

# **InstaRide: a redesign of the ticketing system for public city transit**



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# Task Centered Design and Prototyping Grading Sheet: Be sure to include it in your portfolio

Student  
Names  
and  
emails

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*Note: The list below is a set of guidelines, or a "convenience" checkpoint. Getting many satisfactory checks does not necessarily indicate a good project (or vice versa).*

## Structure and format

	Included	Not included		
Portfolio uses a binder	1	0		
Section separators	1	0		
Name on outside cover	1	0		
Name and contact information on the first page	1	0		
This grading sheet included in portfolio	4	0		
	Complete	Missing portions		
Table of contents	2	1		
		0		
	Great: no problems	Good: a few minor problems	Poor: Problems throughout (your mark in other sections may also be affected as well)	
Appearance (organization, layout and whitespace)	6	4	0	
	No typos, grammatical or spelling errors, clear writing style	Minor typos or grammatical errors or spelling mistakes or some writing may be a bit vague	Problems in two areas (spelling, grammar, style)	Problems in all three areas

Language and writing style	7	5	3	0
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### Setting the stage

	<b>Clear and complete (yes)</b>	<b>Clear and complete (no)</b>		
Background	1	0		
Expected uses of the system	1	0		
System constraints	1	0		
	<b>Lists user groups along with relevant skills and experience</b>	<b>Lists user groups with no additional information</b>	<b>Information not included</b>	
Expected users	2	1	0	
	<b>Clear &amp; complete</b>	<b>Some information missing or unclear</b>	<b>Information not included</b>	
Work context	2	1	0	
	<b>Spoke directly with actual users</b>	<b>Spoke with a representative of the user</b>	<b>Made it all up</b>	
Approach for getting background information for tasks	2	1	0	

### Tasks

	<b>Appropriate No. (~5-7)</b>	<b>Fewer than what's needed for the usage of the system</b>	<b>No tasks were included in the portfolio</b>	
Number of tasks	2	1	0	
	<b>Covers all relevant activities</b>	<b>Missing a few important tasks</b>	<b>Missing many important tasks</b>	<b>No tasks were included in the portfolio</b>
Coverage of the tasks	8	6	2	0

	<b>No violations</b>	<b>A few minor violations</b>	<b>Many violations throughout</b>	<b>No tasks were included in the portfolio</b>
Do the tasks follow the properties of a good task?	8	6	2	0
<b>Prototypes</b>				
	<b>Two or more</b>	<b>One</b>		
Number of versions/iterations	2	1		
	<b>Marked improvement from version to version</b>	<b>Few and/or superficial changes from version to version</b>	<b>No evolution between prototype versions</b>	
Evolution of prototypes	6	2	0	
	<b>Provides clear idea of how prototype changed from version to version</b>	<b>Describes changes but some parts are unclear</b>	<b>None</b>	
Description of how prototypes evolved	4	2	0	
<b>Requirements</b>				
	<b>Requirements are grouped into categories with clear and detailed explanations based on the users and their tasks</b>	<b>Requirements are grouped into categories, no indication of how functions were put into particular categories</b>	<b>Requirements are shown in a single list, no attempt at prioritization</b>	<b>No requirements listed</b>
Description of system functions to be implemented	5	2	1	0
<b>Walkthroughs</b>				
	<b>Walkthroughs for all relevant tasks</b>	<b>One</b>	<b>Zero</b>	
Number of walkthroughs performed	4	1	0	
	<b>Walkthroughs conducted, all or most usability problems were caught</b>	<b>Walkthroughs conducted, some minor problems were missed</b>	<b>Walkthroughs conducted, many minor or several serious problems were missed</b>	<b>Walkthrough not performed</b>

Results of conducting the walkthrough algorithm	10	8	4	0
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	<b>Walkthrough results summarized for each scenario/task</b>	<b>Walkthrough results summarized for each scenario/task but not for all tasks</b>	<b>Walkthroughs conducted and results shown in table but no additional analysis, summarizing problems</b>
Analysis of walkthrough results	6	3	0
Ease of following/tracing the walkthroughs	<b>Walkthroughs easy to follow (e.g., included diagrams at all relevant points of walkthrough, diagrams are annotated)</b>	<b>Some points of the walkthrough difficult to follow (e.g., walkthrough description didn't match interface, additional diagrams would have made things clearer)</b>	<b>Walkthroughs not conducted</b>

## Tutorial presentations

	<b>Provides clear background information, good tasks presented, requirements properly categorized</b>	<b>Minor problems: some background information unclear, minor violations in the descriptions of the tasks, requirements could better justified</b>	<b>Poor: task violate many properties of good tasks, or background missing or largely incomplete, requirements are not justified</b>	<b>No presentation</b>
First presentation: Phase one and two	4	3	1	0
	<b>Walkthrough: caught most problems, clear indication of what future improvements should be</b>	<b>Walkthrough: Missed a few minor problems in the walkthrough</b>	<b>Walkthrough: Missed many minor problems in the walkthrough or a few major usability problems</b>	<b>Walkthrough: Many serious problems were missed in the walkthrough</b>
	<b>Prototype: Gives a good feel for how the interaction unfolds, covers main system functions</b>	<b>Prototype: Some parts of the interaction unclear, a few minor system functions (relevant to task) or a major function is missing</b>	<b>Prototype: several main system functions were missing</b>	<b>Prototype: main system functions were missing</b>
Second presentation: Phase three & four	4	3	1	0
All team members completed all weekly MVP surveys to portfolio due date	Complete	Incomplete		

## **Phase 0: General Background**

### **Background environment:**

Our project will be based on public transportation systems from all around the world, with a primary focus and inspiration from Calgary Transit; our design and task examples are based on Calgary Transit. Public transportation systems around the world typically have the ability for passengers to take a train and/or a bus towards/to their desired location. Lots of people, from a variety of different backgrounds (eg. age, gender, race, occupation, education, etc), may use public transportation systems from a range of on a daily basis to using these systems once in a rare occasion. To use these transit services, passengers need to produce a valid transit ticket; they can do this by buying a ticket on the spot, showing a valid non-expired ticket, redeeming a pre-purchased ticket, or by showing their transit pass (monthly transit passes are typically valid for the month they are purchased, or for full-time university students, they can get access to a U-Pass, which is valid for the school semester). Currently, many transit systems, such as Calgary Transit, allow passengers to purchase tickets on “ticket vending machines” that are seen throughout train stations. These ticket vending machines use a touch screen interface to allow the passengers to purchase their transit ticket(s) using payment methods of either cash or credit/debit card. If the passenger is taking the bus, they can get a ticket/transfer by paying with cash. There are other ways to purchase tickets such as going to a physical or online store to purchase batches of physical future-use tickets and monthly passes. The batches of physical future-use tickets can be redeemed and used at any time before their expiration date. A lot of cities, including Calgary are now adopting mobile applications for public transportation. For example, the current Calgary Transit “My Fare” app allows the absolute necessity of purchasing ticket(s) and viewing the tickets purchased. The app also contains information for customer service, and FAQ section directly integrated on their app; everything else on the app links back to other external applications such as the Calgary Transit website via a web browser. There also co-exists a self-titled Calgary Transit app, which focuses more on the trip planning aspects of taking Calgary Transit. Both of the Calgary Transit Apps are used as an alternative, rather than a replacement to the current Calgary Transit system and they aren’t advertised to be a replacement right now.

## **Why are we making a new system to replace the current system?**

We plan to build a mobile application for public transportation services, such as Calgary Transit, with a primary emphasis on the transit ticket purchasing experience. Some of the reasons we want to create this mobile application system includes:

1. **COVID reasons and wanting to avoid touching widely used public surfaces.** Due to the ongoing COVID-19 pandemic, everybody is trying to avoid/reduce their chances of contracting this deadly virus and reducing another popular surface for passengers to touch will reduce the chance of contracting the virus. Reducing the public surfaces touched can help towards making using public transportation a more sanitary experience.
2. **Reduce the usage of paper for environmental reasons.** As the world is in the midst of many environmental crises, a good way to help the environment is to reduce the usage of paper used by transit services. Transit tickets are single use items; they typically get discarded by the time the ticket expires. Digitizing tickets is a good way to help reduce the impact on the environment.
  - 2a). **This also has a nice side effect by reducing the chances of losing the transit ticket during the ride.** There may be passengers who forget to grab their ticket after purchasing it or they may simply lose their ticket and when asked by an officer/operator for their ticket, they may get fined/have to pay for another ticket to continue using the service; digitizing tickets greatly reduces this situation from happening.
3. **Fastest/most convenient way to purchase tickets.** There are situations when using transit services where you do not have the time to go to a ticketing machine and perform the steps it takes to purchase a ticket because the train may be leaving soon. A mobile ticketing option can be the quickest way to purchase tickets, so passengers don't have to spend lots of time purchasing tickets to reduce their chance of missing their train. This will also avoid the passenger having to go to a physical store to purchase batches of future-use tickets or their monthly passes, saving them unnecessary trips.
4. **Over time, the removal of standard ticketing machines.** Similar to the reasoning for reducing the use of paper for the tickets, transit services want to reduce the usage of standard ticketing machines. This can save on electricity that these ticketing machines use and the cost of

maintenance on these ticketing systems (such as repairs on damage to the systems). Ideally, all the ticketing machines are removed, but we are aware that a reduction on the majority of the machines used will be satisfactory as there may be passengers who need to continue to use these existing systems.

### **What the system will be used for and general expectations:**

The mobile application system will be used as the eventual replacement of the standard ticketing systems, and become the primary way to purchase tickets for public transportation. This mobile application will primarily be used to purchase tickets and passes, hold onto tickets and passes for future use, and to display the tickets and passes when needed. We envision this mobile application to be a one-stop location for all the transit needs for users. In addition to the primary features mentioned, users' would be able to request special accessibility transportation, search up routes, contact customer service, get estimated arrival times, etc. We want passengers to feel that the mobile application is the main way to purchase tickets instead of being a gimmick/alternative to standard ticketing systems. Since the application is envisioned to be used by all transit passengers, we want to make the application easy to learn how to use, and easy for the passengers to perform their tasks since we can't assume every passenger will have a very good understanding of how mobile applications work.

### **System Constraints:**

There are factors that will limit how our system will be used and deployed.

1. **Not everybody will have a compatible mobile phone.** Even though a majority of people use mobile phones, we cannot assume that everyone will be able to have access to the mobile application. Some reasons include some users simply not having a smart-phone, some users who have working smart phones, but it does not have the supported software (such as up to date IOS/Android version) and some users whose compatible smart-phone may run out of battery.
2. **Users without compatible payment methods.** Many adults have some form of payment that can be used digitally such as a debit/credit card, paypal, etc, but we cannot assume that every user will have access to them, or they may simply opt not to use these payments on our mobile

application. Many of the younger users (pre-teenagers) do not have access to these forms of payment and they rely on cash to purchase things.

**3. Users who are not good at using mobile applications.** Our intention is to design the mobile application to be as simple to use as possible. However, we are aware that there are “technology-illiterate” users who may not be able to navigate a simple interface. These users may have trouble doing important basic tasks like purchasing tickets on the app or finding their tickets on the app. Even though we are trying to make the mobile application as easy to use as possible, we cannot assume that every user will be able to use it without much trouble.

**4. Not every user will have access to internet/data.** Passengers need access to the internet so they can purchase a working ticket/pass. Not everybody will have access to data plans for reasons like it may be very expensive in some places. A solution to this might be to add good public internet throughout train stations, train lines, and bus stops, but this will require more money spent by Calgary Transit (and other public transportation companies). We also have to keep in mind that if the entire internet infrastructure has an outage for whatever reason, no passengers would be able to purchase tickets using our mobile application.

**5. Users refusing to use the app.** Some users who may have all the necessities to use the application may not be convinced to use the application and want to use the old fashion tickets instead.

A solution to these 5 constraints: keep a few standard ticketing machines. While we would prefer to completely remove the usage of these standard ticketing machines, we are aware that some passengers can’t/don’t want to use the mobile application, so we could keep a few of these machines running. Ideally, we would reduce the number of ticketing machines used to 1-2 at most at train stations and on buses we keep the option to be able to purchase tickets using cash. For Calgary Transit Access accessibility options, we can keep the existing phone and web interfaces to coexist with our mobile application.

**6. Users who have disabilities that prevent them from using the mobile application.** While we are including accessibility features to make it easy for people with disabilities to request

personal transportation, there will be users who need these services that will have trouble using the application. These users include those who cannot physically interact with our mobile application (and in general, mobile phones) because of a lack of motor abilities or users who have impaired vision and cannot see what they are doing. A suggestion to help these users could be implementing voice assistant and text-to-speech services, but this may be very difficult to implement for the scope of this project.

**7. Technology and implemented features:** If this mobile application would be developed by an actual software company for actual use, everything that we envision to implement should work properly, but as students, we do not have the ability to implement all the features that we want. One of the main reasons is access to all the technologies/algorithms/coding abilities needed. For example, implementing a map based feature to track where the passenger is and expected trip time is a feature that should be implemented, but the algorithms to perform these features are extremely complicated and not realistic to implement for the scope of this project. A database to track all the tickets/passes, etc purchased by all the passengers and ways to process payment are also very complicated and difficult to implement for a project of this scope.

**8. Time to work on application:** Of course as university students, we have to budget for time for this project with all of the other courses we are taking. There may be features or designs that we cannot implement due to time constraints.

## **Phase 1: Identification**

### **Expected types of users of the system:**

Transit Passengers: We have to assume that anybody in the city could be a passenger of public transit services. This includes younger kids, young adults/teenagers, adults, and seniors. Since there is a large variety of users who use public transportation services, it is very tough to categorize users based on any set of distinct personal features. Instead, we can group all the users into 4 broad categories based on their frequency of use on public transportation systems and any specific public transportation services they need to use: regular transit passengers, occasional transit passengers, rare transit passengers, and passengers who need accessibility services.

**Daily transit passengers** are passengers who use transit systems on a daily basis; typically using transit at least 4-5 days a week. These passengers are likely to purchase monthly transit passes/ use university transit passes because they use transit frequently and it would be cheaper to buy a monthly pass than to buy individual tickets for a month. These passengers are knowledgeable and know the tasks they need to do to use public transportation. An example of daily transit passengers are passengers who take public transportation to work or school.

**Occasional transit passengers:** These are passengers who use transit systems, but not on a daily basis; they may use transit services from 0 to 3 days a week. These passengers are not likely to have monthly passes as it just doesn't make financial sense to purchase them based on how often they use these services. These passengers are generally knowledgeable and know the steps they need to take to use public transportation. An example of occasional transit passengers is passengers who may use these services to buy groceries or go shopping.

