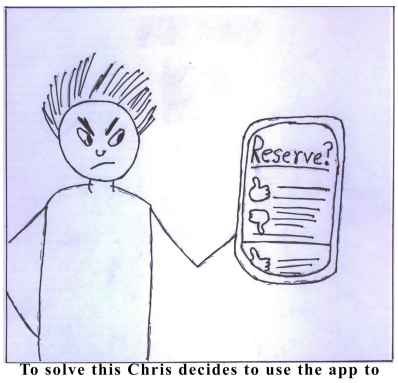


Guillermo arrives with enough time to finish the exam. The app will warn him if the time on his parking meter runs out.

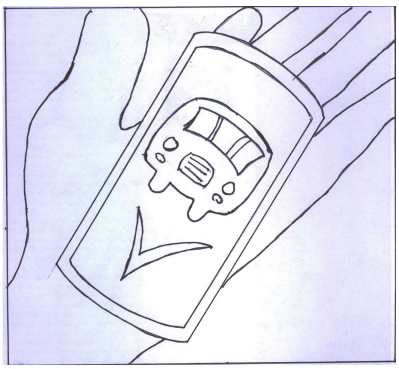
Scenario 4



The lab where Chris works recently hired a lot of brand new people for a big project, so Chris has been having trouble finding parking.

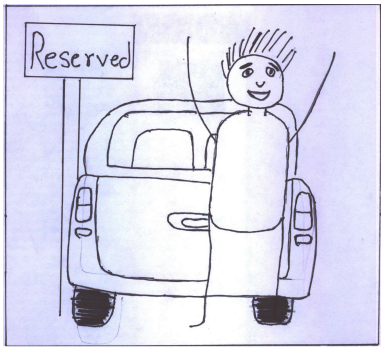


To solve this Chris decides to use the app to reserve a parking spot for himself. To see which parking lot he prefers, he browses through the descriptions and user reviews of several lots.



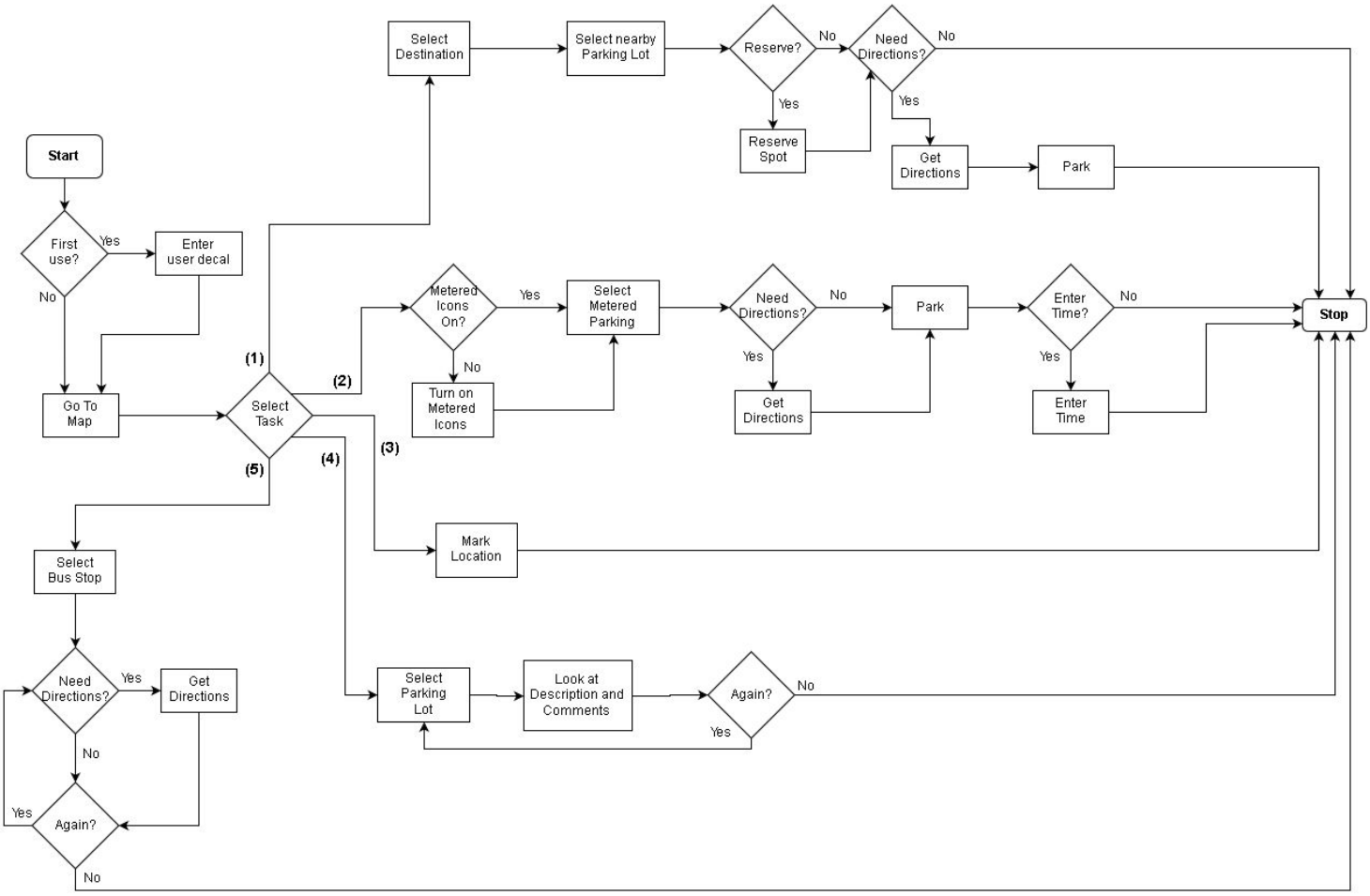
He wants a parking space near a bus stop, so before deciding where to reserve Chris also looks at which lots have bus stops nearby.

While browsing, Chris almost reserves a spot in a lot that he doesn't have a decal for, but the app warns him just in time.



Chris selects a parking spot he likes and reserves it. Now he no longer has to compete for parking spots.

Task Flow



Tasks:

(1) Find Parking
(2) Using Metered Parking
(3) Marking Location
(4) View Lot Details
(5) View Bus Stops

Wireframes

With respect to each scenario, the user would interact with this app as follows:

Scenario 1: Screen 2 - 6 -1 - 3 - 4 for browsing, setting decal, getting directions and marking places.

Scenario 2: Screen 2 - 6 - 7 - 6 - 3 for checking events parking, browsing and getting directions.

Scenario 3: Screen 2 - 4 - 2 - 6 - 7 - 3 for checking metered parking, getting directions and setting alert.

Scenario 4: Screen 2 - 6 - 7 - 4 - 6 - 5 for checking comments, reserving spot and browsing bus stops.