Project Deliverable #1

COMP3004: Object-Oriented Software Engineering.

Instructor: Olga Baysal

September 20th, 2020

Team name: D.O.P.E (Digitally Open, Professionally Engineered).
Project name: Parallel.
Team Members:

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What is your project? Why is it interesting? Describe and justify your project selection. Why does this project make sense in a mobile form factor?

Team D.O.P.E has decided to go with a project/app called Parallel. Parallel is all about making payments for street side parking as convenient as possible for the driver. The app will make it easier for drivers to pay for street side parking via their mobile phone and it will also give them the ability to extend their time as needed. Using Parallel will remove some of the underlying stress and complications that come with using an old system such as the parking meter that is currently being used.

Paying for street side parking is a problem that many people face on a day to day basis and for various reasons. Users will no longer have any reason to use the parking meter again because the payments can easily be processed via Parallel. A situation could occur where someone has paid for parking but needs more time, Parallel makes the process of extending your booked time very easy with payments being made from your mobile device with no need to walk back to where the parking meter is located.

We decided to build Parallel because we saw street side parking as an area that we could make a meaningful impact. According to Statistics Canada, there were about 13 million Registered vehicles in Ontario last year, that's already a potential 13 million users for Parallel in Ontario alone. According to Ottawa.ctvnews.ca from March 17th to June 18th last year Bylaw services officers issued about 63,000 tickets for a parking violation in Ottawa. Parallel could help reduce the number of tickets issued because of the payment flexibility it offers; if the user goes past the allotted time, they can just easily extend the time right from their mobile device.

Parallel is best suited as a mobile application because of all the convenience that a mobile device already provides with portability being the main one. If Parallel were to be designed for Desktop use only, that would negatively impact the level of convenience we are trying to achieve by building Parallel.

Functional Requirements

1. For general/metadata view for any user
   1.1. Highlight new parking spots, the parking prices and/or rates.
   1.2. Display for the user the most updated information for parking prices.
   1.3. Display (on a map and/or a list) for the user all metered and non-metered parking areas registered with the app.
2. For app transaction info to the user
   2.1. Input user's vehicle licence plate number and reservation password (session ID) to the system's server for when users check in.
   2.2. Provide users with proof of payment when checking out of the app.
3. For user main interactions with the app.
   3.1. Geolocate parking spot from list of options registered with the app.
   3.2. Display the details of the selected parking space (name, flat rate/price per minute, time left until expiry, number of available spaces if applicable.)
4. For managing the app's Backend
   4.1. Modify & communicate parking status to users.
   4.2. Create a sessionID for each parking transaction and share it with the user.

Non-Functional Requirements

1. Product Requirements
   1.1. Security - pay info and user data (licence plate)
      1.1.1. The system must assure that user data is secure according to the licence plate. -- Access to driving or payment history must be prohibited or at the very least limited to the user.
         1.1.1.1. Metric : redirect users to 3rd party payment app.
         1.1.1.2. Measure : number of redirections to PayPal.

   1.2. Reliability
      1.2.1. The Android-based system must perform its tasks (provide accurate parking data) as required and expected.
         1.2.1.1. Metric : defect rate based on the amount of hours the system is in operation.
         1.2.1.2. Measure : The system defect rate shall be less than 1 failure per 1000 hours of operations.

2. Process/Organizational Requirements
   2.1. Environmental
      2.1.1. The system must not cause physical harm to users, non-users and surrounding fixed or moving agents (bystanders, buildings, city structures, personal or public property)
         2.1.1.1. Metric : approving of the terms and conditions to using the app.
         2.1.1.2. Mesure : number of "I Agree" to using the app.

3. External Requirements
    3.1. Safety
        3.1.1. The app must not require user input while the user is driving.
            3.1.1.1. Metric: detecting the mobile geolocation and the speed at which the device is moving.
            3.1.1.2. Measure: any movement in excess of driving speed per hour, the user will be alerted to not engage with the app while driving.