**Rare transit passengers:** These are passengers who rarely use transit services, they may never use transit services, or at most 1-2 days for an entire month. They are most likely not users of monthly passes as they almost never use the service. These users may have trouble knowing what tasks they need to do in order to use public transportation because they rarely use it. An example of rare transit passengers includes people who have access to a vehicle and drive everywhere they go.

The above 3 user types only differ in how often they use public transportation and thus how knowledgeable they are about using these public transportation systems and what is their likely way to obtain a transit ticket.

We also have to keep in mind **passengers who need accessibility services**, who need access to personal public transportation options. These are rare passengers who cannot use typical public transit services because of disabilities that will make it very difficult to use these services, such as users with physical disabilities (such as wheelchairs) or users with cognitive disabilities that prevent them from using regular transit services. These passengers get to use personal buses/taxis that can take them directly to a destination of their choice. We decided not to explicitly split this

user group based on how often they use public transportation due to redundancy reasons, but these users can also use these services daily, occasionally, or rarely.

Since there is such a large range of passengers on public transportation, we cannot assume the experience that passengers have with smart-phones and mobile applications. Thus we need to design the application so it is easy for anybody to use and easy for them to learn, so it won't be a hassle to use whenever they use public transportation services.

A type of user we are excluding from this is Calgary Transit Drivers. These drivers do not need to present any tickets or payments in order to use public transportation services, and they have their own system to identify themselves as employees.

### **Work Contexts:**

Since many people use transit systems, there can be lots of reasons to take transit, including going to school, going back home, going to work, going shopping, going out, etc. People use transit services because they know it is an affordable and typically reliable way to get to their destination.

### **Typical Work setting:**

Regardless of the reason for using transit, passengers typically need a form of proof of payment (eg. transit ticket/ monthly/school pass, etc), or to have the ability to purchase tickets right before using the transit services. They then have to wait for the train/bus to arrive before getting on. There may be certain times where transit gets busier than others (such as early morning before school/work and after school/work); which may require waiting extra time to do tasks.

Passengers get off at their desired locations and it is possible that they may have to transfer to different trains/buses to get to their desired location. Tickets are time based; for example, if someone purchases a regular ticket, they can use it for 90 minutes before they are required to purchase another ticket to continue using the service on Calgary Transit. The transit system could

range from different sections around the entire city based on reasons such as population density or ease of access to the location.

There are also some users who may have disabilities and cannot use regular transit services for those reasons. There is the ability for these users to contact special public transit services for personal forms of transportation to their desired locations. Through special services such as Calgary Transit Access, users who need special access can use this service by making a request using the Calgary Transit Access website or by calling a special phone number to book the trip. Users of these services would enter information including the time frame and date they want to use the service, their pick up location, their drop off location, if they need a bigger vehicle to accommodate their needs (such as fitting wheelchair onto the vehicle) and the ability to request a round/multiple trips if needed (and repeating the process of entering the time/date they want to be picked up, their pick up location, their drop off location). A vehicle would arrive at the pick up destination on the proper time and date and the driver can escort the passenger into the vehicle and transport the passenger to their drop off location.

### **Concrete Tasks Example:**

#### **Task Examples:**

##### **Student Going to University:**

Scottie Barnes is a full-time university student who uses Calgary Transit on a daily basis to get to the University Of Calgary because he can use the U-Pass that his school provides him. On this particular day, Scottie gets to Somerset station and goes on the train, but the train doesn't depart immediately so Scottie isn't sure when he is expected to arrive at the university train station; he uses the Calgary transit website to see the estimated trip time, which takes 1 hour. The train leaves 5 minutes later and a transit officer asks Scottie for his proof of payment. Scottie gets his U-pass on his university ID card out of his backpack to present to the officer, who is satisfied and moves on to check other passengers. Unfortunately for Scottie, most of the downtown train

stations are not working properly due to a power outage and trains are not able to go through these train stations, forcing all the passengers, including Scottie to exit the train at City Hall station and forced to take the shuttle buses to a working train station. Scottie is very shocked and unaware about the power outage and is forced to wander around so he can find a shuttle bus that will take him to a working train station. After failing to find anything in his surrounding area, he visits the Calgary Transit website and uses the map feature to find the nearest shuttle bus, which is only 1 block away. Scottie reaches the bus and takes his U-pass out of his backpack to show the bus driver so he will be allowed on the bus. The bus arrives at 7th street station and a train is there, allowing Scottie to get on and make his way to school.

**Explanation:** Scottie represents a daily transit passenger because he takes transit on a daily basis so he is able to get to school. Scottie represents a user type that is very important to consider; many passengers take transit on a daily basis for multiple different reasons, so they are a user type that we must consider when designing our application. The task that most daily transit passengers do is presenting their monthly passes/ U-passes to officers/transit drivers. This is a very important task because it is done very frequently, multiple times daily by many passengers. Since this task is done very frequently, we want to make a design that would be pleasant to use features that are needed on a daily basis, such as having a quick way to pull up monthly transit passes; this wouldn't make the users feel like it is a chore to do this essential task. Getting the estimated trip time is also an important feature to have, but daily transit passengers may not use it daily; occasional and rare passengers are more likely to use it as they may not be sure how long their trip will take. Having a map interface is also an important feature, and can be a commonly used feature; each user type could find the route they are taking and know when to get off based on the map interface, but daily passengers are probably not going to use these map interfaces for their daily routes; they may use this map interface for unfamiliar routes. A service disruption notification is rarely used, as service disruptions don't occur on a daily basis, but are important when needed. Passengers should be notified about the disruptions before they even arrive at the train station/ bus stops so they can make alternate arrangements if needed.

**How we collected and validated these tasks:** since all of us are university students who have to take transit to get to university at some point, we are all familiar with how taking transit on a

daily basis went and making use of map interfaces/estimated trip time when going somewhere we are unfamiliar with. This example was exaggerated because service disruptions that prevent trains from working in a certain area is a very rare, but a possible scenario that a few of us have experienced.

### **Buying Multiple Tickets at the Same Time:**

Karen Hill and her 3 children are heading to the Calgary Stampede on kids day. She drives her kids to Heritage station so they can take the train as parking is impossible to find during the stampede, otherwise they would have driven there. Since Karen never takes transit, she isn't sure of the proper procedures and asks a passenger who tells her that she needs to purchase tickets for her and her kids and for them to wait for the northbound train to arrive. Karen and her kids reach a ticket purchasing machine and having never purchased a transit ticket before, Karen is able to navigate to the ticket choice options, as the interface is very simple (1 button to be able to purchase tickets) and Karen has experience with different kinds of interfaces. Karen notices the option to purchase multiple tickets at a time, which could save her a lot of time, so she selects it. Karen initially wants to purchase 1 adult single ticket and 3 youth single tickets (total cost: \$10.70), but notices a day pass ticket option, and she removes the regular tickets so she can purchase 1 adult day pass and 3 youth day passes (total cost: \$35.00); so she doesn't have to buy tickets on her way back. She then does some quick calculations and notices that she would be paying more than necessary since she is only intending on taking the train on the way back to get her car, so she removes the day passes and switches back to the 1 adult single ticket and 3 youth single tickets (total cost: \$10.70). She is fine with the options she selected, so she proceeds to the payment page, where she taps her credit card to make the transaction. The machine then dispenses her tickets purchased and she holds onto them for her children. Karen and her children get on the train and make their way to Victoria park station, where they will enter the Calgary Stampede.

**Explanation:** Karen and her children are rare transit passengers; before this scenario, they have never used public transportation and after this scenario, they may not use it again unless there is a special occasion. She is important to consider in the design because these passengers do not

have the most experience with how to use public transportation and they may need some assistance to know what tasks they need to do. The tasks that Karen has performed are commonly done and important tasks. There are lots of scenarios where somebody has to purchase all the transportation tickets for a group and the important feature is to purchase all the tickets in one transaction so it would be very convenient for the passengers; otherwise passengers would have to purchase 1 ticket per transaction, which would become very annoying. Karen purchased tickets that are for immediate use and this is a very important and extremely common task to implement; most occasional transit passengers and rare transit passengers typically obtain their tickets by purchasing their tickets immediately at the transit ticketing machines or on the bus. The task to be able to change which tickets passengers want to purchase is also a very important task to perform since passengers should not have to purchase a ticket that they do not want. Changing the tickets selected is a less common task since passengers typically know what tickets they want to purchase, but newer users may have to play around with the interface, or it is possible that passengers accidentally selects an incorrect ticket.

**How we collected and validated these tasks:** Eric recalled a time where when he was younger, his mother took him and his siblings to use the C-train where his mother purchased the tickets and he observed that multiple tickets came out in 1 transaction. For this project, he asked his mother how she would feel if she did not have the ability to purchase all the tickets in 1 transaction and she said it would be annoying to do the ticket purchasing task and would take up too much time.

### **Trip to the mall:**

Emma Lee is a shopaholic adult and loves to go shopping at Chinook Mall multiple times a week. She takes public transportation there because she gets annoyed when trying to find parking spots at the mall. Emma uses the Calgary Transit website to get an estimate for when the bus is arriving at her stop so she knows when to go to the bus stop; she checks the arrival time and it is in 6 minutes. She makes her way to the bus stop and waits for the bus to arrive. When she goes inside the bus, she uses her last pre-purchased transit ticket, and receives a transfer from the bus driver. The bus arrives at Heritage station, where she makes her way to where the train is located

and she gets inside it, with her transfer in case any officers ask for proof of payment. She makes it to Chinook station where she heads towards a bus that takes passengers directly to Chinook Mall. Emma presents her transfer to the bus driver and the driver lets her on the bus, taking her and the other passengers to Chinook Mall. Emma goes shopping for about 3 hours and decides it is time to go home. She enters the bus to take her back to Chinook station and she doesn't have any more pre-purchased transit tickets left, so she decides to pay her fare with \$3.50 in change and the bus driver gives her a transfer. The bus driver takes the bus to Chinook station where Emma gets off and gets on a train that takes her to Heritage station. After getting off the train, she enters the bus that will take her towards her home and she presents the transfer to the bus driver who lets her on the bus. The bus departs and Emma gets dropped off at the stop near her house before walking home.

**Explanation:** Emma is an occasional transit passenger; she only uses transit a few times a week to go shopping at the mall. Occasional transit passengers are another user type that we have to consider as well. They typically have experience and know the tasks in order to take public transit. Emma has to take a bus, transfer to a train, and transfer to a bus to get to her destination at chinook mall; this is a very common scenario that passengers have to transfer from multiple vehicles to get to their location; to be able to transfer, they have to have proof of payment which can be obtained by the bus driver/ticketing machine. It is a common task to use pre-paid transit tickets for transportation services. It is also an extremely common task to pay for a ticket with cash on the bus, because buses may not have a credit/debit card system implemented. It is also common to check for bus and train arrival times so passengers do not have to waste unnecessary time standing around waiting. Overall the tasks that Emma performs are very common and must be considered in the design of our system.

**How we collected and validated these tasks:** This is a very typical task example that our entire group has experienced and most likely many transit passengers have experienced something similar to this. It is very common for passengers to purchase a ticket with cash or redeem a pre-purchased ticket and are required to show a ticket/transfer when transferring to another vehicle.

### **Train is Just About to Arrive:**

Kobe Jordan takes the train every Friday to the landmark cinema movie theatre to watch a movie. He walks to the nearby Canyon Meadows station and has to purchase a ticket to get on the train. He sees that there is a small lineup (2 people) at all the transit ticket machines and waits in line. As he is waiting in line, he hears the train coming. Kobe, who is an honest passenger, waits to purchase a ticket instead of illegally getting on the train without a ticket. When it is his turn to purchase the transit ticket, the train has just arrived, so he needs to purchase his ticket quickly. He selects the purchase ticket option, selects his 1 adult ticket and pays with his credit card as fast as he can, but the credit card processing and printing of the transit ticket takes a little bit too long and by the time he grabs his ticket and reaches the door of the train, the train doors have shut and it has started to leave. The next train arrived in 10 minutes and fortunately, he gets on the train.

**Explanation:** It isn't specified what type of passenger Kobe is; he is most likely an occasional transit passenger because he doesn't have a transit pass, but we do not specify in the story. Regardless, Kobe is a user of transit services and uses transit services to reach his intended destination, so he is a user that we have to keep in mind when designing a system. Kobe's task where he buys a single immediate use ticket using a credit/debit card just to take the train to his destination is a valid task which is frequently done by many passengers. Something special to note about Kobe's story is that when he was using the ticket machine, it took some time for his payment to process, and for his ticket to get printed, which contributed to Kobe missing the initial train; there are commonly passengers who reach the train station and just barely miss out before the train leaves. In this task example, all the transit ticket machines were occupied, which could be the case during busier times where many would use public transportation, forcing people to have to wait in a line to purchase transit tickets.

**How we collected and validated these tasks:** A few of our group members and plenty of passengers that we have observed, have been marginally late to get on the train and had to wait for the next train to come. Passengers being slightly late to get onto the train is a common situation that can happen on a daily basis to anybody.

### **Accessibility Transportation Service:**

Shang-Chi is a senior who uses a wheelchair to move around. He needs to use Calgary Transit Access in order for him to be transported to his day-program twice a week at a nursing home. He does not know much English and relies on his son to arrange his trips by calling a special Calgary Transit Access phone number; his son provides Shang-Chi's requested pick-up time and date (8:00 am on May 5th, requested pick-up destination (Shang-Chi's home: 123 Elbow Drive SW), requested drop-off destination (1212 Centre St NE) for his trip to the nursing home, and that he needs a vehicle to accommodate his wheelchair and he provides the same information in order for him to get back home. On the requested pick up day, 5 minutes before the requested pick-up time, an automated phone call in English lets Shang-Chi and his son know that the transportation is on its way, so they can prepare to wait at their front door. On the requested pick-up time, a Calgary Transit Access bus that is meant for wheelchair users, arrives in front of Shang-Chi's house and the driver escorts him onto the bus; Shang-Chi provides a pre-purchased ticket to use for his ride. Shang-Chi is transported to the nursing home and the driver escorts him into the building. For the second part of the round trip, a different driver escort's Shang-Chi from the building into the Calgary Transit Access bus, which takes him back home; Shang-Chi provides another pre-purchased ticket to use for his ride. Once Shang-Chi reaches his house, the driver will escort him back into his home.