User Scenarios (3)

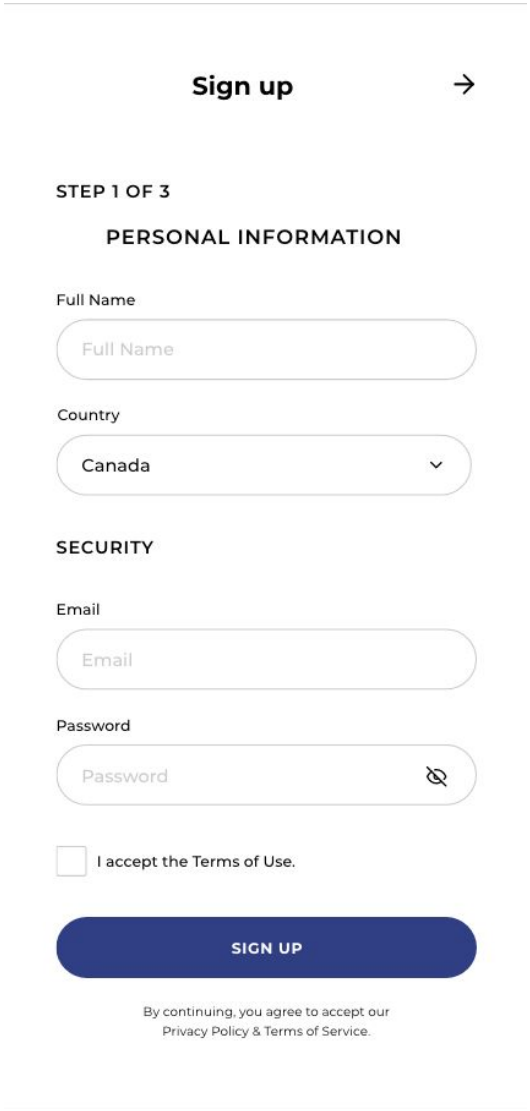
Abraham is a very outgoing and extroverted individual who oftens likes to go to parties, events, and many other social gatherings. One night as he is driving towards a house party that his friend is organizing he struggles to find a open parking space and spends over 30 minutes looking until he finds one.Unfortunatly he needs to pay the meter and decides to stay at the party for 2 hours, while at the party he realizes his 2 hours is almost up but he really wants to stay an hour longer. This inconveniently means that he needs to walk all the way back to his car and pay for the extra time that he wants, would it not be great if there existed an app that made Abraham's life easier. Parallel will show Abraham available parking spaces whether or not it is metered, allow him to pay for a specific amount of time and extend his amount of time if need be all the while providing him with proof of payment.

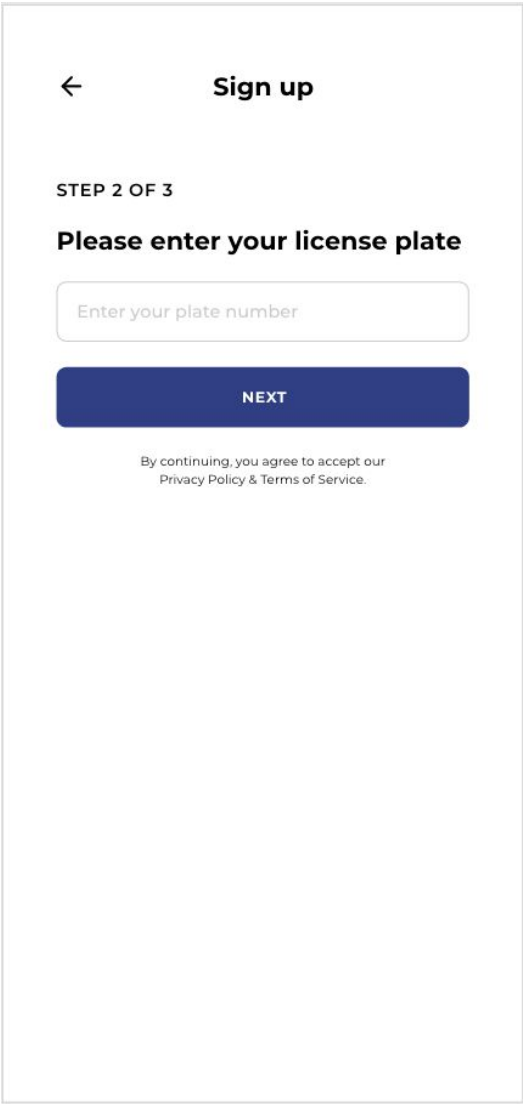
Let's look at Paige, Paige is a student in OttawaU who is diligently preparing for her upcoming exams. One particular morning she is rushing to campus with her car looking for a parking spot, unfortunately the campus is located in downtown Ottawa and parking space is limited. She is in a rush due to the fact that she needs to write her exam in less than an hour, desperate she parks her car in a place that doesn't seem to require payment, unbenounced to her there is a 2 hour time limit and her exam is 3 hours. Unfortunately she received a parking ticket, this tragedy has befallen many students simply seeking knowledge, if there was only an app that told her where she could park for free. This is where Parallel comes in displaying(on a map and/or a list) all metered and non-metered parking areas registered with the app to page and highlight new parking spots, the parking prices and/or rates .

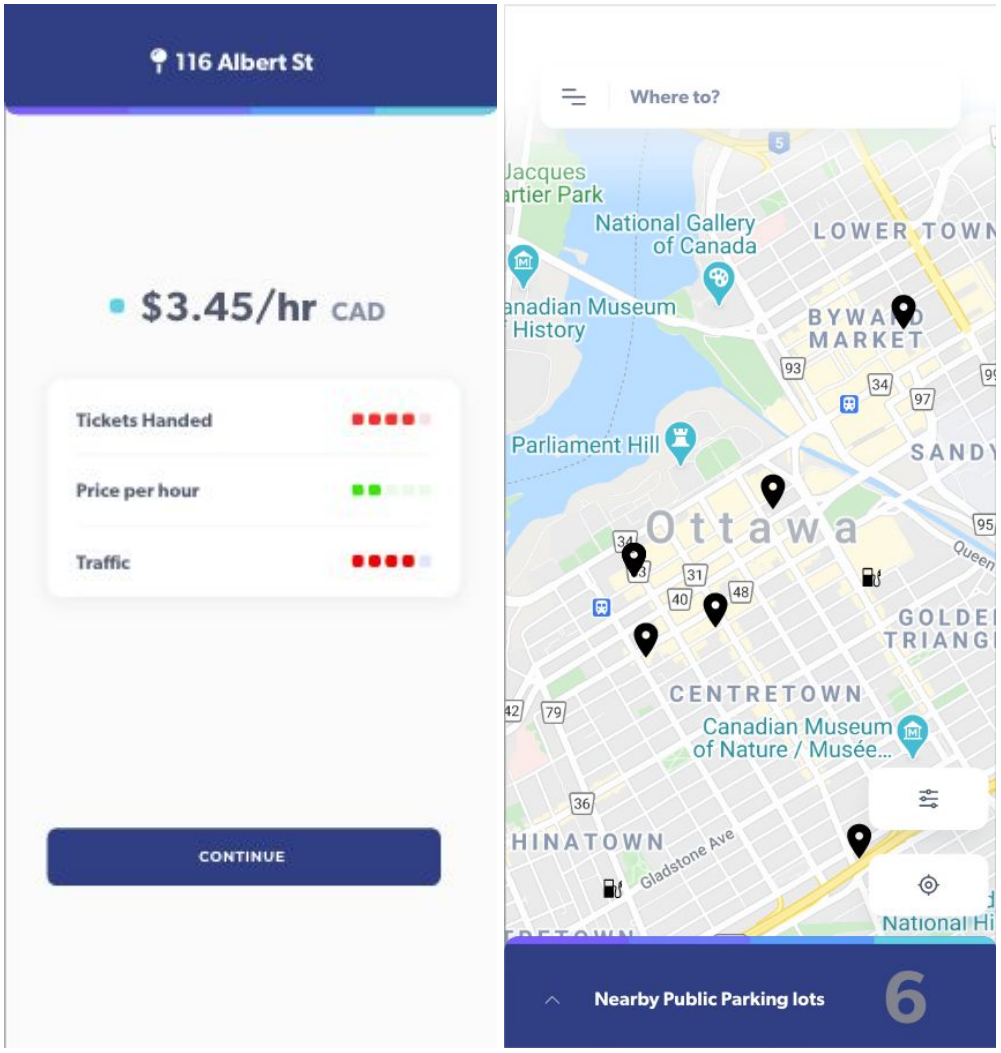
Sara is a nurse working at the Civil Hospital, on her way to an early morning shift she notices that there is construction going on at the parking lot hospital and she has nowhere to park. After spending around thirty minutes looking for a parking garage she finally finds one inconveniently located 15 minutes away from the hospital. Once she parks her car and pays the meter she heads over to start her shift, during her shift she overhears her coworkers talking about a parking lot conveniently located only 5 minutes away from the hospital. Parallel would have displayed for her the most updated information for parking locations and places to park informing her of the parking garage where she could pay at the end of her shift.