**Explanation:** Shang-Chi is not a typical transit passenger; he is a senior user with a disability that has to rely on accessibility services that provide a personal form of transportation to accommodate his physical disability. Although most transit passengers are not in need of these accessibility services, those like Shang-Chi who need it, will find it as the most important feature that a transit service can provide. Shang-Chi and other users with disabilities that prevent them from using standard transit services are rarer passengers and the task of taking special forms of public transportation is a rare task, but it is a very important task to perform and to be implemented by transit services. The task that someone has to phone the Calgary Transit Access phone number to book a trip is a rarer task not commonly performed by most transit passengers, but it is an incredibly important task for those who need to use the service. We also have to consider in this task example that Shang-Chi does not understand English, so it can be tough for

him to understand things such as the automated phone message in English. While not a task, there can be transit passengers who do not understand the supported language, so multiple language support can be an important thing to implement in a design.

**How we collected and validated these tasks:** Eric's neighbour uses these services and he had a quick interview with his neighbour describing the process and tasks he performs in order to use these services. We also researched the Calgary Transit Access website (another way to book trips) to verify the information needed to request a trip. We included the lack-of-language detail to acknowledge that there are a wide range of transit passengers and we cannot assume that all of them understand the language that the application uses.

### **Fight on the Train:**

Tyler Durden uses transit on a daily basis to get to work, which is near city hall station. His house is next to Tuscany station, so it is a quick walk for him to get to the train station. He gets on the train and when he reaches Sunnyside station, he notices that there are 2 people who are yelling at each other and they get into a fight soon after. Tyler notices a help button on the other side from where he was sitting and he goes there to press the button. The button activates a communication system with a transit operator and Tyler tells them about the fight and where on the train the fight is happening. When the train reaches the next train stop, 8th street station, 2 police officers show up and remove the 2 fighters from the train. Tyler's train ride goes on as normal and he gets off at the intended destination at city hall station.

**Explanation:** Tyler is a regular transit passenger who uses transit services on a daily basis; he is somebody that we have to consider in our design. It is a good assumption here that he is aware of how to use transit services and that he purchases monthly transit passes because he does not purchase a transit ticket in the task example. On most regular days, Tyler's tasks are the same as other regular transit passengers; making sure he has his monthly transit pass with him, showing his monthly transit pass when requested, and getting on and off the train; these are very frequently done tasks. The situation where Tyler has to use the "help" button is a very rare situation. It isn't very common to see passengers getting into fights on public transportation.

There are other uses for the help button such as to ask for medical assistance, but it is unlikely that there is a scenario that this will be used, but can be of great importance when needed.

**How we collected and validated these tasks:** All of the group members have had a discussion about how often they have seen the help button used and we have only seen it used twice throughout many years. We are aware that there are times where these buttons are used, but it seems like it is used on rare occasions (eg. maybe used a few times a day across all passengers in a city).

### **Younger User and Misplaced Ticket:**

Tom Brady is a 12 year old kid who only uses public transportation after school on Fridays so he can hangout with his friends. His parents provide him each week with 2 transit tickets that he can use because it would be more convenient for him instead of having to calculate the change he needs to use. One Friday after school, Tom and his friends decide that they want to take the bus so they can play football at a football field. They wait at the bus stop and the bus arrives. Tom gives 1 one of the transit tickets to the bus driver and the bus driver gives Tom a transfer. Tom and his friends play football for an hour before deciding to use the bus so they can go somewhere to eat. Tom realizes that he still has half an hour left to use the transfer so he doesn't have to redeem his second ticket, but he misplaces it and he cannot find it. When the next bus arrives, Tom is forced to use his second ticket and he receives another transfer.

**Explanation:** Tom is a younger occasional transit passenger who uses public transit for leisure reasons; he is somebody that we have to consider in our design. Tom knows how public transit works on a basic level, likely from being taught by his parents, so he knows things such as how long he can use the tickets for. One important thing to note about Tom's task is that he redeems a transit ticket on the bus. Users of transit commonly use these prepaid transit tickets; they can be purchased in advance and used whenever the user feels like, as long as it is before the expiry date; this is commonly used by many passengers. Though not being a task, Tom misplaces his transit ticket and is forced to pay for another ticket. This isn't a very common situation, but it should be something considered since the transit tickets are typically small pieces of paper that get intentionally discarded by the time it expires; transit tickets can easily be misplaced,

especially with clumsier groups of people like younger transit users. Another important thing to note is Tom's parents providing him these prepaid tickets to use; parents frequently provide their children with tickets/passes.

**How we collected and validated these tasks:** The entire group has seen people use prepaid tickets to use the bus/train on a frequent basis, or have used them ourselves. A few of us also had the experience of losing these transit tickets at some point.

## Phase 2: Tentative List of Requirements

We are providing a list of task requirements extracted from the task examples. The requirements will be listed in an order which is the same as the ordering of the task examples. There can be requirements that overlap and appear in more than 1 story, but we will highlight the requirements based on the first story that involves the task. There are a few un-highlighted tasks that were not part of the task examples, but they are ideas we thought would be essential to our mobile application that would benefit the users. The categorization of requirements has every possible kind of user specified in Phase 1 (Expected Types of user in the system) in mind, because this is a public transportation service, so anybody would be allowed to use these services.

Task Examples and their highlighted colour:

Student going to university

Buying multiple tickets at the Same time.

Ride to the mall

Train is just about to arrive

Accessibility Transportation Service

Fight on the train

Younger user and misplaced ticket

Requirements from Task Examples:

- Ticket wallet / holds month passes/ upass/ future use tickets/ active tickets
- A way to add special tickets (like U-Pass).
- Map interface
- Estimated trip time.

- Service disruption notifications
- Ability to purchase tickets for immediate use
- Ability to purchase multiple tickets in one transaction
- Digital Payment (credit/debit cards, etc)
- Ability to change tickets during the checkout process
- Transit arrival time
- Ability to purchase/use tickets for future use
- Cash payment method
- Express checkout option
- Personal transportation service for the handicapped.
- Multiple language support
- Help button/customer service
- Ticket transfer (from person to another person)

Requirements that were not derived directly from task examples:

- Profile and profile logins
- Add money to mobile application
- Ticket History

As a group, we decided to put these requirements in priority of a) absolutely must include; b) should include; c) could include; and d) exclude and we gave a brief justification of the reason.

**Absolute Must Include:** These tasks are absolute necessities in terms of having a functioning ticketing system for public transportation. Without any of these tasks, the ability to purchase and use a ticket is negatively affected and may prevent users from being able to use transit services, or it may make users' experience to do the tasks much more difficult.

### **Ability to purchase tickets for immediate use**

This is one of the main purposes for our mobile application. We anticipate most occasional and rare passengers to purchase tickets like this because it seems unlikely for these users to have a transit pass. There will be huge limitations on the system if we do not include this feature.

### **Ability to purchase/use tickets for future use**

While not as important as purchasing for immediate use, many passengers would still like the option of pre-purchasing a ticket and using it whenever they desire. We anticipate a decent number of occasional and rare passengers to purchase tickets like this because it seems unlikely for these passengers to have a transit pass.

### **Ability to purchase multiple tickets in one transaction**

It would get annoying if a passenger had to go through the entire purchasing process to purchase more than 1 ticket for a group such as a family. Giving the option to purchase multiple tickets in 1 transaction will make it easier for passengers to purchase tickets for a group and won't feel like a chore. We anticipate all occasional and rare passengers who need to purchase more than 1 ticket will use this because it seems unlikely for these passengers to have a transit pass, making them forced to purchase tickets for all of these passengers.

### **Digital Payment (credit/debit cards, etc)**

Very important to include since it is how we envision all passengers of the mobile application will pay for tickets; it is very tough/unfeasible to find/create a system to pay with cash while using a mobile application.

### **Personal transportation service for the handicapped.**

We have to make sure that passengers with disabilities who cannot use regular public transportation are not excluded from the application; they are rarer users, but they are very important to consider. Since we are integrating the entire ticketing system on our application, we also need to implement some accessibility services that allow them to book trips. The current systems that Calgary Transit uses to book and cancel orders is not the most pleasant to use; so we need to focus on making this experience as simple to use for those who need all the accessibility support they can get.

### **Multiple language support**

English and French are must-haves for ticketing systems throughout Canada, but we could consider some other popular languages based on demographics in a city/neighbourhood to implement.

### **Ticket wallet / holds month passes/ upass/ future use tickets/ active tickets**

This is a must have because it is the place where all the active and future use tickets will be stored. When a passenger needs to present their ticket/pass to a transit operator or a transit officer, they will need to access this because this will be where it is stored. All the user types we have mentioned will make use of this.

### **Profile and profile logins**

This is a mobile application specific feature that passengers did not need when using the standard ways of purchasing tickets, but with a move to a mobile application, this is very important. We need some kind of account linking so someone can switch devices and their tickets/passes would carry over to their new device; this would prevent someone from losing all their tickets/passes from being lost if they move from 1 device to another if they are logged in.

### **A way to add special tickets.**

This would be for cases where there may be special tickets/passes such as the University U-pass. Passengers need the ability to add these special tickets/passes onto the mobile application. It may be a good idea for this to be achieved using a scan of a QR code/ the actual alphanumeric code or by manually inputting the code.

### **Ticket transfer (from person to another person)**

This feature allows passengers to transfer unused tickets to another passenger digitally. This is a great way for parents to purchase tickets/passes and transfer them to their children, who may not have access to digital payment methods.

### **Ability to change tickets during the checkout process.**

If a passenger selects a ticket choice accidentally or wants to change the ticket purchased, we need to have a feature to remove the unwanted tickets so the passenger won't be forced to purchase something they do not want.

**Should Include:** These are tasks that can help make the transit ticket purchasing experience much more pleasant to use, but are not mandatory features to be implemented in a transit ticketing system. We also added some transit trip specific features that just make planning a transit trip more convenient.

### **Express checkout option**

Passengers may need to quickly purchase a ticket if they are in a rush/ situations such as if the train is about to leave. It is also a simpler and quicker way to purchase tickets for those who purchase tickets on an occasional basis. This needs to make use of a saved/favorite tickets option and preferred payment methods to be able to purchase these tickets quickly.

### **Add money to mobile application**

This is not a task that passengers need to particularly do using standard ticket purchasing methods as users may have cash on them for multiple reasons. Doing this will allow passengers to add funds to their transit account (only when signed in), so when users purchase their tickets, they have the option to use the funds on their account first before using other payment methods. This is very useful for parents who may wish to send money to their children for transit use.

### **Transit arrival time and estimated transit time**

In terms of trip planning, the transportation arrival time is very important so passengers can get an estimate of the time they need to be at a bus/train stop so they can be prepared for their transportation. We can also integrate the expected trip duration in the same section of the app. Be aware that for the scope of this project, it could be tough to implement schedule related and GPS algorithms.

## **Map interface**

This is similar to transit arrival time and estimated transit time, but this functionality will include map/routes visual interfaces that show where the user is/needs to go. Ideally, we can track the movement of users when they are using public transportation, but this can be very difficult to implement in the context of this course.

## **Service disruption notifications**

Puts a banner or notification on the app to let the passengers know of untimely interruptions. Transit interfaces on train platforms and inside the actual train provide this information via screens and speaker announcements respectively, but this can be very useful for users who are on the bus or are preparing to leave for the transit stations; they can get notified so they can make alternative transportation arrangements if needed.

**Could include:** These are features that are nice to have, but are not necessary to use by a majority of transit passengers on a common basis. A few of these tasks are also extremely easy to replace (ie. it doesn't have to be done on a mobile application).

## **Ticket History**

Purchasing history isn't the most important since most passengers may not care, but this can be easily implementable if we want to keep track of user's and their purchased tickets.

## **Help button/customer service**

This could be a way for reporting something is wrong (crime, medical emergency) on the train/bus or just a way to ask for general information, etc. Should be straight forwards to implement, but not essential to the operation. Also easily replaceable by mobile phones; eg make a phone call to emergency services instead of using the feature.

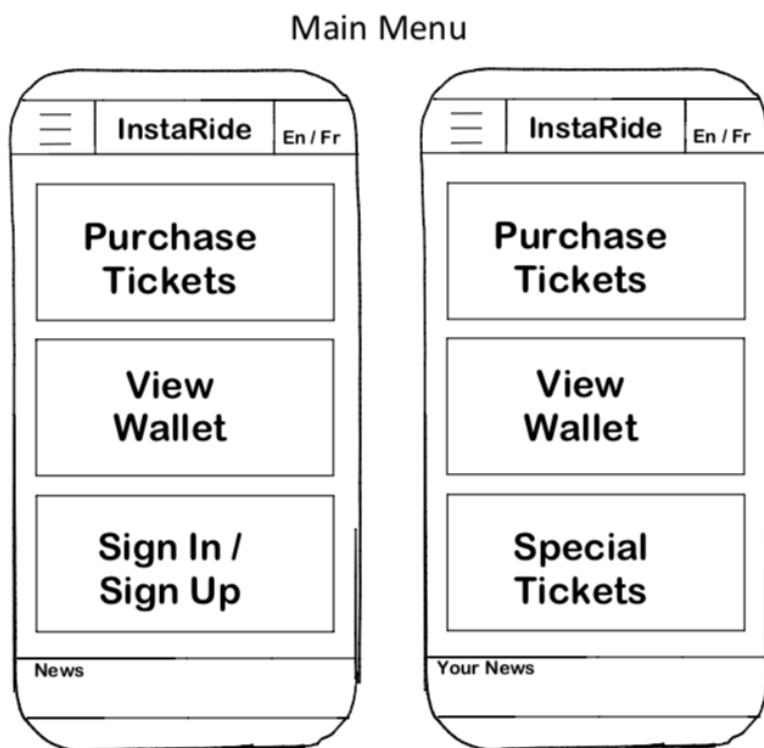
**Exclude:** This is a task that passengers currently do on standard ticketing systems that we cannot implement on the mobile application.

## Cash payment method

This is too difficult to implement and probably never used in reality when using a mobile application. There are no scenarios or applications that we can think of that use a computer interface while allowing a form of payment method to be cash. If passengers insist on using cash to purchase tickets, there are alternatives such as purchasing future-use tickets in stores or if they can find one of the few-remaining standard ticketing machines, they can use cash that way.