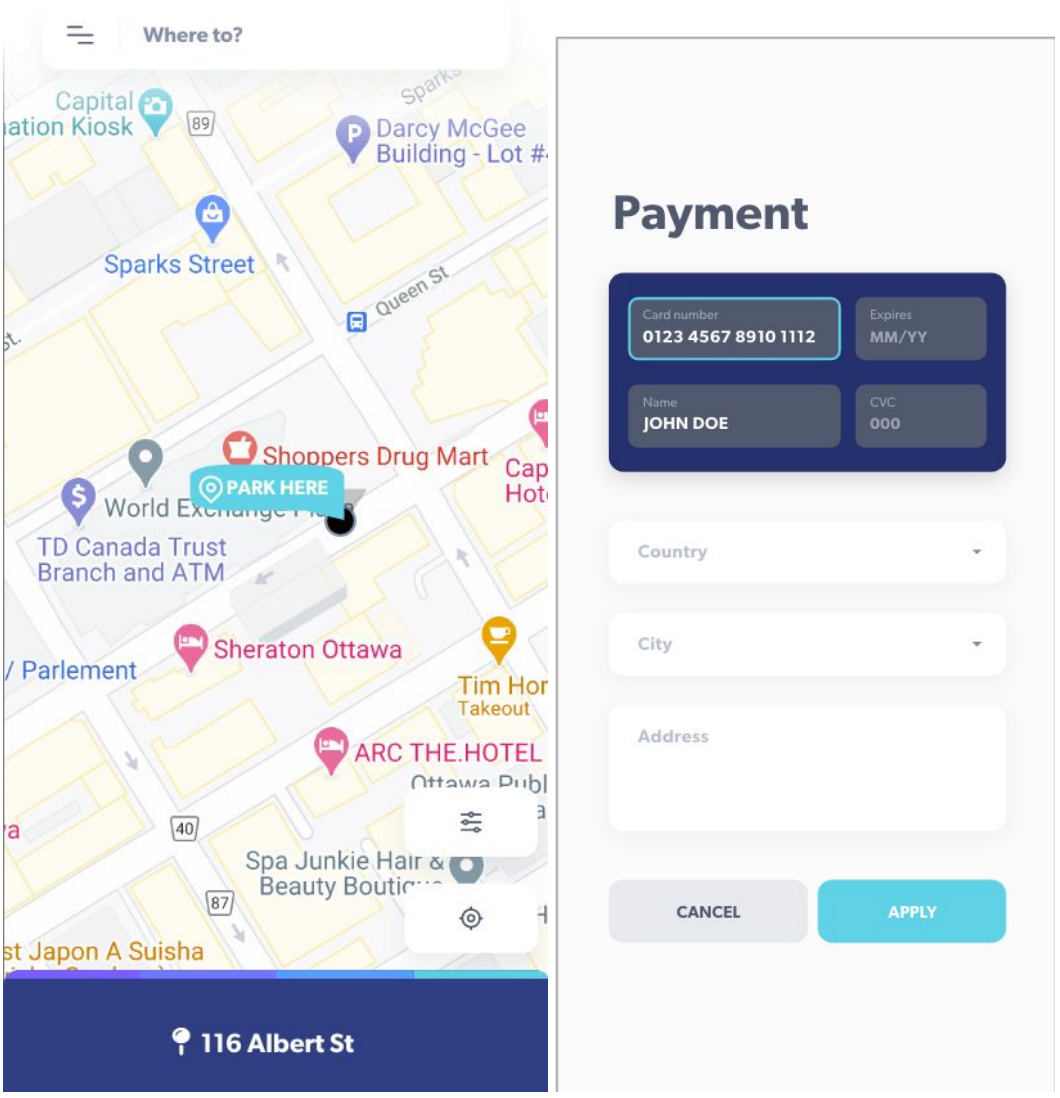
Parallel will provide our users with the ability to conveniently pay for parking for specified time and extend it, display available metered and non-metered parking spaces, and provide proof of payment.

Mockups (Design Draft)






116 Albert St
$3.45/hr CAD
Tickets Handed
Price per hour
Traffic
CONTINUE
Where to?
National Gallery of Canada
LOWER TOWN
BYWARD MARKET
Parliament Hill
Ottawa
CENTRETOWN
Canadian Museum of Nature / Musée...
HINATOWN
Gladstone Ave
Nearby Public Parking lots
6


Where to?
Capital
ation Kiosk
89
Darcy McGee
Building - Lot #
Sparks Street
Queen St
Shoppers Drug Mart
PARK HERE
World Exchange
TD Canada Trust
Branch and ATM
Sheraton Ottawa
/ Parlement
Tim Hor
Takeout
ARC THE.HOTEL
40
Spa Junkie Hair &
Beauty Boutiq
87
st Japon A Suisha
116 Albert St
Payment
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MM/YY
Name
JOHN DOE
CVC
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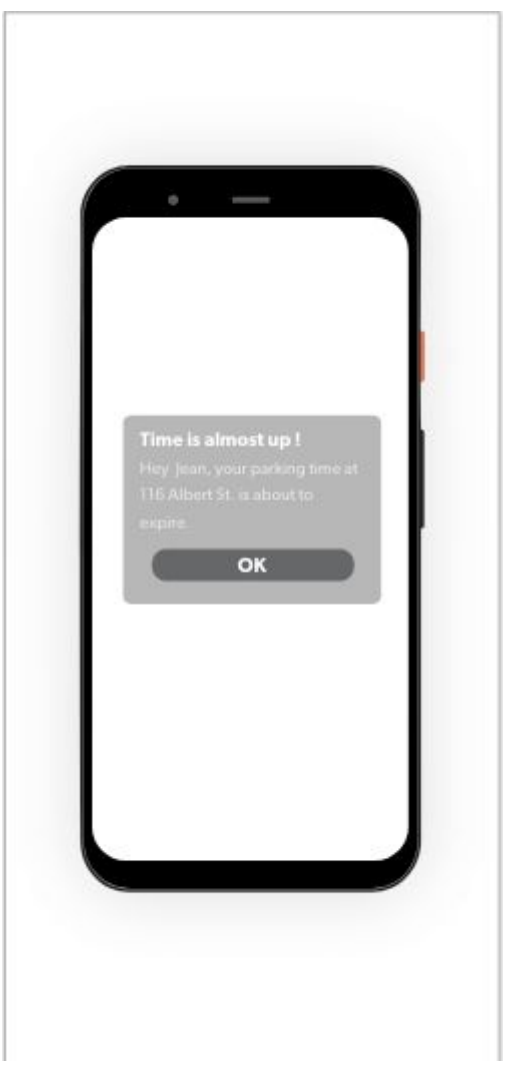
Country
City
Address
CANCEL
APPLY