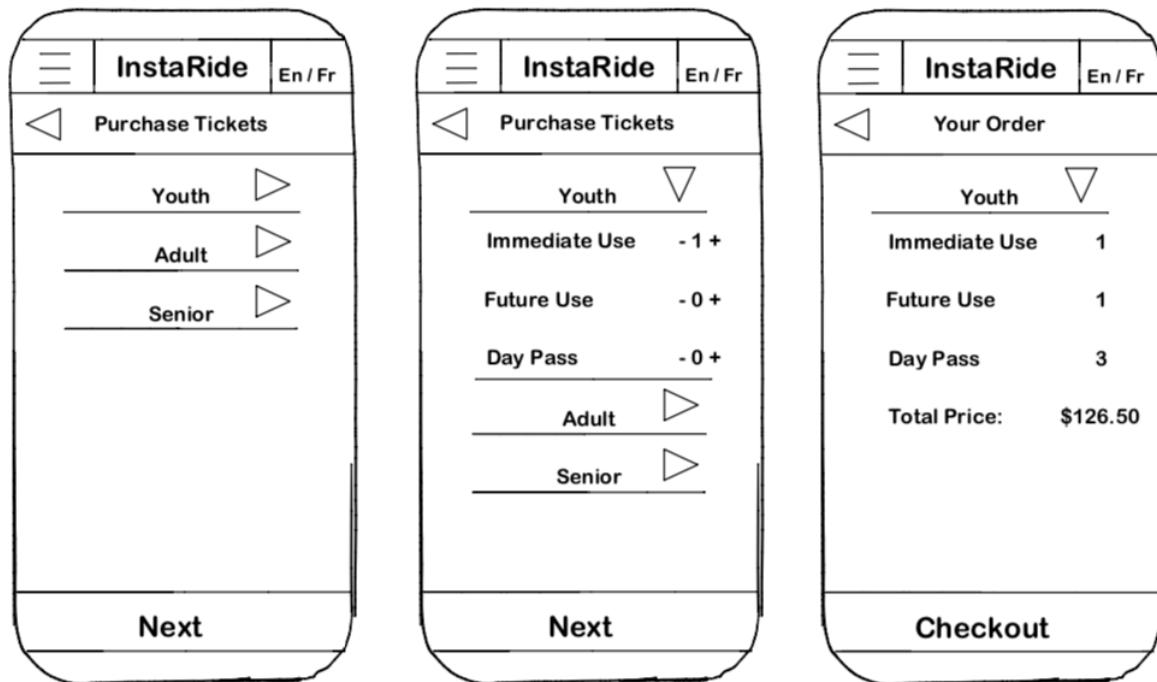
## Phase 3 Prototyping:

This is the final prototype that we have came up as a team. Individual prototypes and earlier prototypes can be viewed in the appendix.



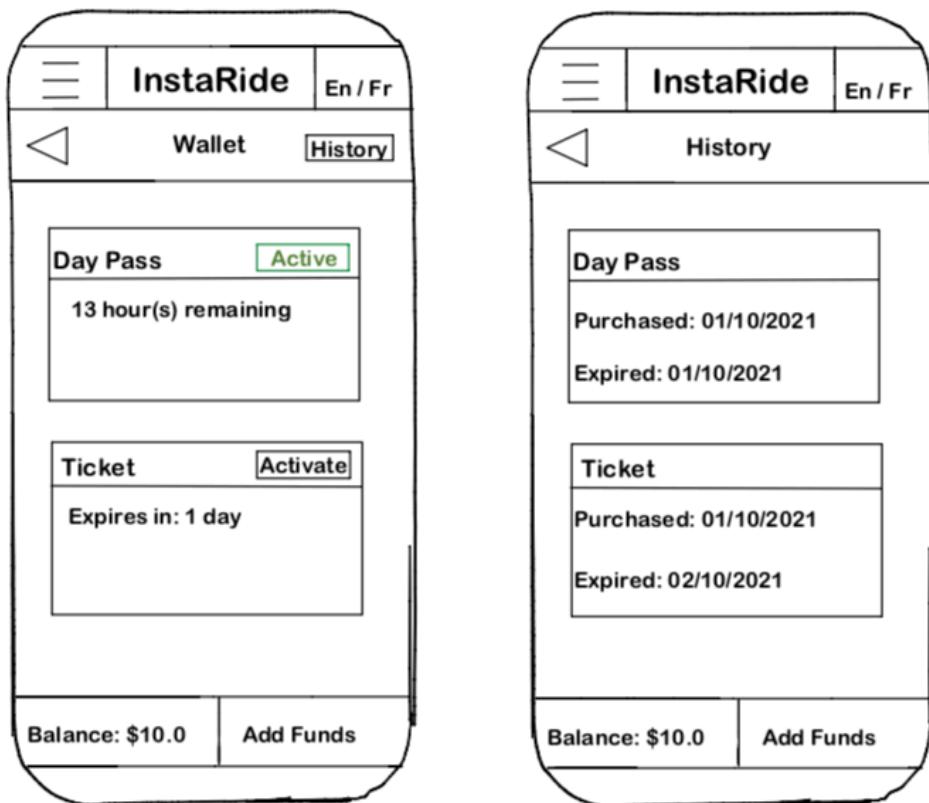
When application is opened, this will be the first things that users see. The screen on the left is for users not logged into the application, while the screen on the right shows what logged in users will see.

## Purchase Tickets



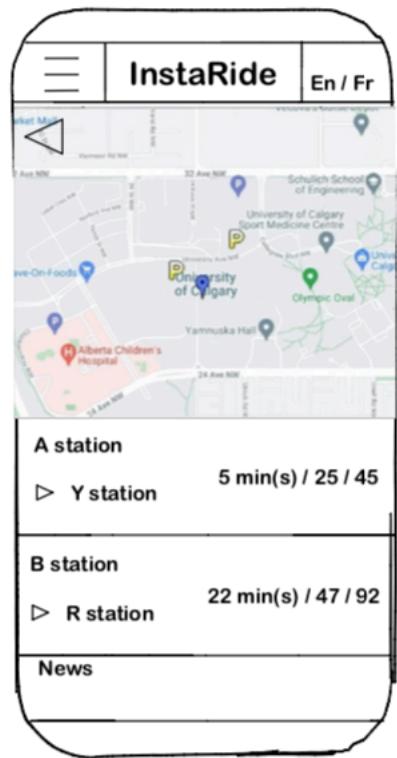
These 3 screens show how the users can purchase tickets after clicking “Purchase Tickets” on the main menu, in order from left to right. Note that the payment page has to be implemented.

## Wallet / History



From the “view wallet” button on the main menu, customers can bring up their active tickets/passes and view their ticket history.

## Map



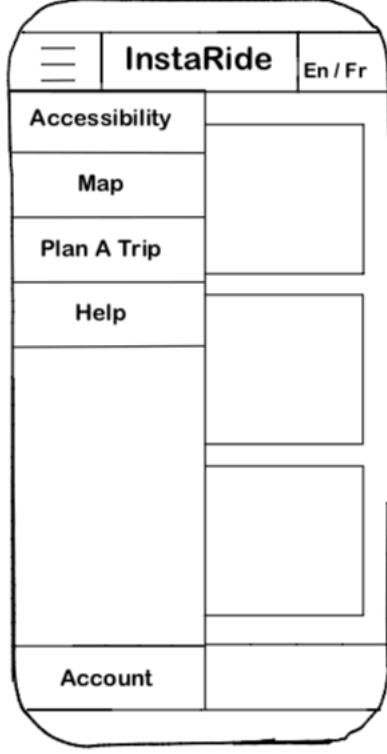
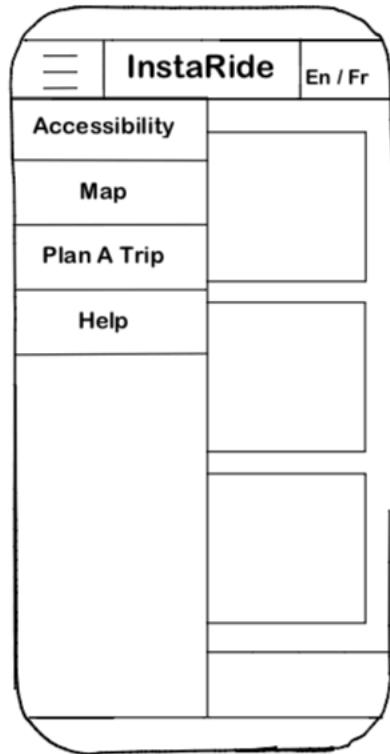
## Accessibility



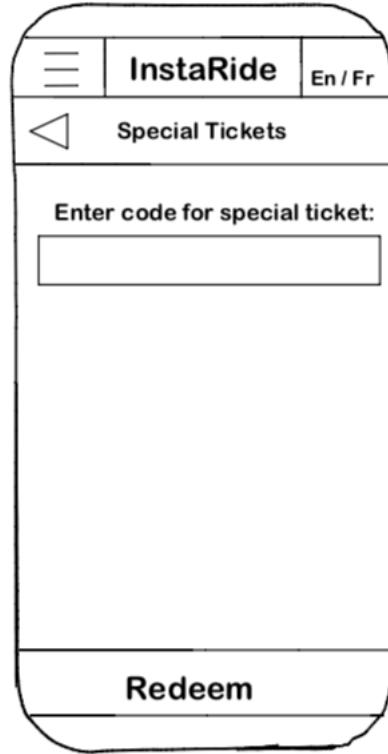
The interface on the left shows a map design from trip planning features such as estimated transit time.

The interface on the right shows how users who need personal forms of transportation for accessibility reasons can request a trip.

## Drop Down



## Special Tickets



Hamburger button reveals a drop down menu revealing multiple features. These 2 screens only differ because the screen on the right represents a logged in user.

Screen to enter codes for special tickets/passes like university transit passes.

## Sign In / Sign Up

The image shows two side-by-side wireframe prototypes for the InstaRide mobile application. Both prototypes have a header with three horizontal lines, the 'InstaRide' logo, and language options ('En / Fr').

**Left Prototype (Sign In):** This prototype has a back arrow icon and the text 'Sign In'. It contains fields for 'Email:' and 'Password:', both represented by rectangular input boxes. Below these fields is a link 'Don't have an account?' and a green-outlined button labeled 'Sign Up'. At the bottom is a large blue button labeled 'Next'.

**Right Prototype (Sign Up):** This prototype has a back arrow icon and the text 'Sign Up'. It contains fields for 'Email:' and 'Password:', both represented by rectangular input boxes. Below these fields is a new field labeled 'Date of birth:' with a corresponding input box. At the bottom is a large blue button labeled 'Create Account'.

Sign In / Sign Up interfaces.  
Users could sign in to any device so they won't lose their tickets saved.

### Phase 4: Team Discussions and Walkthrough:

**Team Discussions:** The entire group talked about a general form for the design and each of the group members drew their own prototypes and added some design elements each individual thought were important/useful. Then we discussed as a group what we thought worked well and what didn't work well, to combine into 1 prototype. We then looked over the combined prototype and refined it once more, to the current prototype we are using in Phase 3 and for the walkthrough of the tasks.

**Walkthroughs:** A few of the walkthrough goes through the interfaces used by our design. The walkthroughs are based off the task examples from phase 1.

## Student Going to University Walkthrough:

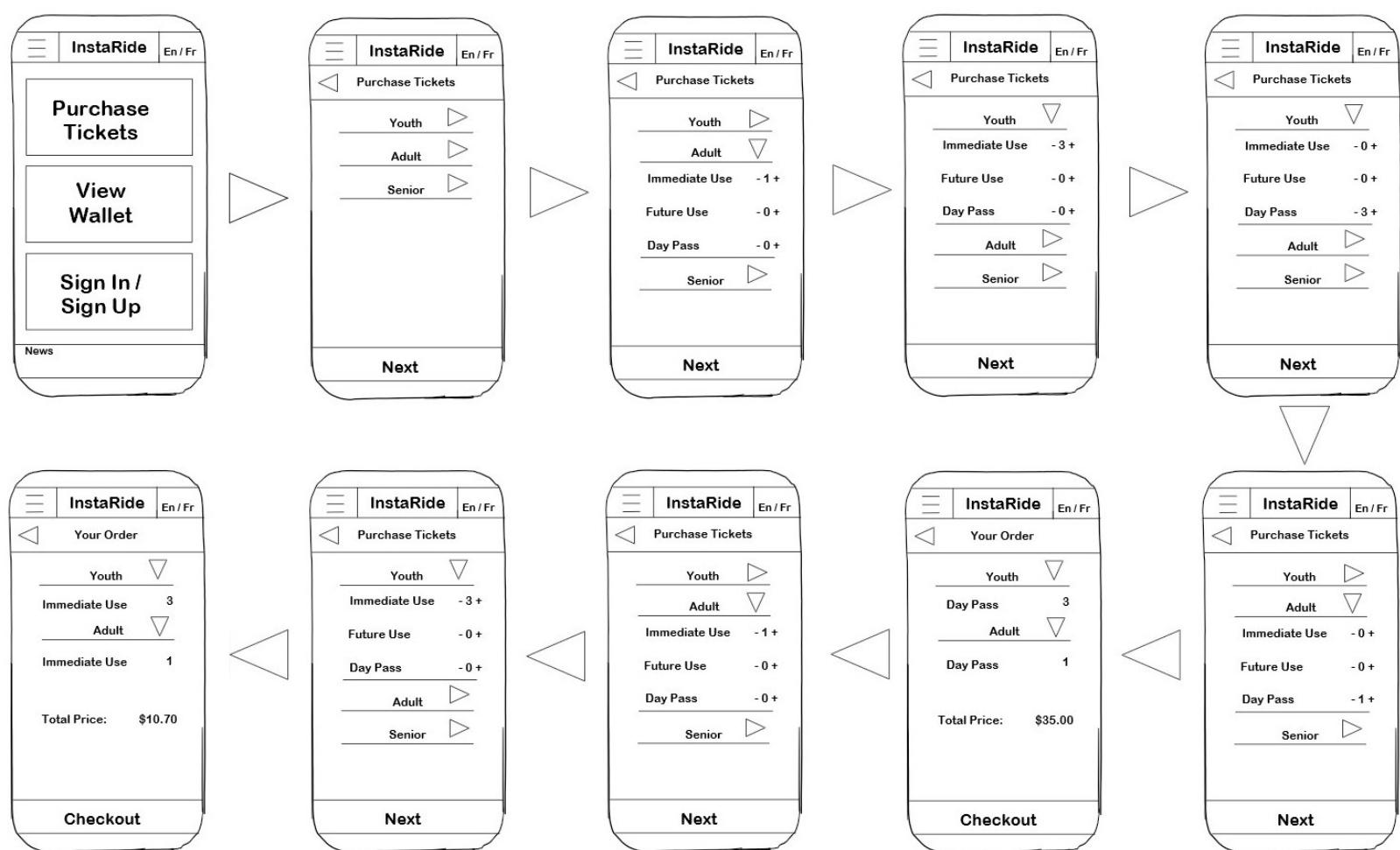


Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/solutions
<b>User enters the train station and the train</b>	Yes. This does not use the interface. The user does this on a daily basis	Yes. They want to get to school.	
<b>User finds option for estimated trip time</b>	Yes, but it may take the user some time to find the option via the hamburger menu.	Yes. It won't be a huge annoyance to find the option since the option has to be in the hamburger menu or the main menu.	Make the hamburger menu button more descriptive.
<b>User enters trip information to get the estimated trip time</b>	This can be confusing. The menu currently has 2 different trip information, but the user should be able to input their position and destination easily. Knowing where to input the information can be confusing.	They are motivated to get the estimated trip time, but the app interface may seem a little bit confusing to use because of the 2 different trip information.	Need to make this page more clear on where to input information. Just display enough information for 1 trip, and can add a history feature for previous trips.
<b>User shows pass to officer</b>	It may be confusing for where the pass can be found: it is either in ticket wallet or special tickets (because the U-pass is a special transit pass). When the proper button is clicked (ticket wallet), easy to display pass	Yes. They want to show their pass so they can take transit services and do not get fined by the officer, but it may be confusing at first on the current interface.	Make the buttons more self-descriptive. Maybe make it easier for users with passes to access them, as they are unlikely to purchase tickets; eg display on main menu.
<b>User gets notified about service interruption</b>	Yes. It can be seen on the bottom row of the main menu.	Not a step they can perform, but the user is aware that there will be adjustments to his trip and he will need to find a shuttle bus.	
<b>User finds option for map interface</b>	Yes. It may take the user some time to find the option via the hamburger menu.	Yes. It won't be a huge annoyance to find the option since the option has to be in the hamburger menu.	Make the hamburger menu button more descriptive.

Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/solutions
<b>User uses the map interface</b>	In the current form, no. Its current form is a google map, which does not provide much information for where to find the closest shuttle bus.	Yes, they want to find a shuttle bus to get to school. The current map interface may be an annoyance to use as it doesn't give the proper information.	In the final version, need to create a map interface that shows the nearest transit vehicles.
<b>User shows pass to bus driver</b>	It may be confusing for where the pass can be found: it is either in ticket wallet or special tickets (because the U-pass is a special transit pass). When the proper button is clicked (ticket wallet), easy to display pass	Yes. They want to show their pass so they can take transit services, but it may be annoying on the current interface	Make the buttons more self-descriptive. Maybe make it easier for users with passes to access them, as they are unlikely to purchase tickets.
<b>User gets on the bus and goes to the university train station.</b>	Yes. Does not use interface. The user does this on a daily basis	Yes. They want to get to school.	

Overall, we want to make the interface more clear and descriptive to use; there is currently some things that are not completely clear such as which button to use to show the U-pass or where certain features are held. The actual design of some of the map designs need to be reworked, but this is something we will implement properly during the next part of the project.

#### **Buying Multiple Tickets at the Same Time Walkthrough:**



Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
Karen and her kids arrive at Heritage station	Yes. This does not require the mobile application.	Yes. They want to go to the stampede.	
Karen finds out what she needs to do to take the train.	No. Karen is a rare transit passenger and may not even know she needs the application to purchase tickets.	Yes. She wants to be able to take the train to her destination.	Have advertisement on the train station showing the mobile application is the way to purchase tickets.
Karen opens the app to the main menu. Assume she has the mobile application and is a first time user of the application from now on.	Yes. We have assumed Karen has used many types of interfaces.	Yes. She wants to be able to take the train to her destination.	This may be an issue for users who are not comfortable to use mobile applications.

Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
Karen navigates to “purchase tickets”	Yes. It is clear to find on the menu.	Since she is a new user, she may not be completely sure the tasks she needs to do to take transit.	For first time users, can we provide them with a wizard-like interface to guide them.
Karen adds 1 adult and 3 youth regular tickets.	Yes. The interface is very clear in how to add quantities (click the +) and the categories of ticket are distinct and obvious.	Since she is a new user, she may not be completely sure how much tickets she needs to purchase and the duration of them before they expire.	Again, we can use a wizard-interface to guide her purchase. We should specify a way to add descriptions for each ticket. Eg. “This ticket is useful for 90 minutes.”
Karen removes the 1 adult and 3 youth regular tickets and instead adds 1 adult and 3 youth day passes.	Yes. The interface is very clear in how to add quantities and the categories of ticket are distinct and obvious. It is also very easy to remove the unwanted tickets (click the -)	Same as the previous task, since she is a new user, she may not be completely sure how much tickets she needs to purchase and the duration of them before they expire. She was interested to do this step because she thought it could have been the same price for a day pass, but after seeing the additional cost, she regrets doing the step.	Again, we can use a wizard-interface to guide her purchase. We should specify a way to add descriptions for each ticket. Eg. “This ticket is useful the entire day.”
Karen removes the 1 adult and 3 youth day passes and instead adds 1 adult and 3 youth regular tickets. We are assuming she knows the differences between tickets now.	Yes. The interface is very clear in how to add quantities and the categories of ticket are distinct and obvious. It is also very easy to remove the unwanted tickets (click the -)	The actual process of removing and adding tickets repeatedly may annoy her, but that is because she was unaware of how each ticket worked. She wants to do this step because buying the regular tickets 2 separate times would be cheaper than buying a day pass.	The actual process of adding/removing tickets work really well, but we should include a way to see descriptions of each ticket to annoying situations like this.

Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
Karen confirms her ticket choices and chooses to pay with her credit card.	<p>Yes. After she is sure of her ticket choices, she can easily click Checkout at the bottom.</p> <p>We have not implemented the payment page, but as a first time user, she would need to fill in her credit card information right now.</p>	She is motivated to finish the checkout process and get her tickets now. It may be a hassle to fill in her credit card information right now.	Can we think of a quicker way to add payment methods for first time users? Maybe suggest a quick mobile payment method like apple pay or google pay before allowing the option to enter credit card?
Karen receives her tickets from the machine and heads towards the trains.	Yes. Although not implemented yet, we will have a confirmation / receipt page to remind her to take her tickets with her.	Yes. She is motivated to take her tickets so she can take the train to the stampede.	Remember to implement a confirmation page.

The interface is very intuitive and simple for the actual ticket purchasing process. The mobile application may need to be more clear for first time users of transit. We should also find ways to add more descriptions to tickets such as how much they cost and how long can they be used.

## Bus Trip walkthrough:

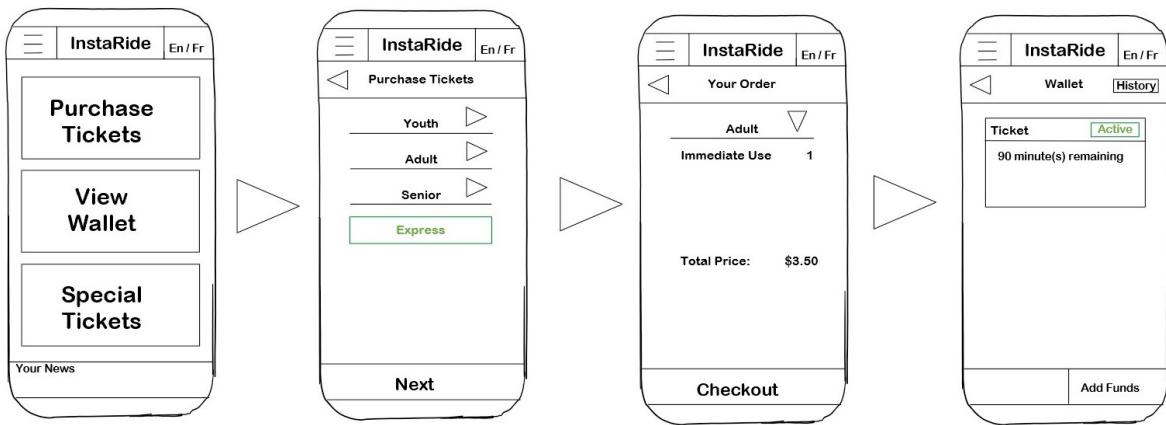


Task Step	Does the user have the knowledge to do this step	Are users motivated to do this step	Comments/ Solution
Navigate to map to check arrival times	Emma is a first time user of the app, so she does not find any indicators to guide her to map	She is motivated to do this step, but it is not straight forward	<p>Because Emma is new to the app, she finds it difficult to find the map.</p> <ul style="list-style-type: none"> <li>A) Could add map in an easier to access space or make the menu to find the map clear, such as “more options”</li> <li>B) Show clear indicator to where the map is</li> <li>C) Comment (maybe we can modify the name; for example, map and schedule)</li> </ul>
Goes to the bus stop and waits for bus	Yes. Doesn't need the mobile application.	Yes. She wants to go to the mall.	
Navigates to ticket wallet	Emma has the knowledge to do this step because it is on the main menu and clearly labelled.	She is motivated to do this step because it is clear how to access it.	This step is easy to accomplish as it is in an obvious place and easy to access.
Select the activate option on the ticket and show the bus driver the ticket.	Emma has the knowledge to complete this step because it is descriptive where to activate on the ticket.	Emma is motivated to do this step because she has to activate the ticket to use the bus.	Can make the activate feature slightly bigger to notice. Also should there be a confirmation to activate the tickets, so users don't accidentally activate a ticket?
Navigate and use the ticket wallet to show the next bus driver at chinook station.	The user has the knowledge to do this step because the button is on the main menu and she has done this step recently.	Emma is not motivated to do this step because it's a step she has already done.	The wallet is easy to find and use, but Emma would like it if some of the features in the wallet are accessible outside of the wallet. We should make active tickets displayed on home screen, so we don't have to go through the ticket wallet.

Task Step	Does the user have the knowledge to do this step	Are users motivated to do this step	Comments/ Solution
Emma reaches chinook mall	Yes. Doesn't need the mobile application.	Yes. This is what she intended to do.	
Emma purchases a new ticket with cash so she can take the bus to Chinook station .	The user has knowledge to do this. The "purchase ticket" is on the main menu and choosing the ticket is very intuitive.	Emma is motivated to do this step because she wants to return home. The interface is also pleasant to use.	Need to show the payment method used on the confirmation page.
Emma takes the train to Heritage station and presents her ticket to the bus driver.	Emma has the knowledge to do this step	Emma is not motivated to do this step because it's a step she has already done multiple times.	The wallet is easy to find and use, but Emma would like it if some of the features in the wallet are accessible outside of the wallet. We should make active tickets displayed on home screen, so we don't have to go through the ticket wallet.
Emma walks home from the bus stop.	Yes. Doesn't need the mobile application.	Yes, Emma wants to go home.	

Emma has completed the task successfully, and has reached Chinook Mall and then went back home. Though the task was completed successfully, it was not without its frustrations, especially repeating the process to show the ticket. We could improve the app by making the layout easier to understand for features like arrival time, and making several of the functionalities of the app easier to access.

### Train is Just About to Arrive walkthrough:



Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
User arrives at the train station	Yes. This step does not use the interface.	Yes. They want to use the train so they can see a movie.	
User clicks on "purchase ticket" button	Yes, because the interface is very specific and there is no other relevant options that the user would think about	Yes, he is. He wants to get a ticket.	The main goal of express ticket is to help people, who are in a hurry. Therefore, it might be better to place the express button on the main page or give the user the option to decide where this button should be located at. Also what if the user wants to purchase different kinds of tickets, but very quick?
User clicks Express	This can be confusing for some. "Express" may not be understood by every user and they would not use this option, even if they need it.	Yes. The user wants to purchase a ticket as fast as possible.	Potentially change the name from express to something easier to understand, like quick checkout.

<b>Task Step</b>	<b>Does the user have the knowledge to do this step?</b>	<b>Are users motivated to do this step?</b>	<b>Comments/ Solution</b>
User clicks on Checkout.	Yes. The checkout option is very clear.	Yes. He wants to get his ticket as fast as possible.	We can see after checkout, there is nothing about the payment method used; need to implement. Also need to think about what happens if a user accidentally purchases a ticket like this because there aren't a lot of steps, it may be easy to misclick.
User gets on the train.	Yes. This step does not use the interface.	Yes. This is the one of the steps the user has to take to go see a movie.	With express checkout option, the user did not miss his train; otherwise, using standard ticket purchasing methods, he would have missed it.

We might want to move the placement of the express checkout option to somewhere a user can access quicker and make it more clear this is a quick way to buy tickets. We could try to create a design so users can choose what tickets to purchase quickly, instead of just 1 option.

#### Accessibility Transit Service walkthrough:

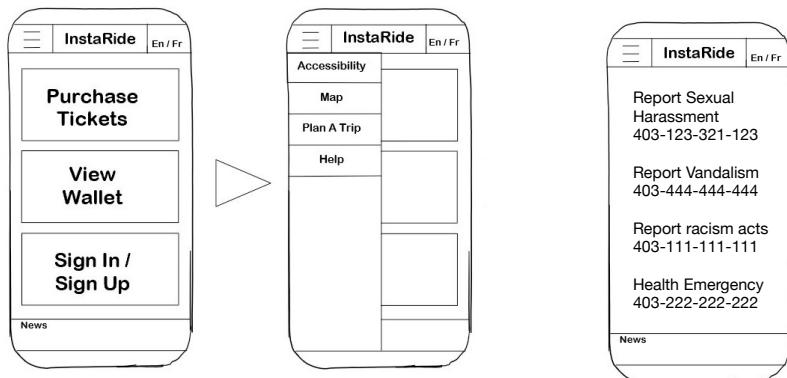
<b>Task Step</b>	<b>Does the user have the knowledge to do this step?</b>	<b>Are users motivated to do this step?</b>	<b>Comments/ Solution</b>
Users son uses the application to book a trip. Starts on the main menu	Yes. The user's son knows how to use mobile applications.	Yes. The user's son wants to book a trip for his father.	We do not currently have multiple language support implemented, since the user does not understand English, he relies on his son to books trips for him. If we can implement multiple language support, the user can do all these steps on his own.