Sign up

STEP 2 OF 3

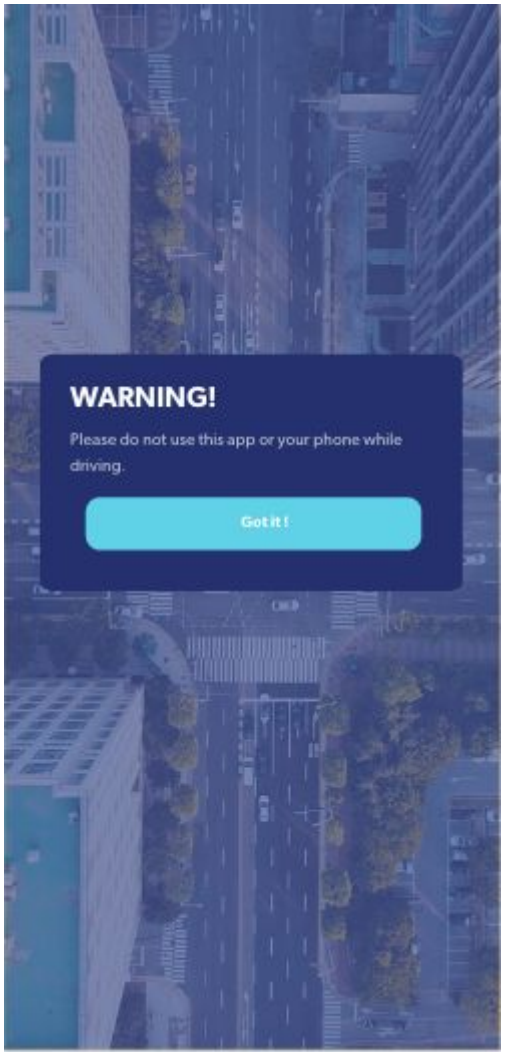
How old are you?

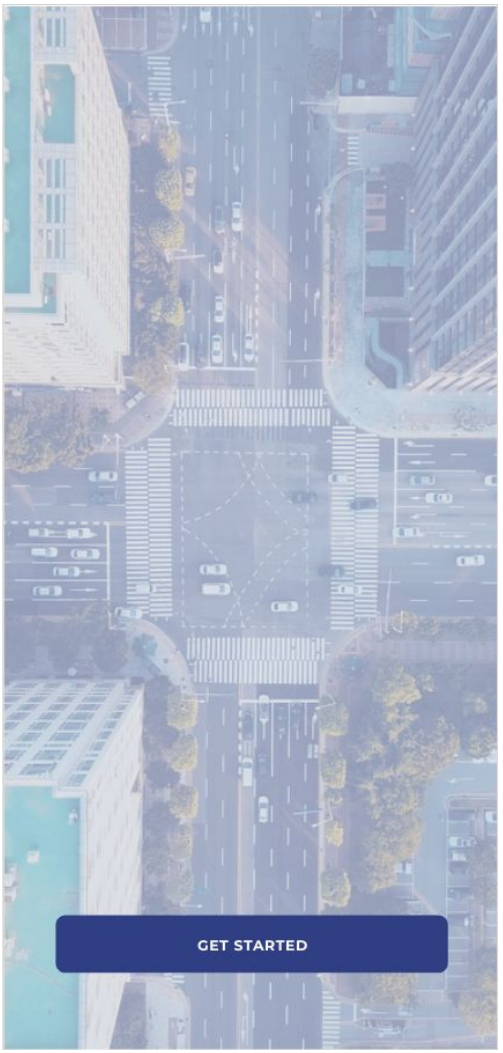
We want to make sure you're old enough to use the app, and drive a car.

Enter your age

NEXT

By continuing, you agree to accept our Privacy Policy & Terms of Service.


WARNING!
Please do not use this app or your phone while driving.
Got it !


GET STARTED