<b>Task Step</b>	<b>Does the user have the knowledge to do this step?</b>	<b>Are users motivated to do this step?</b>	<b>Comments/ Solution</b>
User's son wants to navigate to the accessibility service.	This can be confusing for the user's son to do. The "accessibility" name is not very clear to describe what it does. It should also not have to be accessed via the hamburger menu.	The user's son wants to do this step for his father, but it can be very confusing for him to know option he needs to use.	First we need to change the name of "accessibility" to something like "Calgary Transit Access". We should also have the option to move this service to the main menu, for ease of use for people who use these services.
User's son inputs the information needed to book the trip.	Yes. The user's son knows what information to input in the proper fields.	We have not implemented how the information will be inputted yet; but it will likely require typing on the phone. For the user's son, he shouldn't have much trouble typing in the fields. But for other users, it may be a challenge to type in the fields.	Try to make the inputs easier to fill; such as having the information automatically filled in for default pickup location or a section for favourite trips. This page needs to be redesigned so it is easier to input information; this is very important considering the users who need these services may have troubles here. Also need to remember round trip feature.
User's son books the trip.	Yes. There is a clear button to book the trip.	Yes. After filling in the information, all they need to do is click the button.	Not much issues here, but will need to remember this when completely redesigning the accessibility page.
User and his son get a notification that their transportation is on the way.	Yes. This will let the user know that their transportation is arriving.	Yes. There is nothing the user needs to do here to get the information except to pay attention to his phone.	Multiple notification methods should be implemented. This feature hasn't been designed yet, but we were thinking about classic pop-up notifications that are seen from any screen on a mobile phone, but we can add options like receive a phone call, depending on the user's preference.

Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
User gets picked up by transit accessibility services to his intended destination, and arrives back home afterwards.	Yes. This task does not involve the use of the mobile application.	Yes. This was what he intended to do.	

We need to completely redesign the accessibility option on the mobile application. The name of the accessibility option needs to be more clear and at a more accessible location. The actual process to book a trip needs to be redefined for these users who need accessibility services. Having options to save favourite trips and easier ways to fill in information without typing much is what we need to design for the second part of the project.

### Fight on the Train walkthrough:



Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
User gets to the train station, gets inside the train, and observes a fight midway through his trip.	These are steps that do not require the mobile interface.	The user wants to go to work, and wants to stop the fight.	

Task Step	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments/ Solution
Click on drop down menu	It can be slightly difficult to find the option as the hamburger menu isn't descriptive that it is a button that provides more features, but this particular user is a regular passenger, so he shouldn't have much issues finding it.	Yes, he is motivated since he wants authorities to stop the fight.	Hamburger menu needs to be more descriptive.
Clicking on the help button	Potentially no. The user can locate the button, but he does not really know if the help button is the correct option to use.	He still wants to stop the fight, but he may get annoyed when trying to decide if this is the proper option to use.	The use of the keyword 'Help' is not appropriate. This keyword might have different justifications; for example, help as in FAQ or help in a payment method. Therefore, using more powerful word such as emergency is more useful.
The page after pressing 'Help' contains a list of numbers. A user can copy the number that he wants to call.	Yes, the user is going to see the list of numbers and he will be able to identify who to call.	No, he is not motivated. He does not want to open this page just to find some numbers he has to copy onto his phone to use. He would rather something be done as soon as he opens the help section. Why couldn't the user have just called 911 earlier?	The help functionality needs to be redesigned. It would be better a directly connect to somebody such as transit or emergency customer support as soon as this button help feature is selected.

The help buttons provide the sense of safety for our users, but it needs to be reworked. The “help” name should be changed to something more specific, such as “emergency”. The main problem is navigating through this process can be enhanced more to be quick and flexible; it should directly connect the user to somebody, rather than provide numbers to call.

#### Younger user and misplaced ticket walkthrough:

Task Step	Does the user have the knowledge to do this step	Are users motivated to do this step	Comments/ Solution
The parent will navigate to the wallet through the home screen	The parents may be confused that the ticket transfer feature is in ticket wallet.	Yes, the parent wants to access their wallet to choose the tickets they need to transfer to their children.	Maybe make this a separate option to select on the drop down menu.

Task Step	Does the user have the knowledge to do this step	Are users motivated to do this step	Comments/ Solution
The parent will press on send ticket, and select the required amount of tickets	This feature is currently missing on the ticket wallet. When it is implemented, we want it to be straight forwards to use.	Yes. The parent would be motivated to help their children by sending the required tickets.	We need to implement this feature. Maybe it will look like a e-transfer interface, but with tickets instead.
The parent will then press send, and enter the email to finalize the sending.	Yes. Once the feature is implemented, entering an email and clicking checkout should be an easy process.	Yes. The parent would be motivated to help their children by sending the required tickets.	The parents appreciate the option to save an email to send to, so they don't have to manually enter the email address.
Tom navigates to wallet through the home screen	Yes, Tom has the knowledge to complete this step because it is easy to spot and access from the home screen	Yes, he is motivated to do this step because he wants to confirm he has received the tickets from his parents so he can use them.	Tom should receive a notification telling him that he received tickets from his parents. We need to implement this  It might be good to add a tab that shows any received tickets to keep organized.
Tom clicks on the ticket and activates it.	Yes, Tom has the knowledge to do this step because the activate button is clear on the ticket.	Yes, Tom is motivated to activate his ticket because he just needs to click the button	Tom likes that it is only one button press away, but he really hates that there is no confirmation as he sometimes activates the ticket accidentally.  A) Add a confirmation box or show a confirmation message before activating B) Make the activation button color coded to steer away from mis clicks as much as possible.
Tom rides the bus and reaches his destination with his friends.	Yes. This step does not require use of the interface	Yes. This is the reason for him to take the bus.	

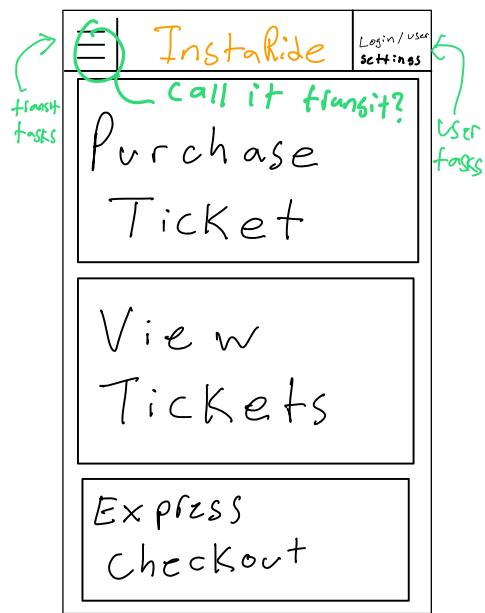
Task Step	Does the user have the knowledge to do this step	Are users motivated to do this step	Comments/ Solution
Tom now goes with his friends to another bus stop because they want to eat	Yes. This step does not require use of the app	Yes, Tom is motivated to do this step because he is feeling hungry after playing for a while	
Tom navigates to wallet through his home screen because he wants to re use the same ticket that he activated earlier	Yes, the step is pretty straight forward because it is one tap on the screen from the main menu.	Tom isn't very motivated to do this step. He only does it because he has to.	Tim feels like he shouldn't have to access the wallet to show his activated ticket. We should make it simpler to find an active ticket, instead of going through the ticket wallet.
Tom shows the ticket to the bus driver so he can get on the bus	Yes. Tom has the knowledge because he just needs to show the phone screen to the bus driver.	Tom is motivated to do this step, even though it takes 1 more screen to access this. He would prefer if he could show the ticket from the main menu.	Tom does this step only because he wants to ride on the bus. He finds it tedious and unnecessary.  A). Make any active ticket appear in the home screen so that it would be easier to access if needed again.

The user has completed the task successfully, and it was relatively simple and straight forward. However, it can get annoying for the user to access the ticket wallet to show the active ticket. We should find a way to display the active ticket information easily on the main menu.

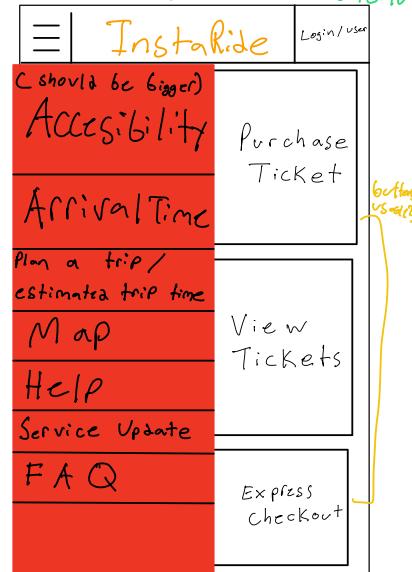
## Appendix:

We are including some of our initial prototype ideas that we created individually and as a group.

As soon as the app is opened, we see this interface immediately; no title screen.

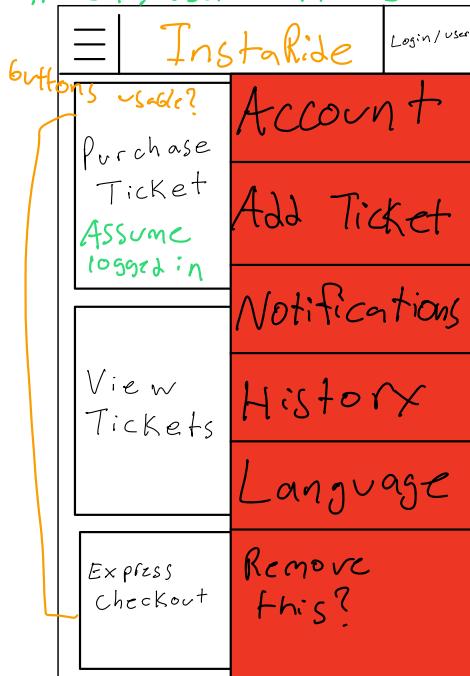


Transit task dropdown menu

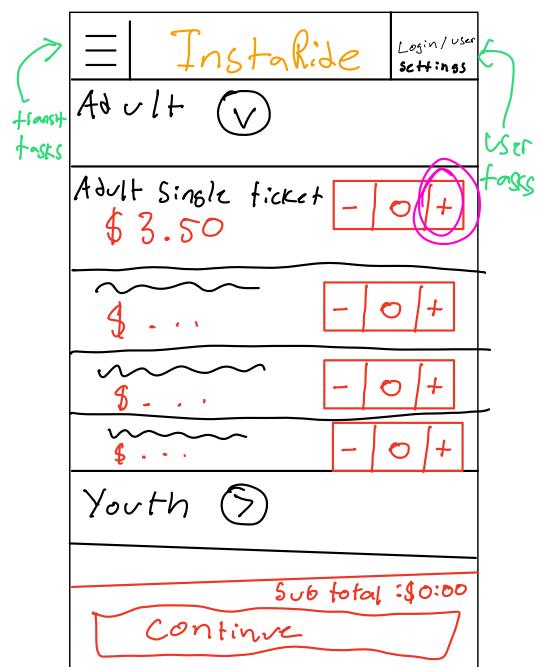


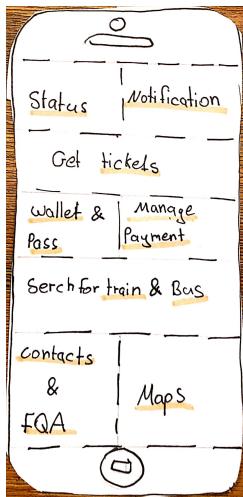
## Eric's Prototype Design

Transit / user options

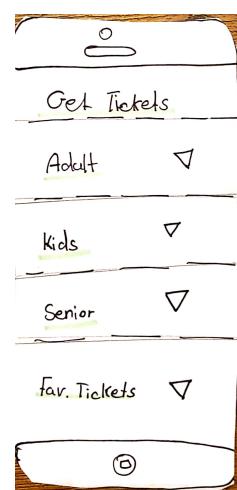
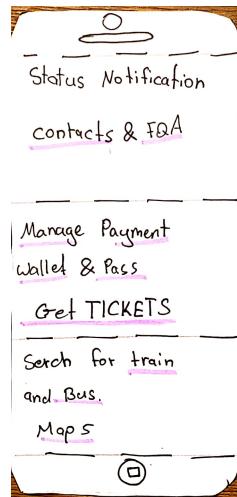


Walkthrough 1: purchasing a ticket immediately Part 3 drop down

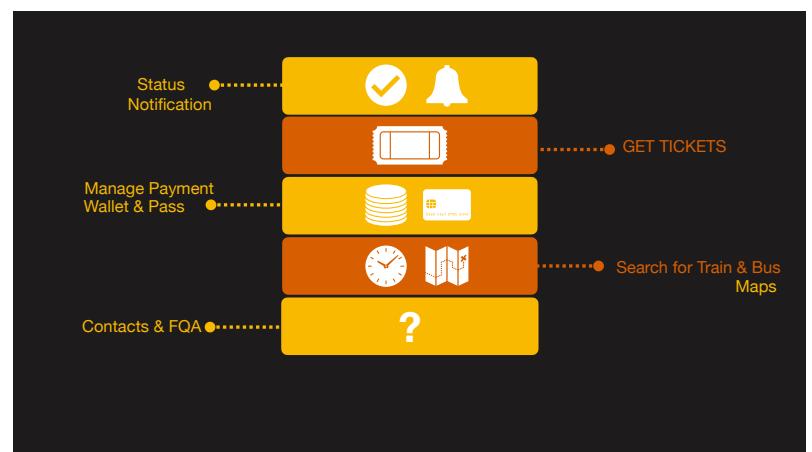
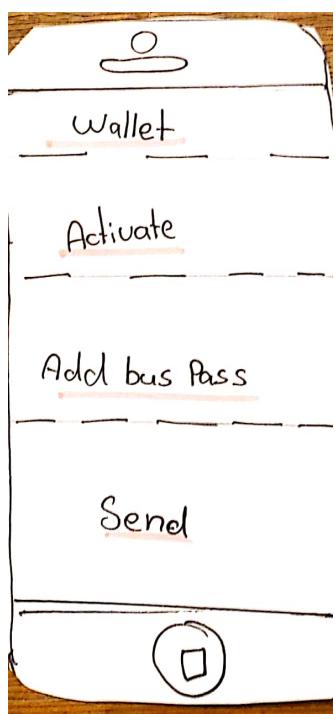




OR



## Ahmad's Prototype Design



Log In  
Sign up

(4)

Buy Tickets

(1)

Ticket Wallet

(2)

Accessibility options

(3)

Help

(5)

FAQ

(6)

1a

# Mustafa's Prototype Design

Adult single

Youth Single

Adult Day Pass

Youth Day Pass

Monthly Pass

Airport Pass

(2)

Available Tickets

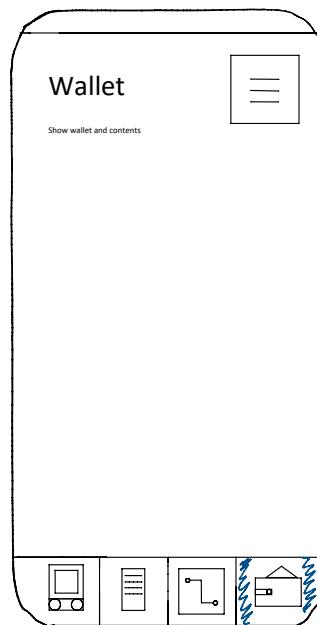
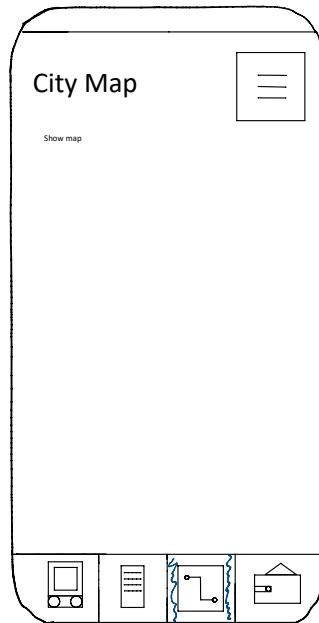
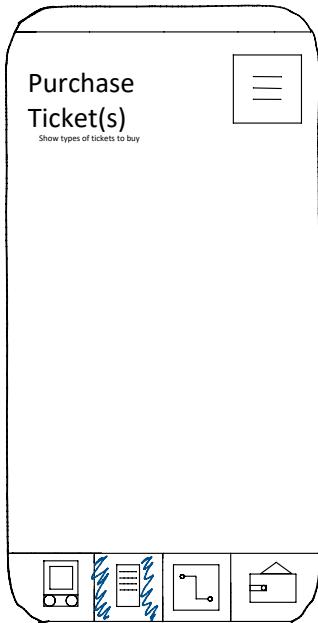
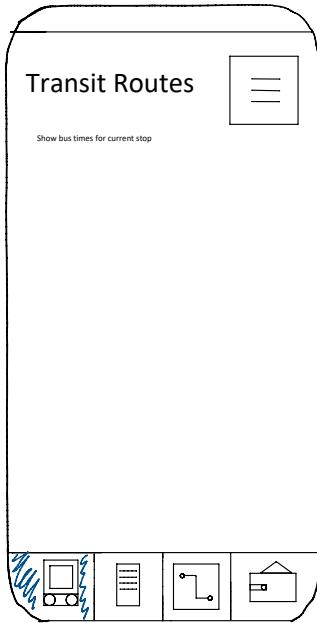
History

Adult ticket 1 | Unused  
-----  
7 days remaining

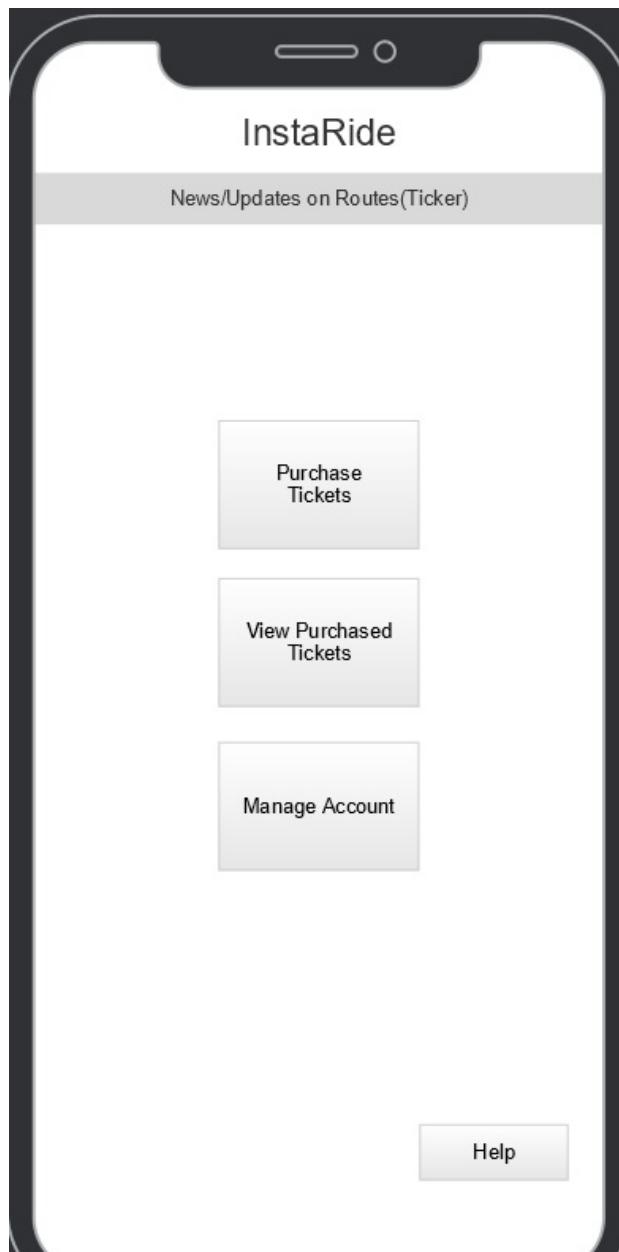
Adult ticket 2 | Active  
-----  
90 mins remaining

Youth ticket 1 | Used  
-----  
Used Sep 27

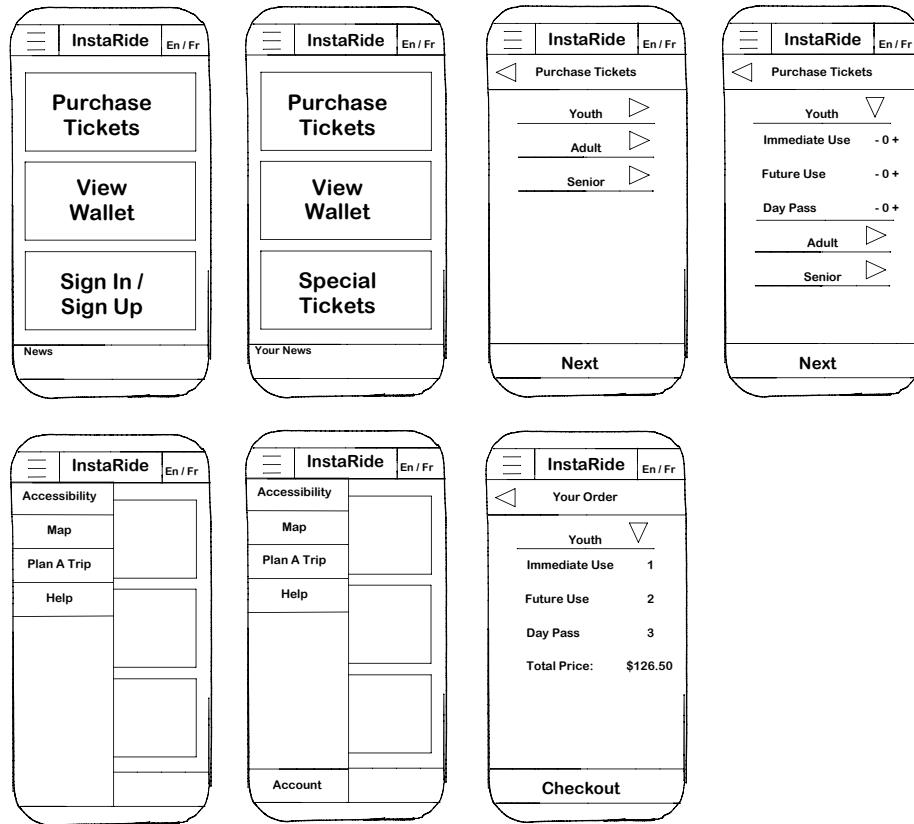
App Previews



Matthew's Prototype Design



Muhammed's Prototype Design



## Group's First Combined Prototype Design

## InstaRide (Group 8) Prototype Redesign Writeup:

Medium Fidelity Horizontal Prototype Redesign Rationale: Changes and features added descriptions; starting on page 1.

Illustrations of Medium Fidelity Horizontal Prototype; C# implementations starting on page 4. Computer drawn implementations starting on page 9. Original lo-fi prototypes from assignment 1 starting on page 18.

### Main/Home Screen:

#### Button/Screen Layout:

Instead of putting 1 button on each row, we included a row that contains 2 buttons; we made the “View Tickets and Passes” and “Quick Checkout” buttons smaller and put them on the same row (towards the bottom of the screen). The “Add Tickets” button gets its own row because it’s the most important feature of this application; passengers who need to purchase tickets (a large portion of total passengers) would be able to access this feature easily.

The “View Tickets and Passes” button has been compressed because the active ticket status display that we added replicates some of the functionality of this button. The “quick checkout” button has been added to the main screen for a quick way to purchase tickets; we previously did not include this on the main screen in our lo-fi prototype. The quick checkout button does not take up more space because it is not used as much as the standard way to purchase tickets. We also got rid of most of the white space between buttons so we can get more usable space to make the buttons and display for active ticket status larger.

**Replaced language button:** Instead of the En/Fr language option, we moved the language options to the application settings and replaced it on the main screen with a notification icon, which will provide news and notifications to users; this allows us to remove the news banner at the bottom of the application and it allows more room for the buttons and other features.

**Active Ticket Information Display:** With some extra space that we have created, we implemented a display that can be used throughout most of the application that shows ticket information such as if the user has an active ticket/pass or not, click the display to get detailed ticket information, and the option to scroll through all the available tickets/passes (helpful for groups with multiple different types of tickets). This display can be seen throughout most screens on the application, so when the user needs to access their tickets/passes, they have a convenient way to do so from most places on the application (instead of forcing users to go to the main screen and use the “View Tickets and Passes” button).

**Alternate main screen for accessibility users:** We removed the “quick checkout” button and reduced some button sizes on the main screen in order to add features that accessibility users commonly use on the main screen so they can access these features easier; “book trip” and “view trips” buttons. Instead of showing the ticket status throughout the application, we replaced it with a way for accessibility users to view their current trips instead; current trips are more important than ticket status for these users and having a trip also implies having a valid ticket. The “Purchase Tickets” and “View Tickets and Passes” buttons remain on the main screen, but not emphasized as much as the accessibility features; which is why the button size is reduced.

**First time welcome and setup screens:** A feature that we added is some kind of “welcome page” when a user opens the application for the very first time. This will introduce them to the application and application features. The user will then be able to setup options that can make their user experience better; such as language options, if they want a wizard interface to help guide them through how to use the app, if they need accessibility transit options (implemented on the main screen), enable location services (for better usage of map and trip planning features), sign-in/sign-up, etc. We included a “skip” option if a user

would like to skip these pages if they don't care about these things (and are fine with default settings), or if they are in a rush and need to purchase their ticket ASAP (eg. first time users who are in a rush to catch their train); the "skip" button leads to the default main screen page. Users will have the ability to change their choices in application settings as well anytime they want.

### **Ticket Purchasing:**

- Renamed to "Add Tickets"; more appropriate with a feature we are adding to this button.
- Colour coded different age groups of users to make it more distinctive which type of tickets users are selecting on the ticket selection pages. (C# prototype doesn't have colour, but computer drawn has colour).
- On the ticket selection page, added a "cart" feature, which easily shows the users what tickets they have currently selected (and easily modify if they need to modify their order).
- On the checkout page/confirmation, we added the prices of each type of ticket and included an explicit option for users to modify their order from here if necessary.
- Implemented a page that allows users to pick their payment methods (missing from lo-fi prototype).

**Special Tickets:** We decided to integrate the "Special Tickets" feature (from lo-fi prototype) into "Add Tickets" ("Special Tickets" tentatively called "Redeem") and removed this element from the main screen because it makes sense that this feature is connected to "Add Tickets" and that the feature may not be used frequently by a majority of transit passengers. The feature has been modified so users can also scan a code (using their camera) to redeem their ticket/passes instead of relying on typing out the code.

**Quick Checkout:** This feature has been implemented on this design iteration (lo-fi prototype did not have this implemented). It provides users with default ticket options that they can quickly choose and pay for a ticket as fast as possible. The users can modify these default ticket options to their choosing if they want; similar to a saved/favourite tickets feature.

### **Wallet:**

- Changed the button label to "View Tickets and Passes"; more descriptive for users to understand what it is.
- Moved the history option to the bottom of the page on the same row as "Add funds" to create some space and added the button to transfer tickets to different users ("send tickets"), which gets a dedicated row.
- Moved the current balance to the top of the page as we felt that it is a little more intuitive to view here.

### **Accessibility transit options:**

- Slight modifications on the input boxes: date by default is the current date and time is the current time. Location's can be accessed by either typing it in, or by using map coordinates. An arrow beside the pickup and destination will lead to a drop down of saved addresses. These features help make it easier for users to enter information.

**Map:** We split the Map interface into 2 features: one is primarily focused on the map, and the other is primarily focused on directions between locations; both integrate the other features if a user needs it. We split these features so it allows more space dedicated to each feature, which can make it easier to use each feature on the phone interface; eg. more space to use the map interface.

### **Map:**

- The map takes up much more of the screen.

- The bottom of the page shows the nearest transit stop and how long before the transit vehicle gets there if location services enabled; if no location services enabled, location search here.

- Included a way to view history of locations searched.

- Have an option through the map to enter directions to a location; opens the directions interface.

**Directions:** Enter your current location and destination and it will give you precise directions and expected time it will take to reach it in a list format. There is an option on the screen to enter the locations using a map interface instead of typing it out, and the option to view the directions on the map interface; these features integrate the actual map feature.

- Included a way to view the history of directions searched.

### **Sign In/ Sign Up Account:**

- Instead of only requiring email during signup, provide the option to enter a phone number; versatility reasons for users.

- Instead of asking for users' entire date of birth, ask only for their birth year and month; shows we aren't deliberately collecting information and only collecting some information for custom notifications.

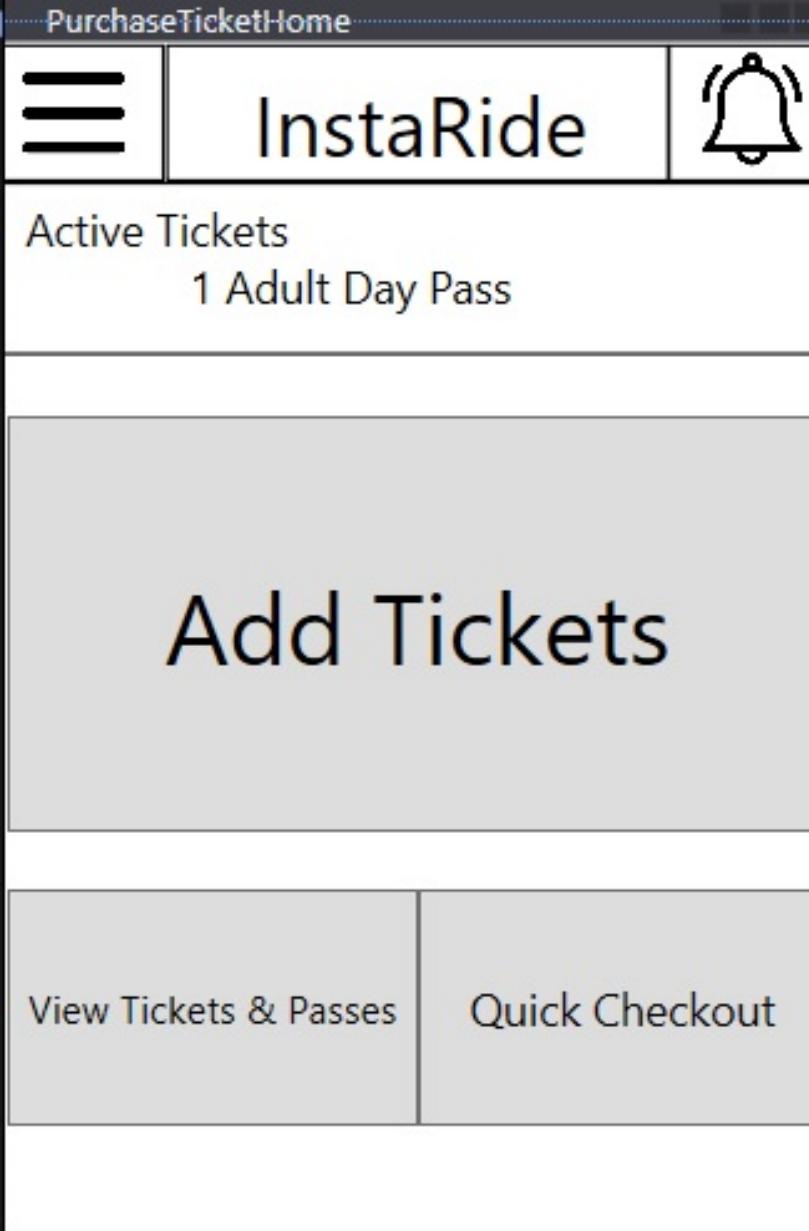
- Also implemented an account button, which allows users to modify information related to their account such as saved payment methods; button accessible via drop down menu.

### **Drop Down Menu:**

- Added "account" button; access specific account settings; "settings" would have more application settings (like language selection).

- Also fill the rest of the drop down menu by either making the buttons bigger, or by shrinking the size of the drop down; will decide during the application implementation stage.

**Notifications:** instead of the bar on the bottom, we replaced it with the bell icon. Clicking the bell icon expands to take up no more than the top-right corner to show news and notifications.



C# Implementations

Main Screen

Main Screen for  
Accessibility Users

PurchaseTicketHome

InstaRide

Next Trip(s)  
Jan 23: 9am  
Departure: Chinook  
Destination: University

Book Trip Add Tickets

View Trip(s) View Ticket(s)

**Active Tickets****No Active Tickets**

Purchase Tickets

**Youth** →**Adult** →**Senior** →**Cart** →**Redeem****Next**

Purchasing Tickets Screens:

Screen 1

Screen 2

**Active Tickets****No Active Tickets**

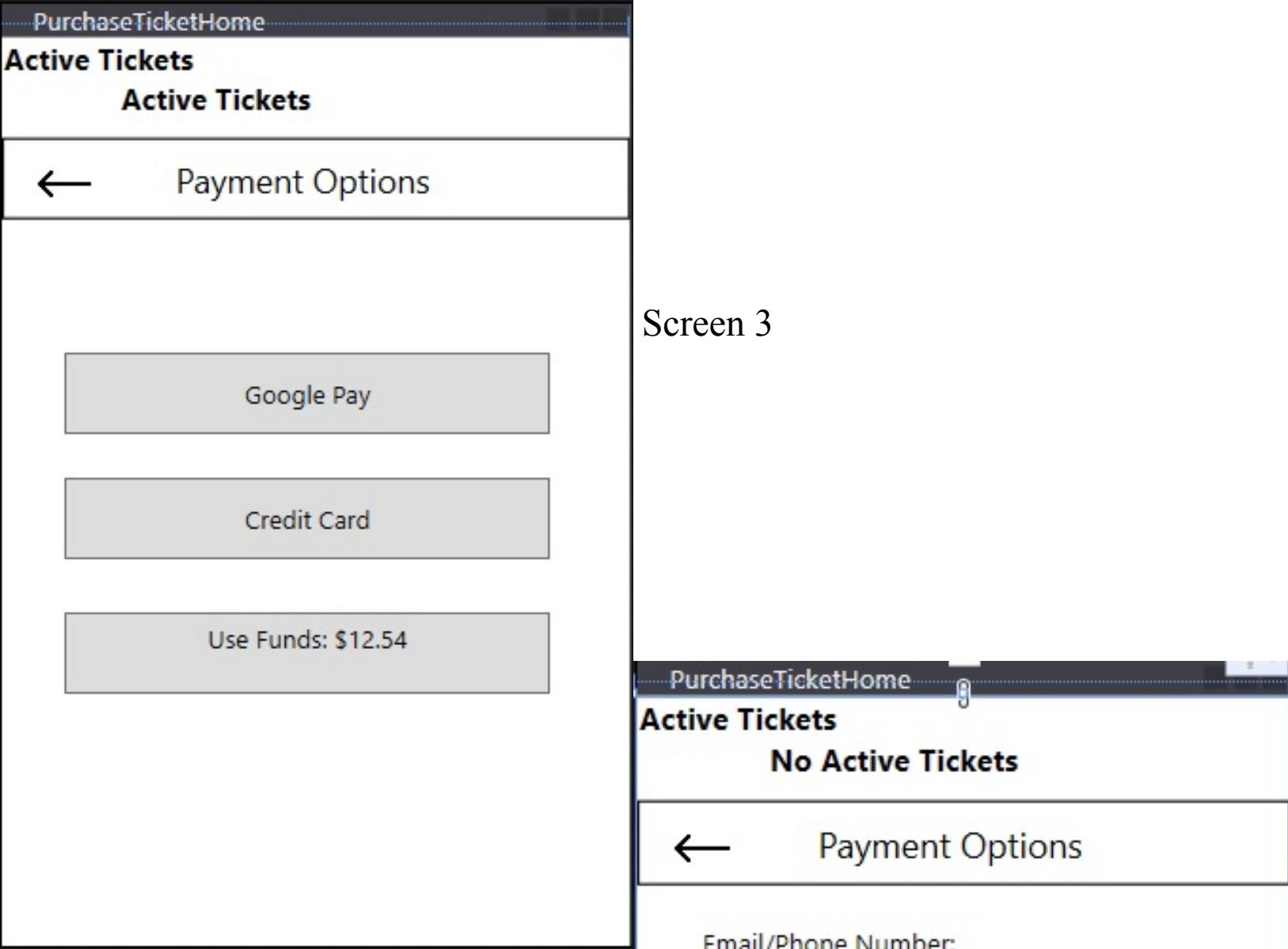
Purchase Tickets

**Youth** ↓

Regular Use -1+ \$3.50

Day Pass -1+ \$10.50

**Adult** →**Senior** →**Cart** →**Continue To Payment**



Screen 3

PurchaseTicketHome

**Active Tickets**

**No Active Tickets**

← Payment Options

Email/Phone Number:

Card Number: Exp:

CVV:

Save Card for future use

Next

This screenshot shows the 'No Active Tickets' screen of the same application. It has a similar header and navigation. The main content area is titled 'No Active Tickets'. It includes a back arrow and 'Payment Options' text. Below this are fields for payment information: 'Email/Phone Number' (with a large input field), 'Card Number' and 'Exp.' (each with a smaller input field), and 'CVV' (with a single-line input field). At the bottom is a checkbox labeled 'Save Card for future use' and a large 'Next' button.

Screen 4

**Active Tickets****Day Pass Active**

Wallet

Funds: \$10.00

“View Tickets and Passes”  
button

**Day Pass**

Active

**13 hour(s) remaining****Ticket**

Activate

**Expires in: 1 day**

Transfer Tickets

History

Add Funds

**Accessibility Trip Booking****Booked Trips****No Trips Booked**

Request Accessibility Trip

Pickup Location:



Date:

Time:

Destination:

 Need Vehicle for wheelchair?

Book Trip

PurchaseTicketHome

## Active Tickets

Day Pass Active



Send Tickets

Select ticket(s) to send

Ticket

Expires in: 1 day

Purchase Tickets

Confrim

Sending Tickets To Other Users

Screen 1

Selecting ticket(s) to send

PurchaseTicketHome



InstaRide



Send Tickets

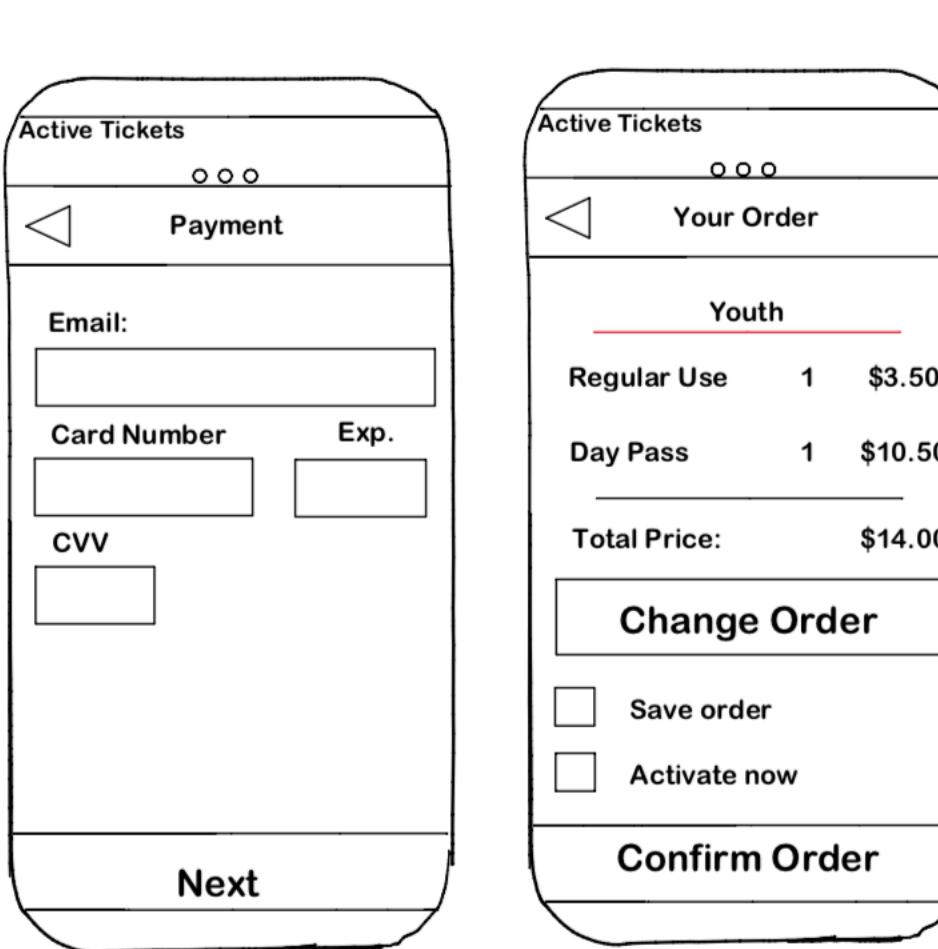
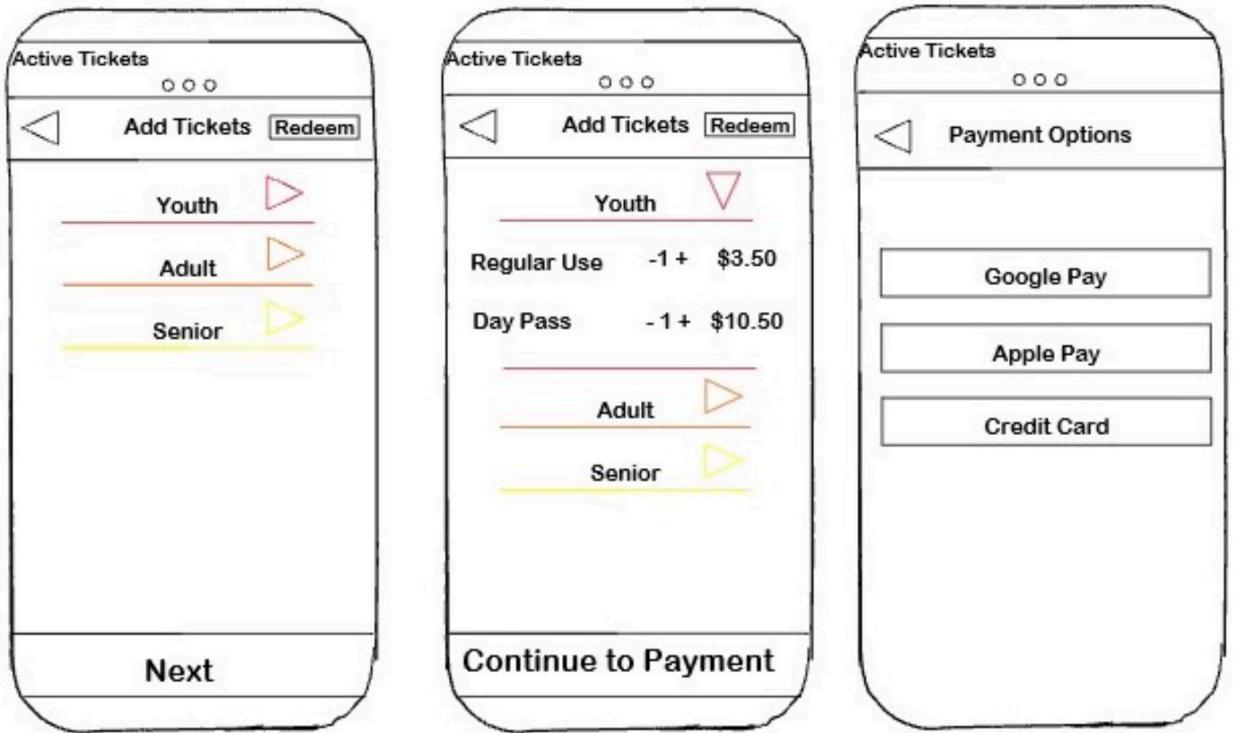
Send To email or Phone Number

Request a code

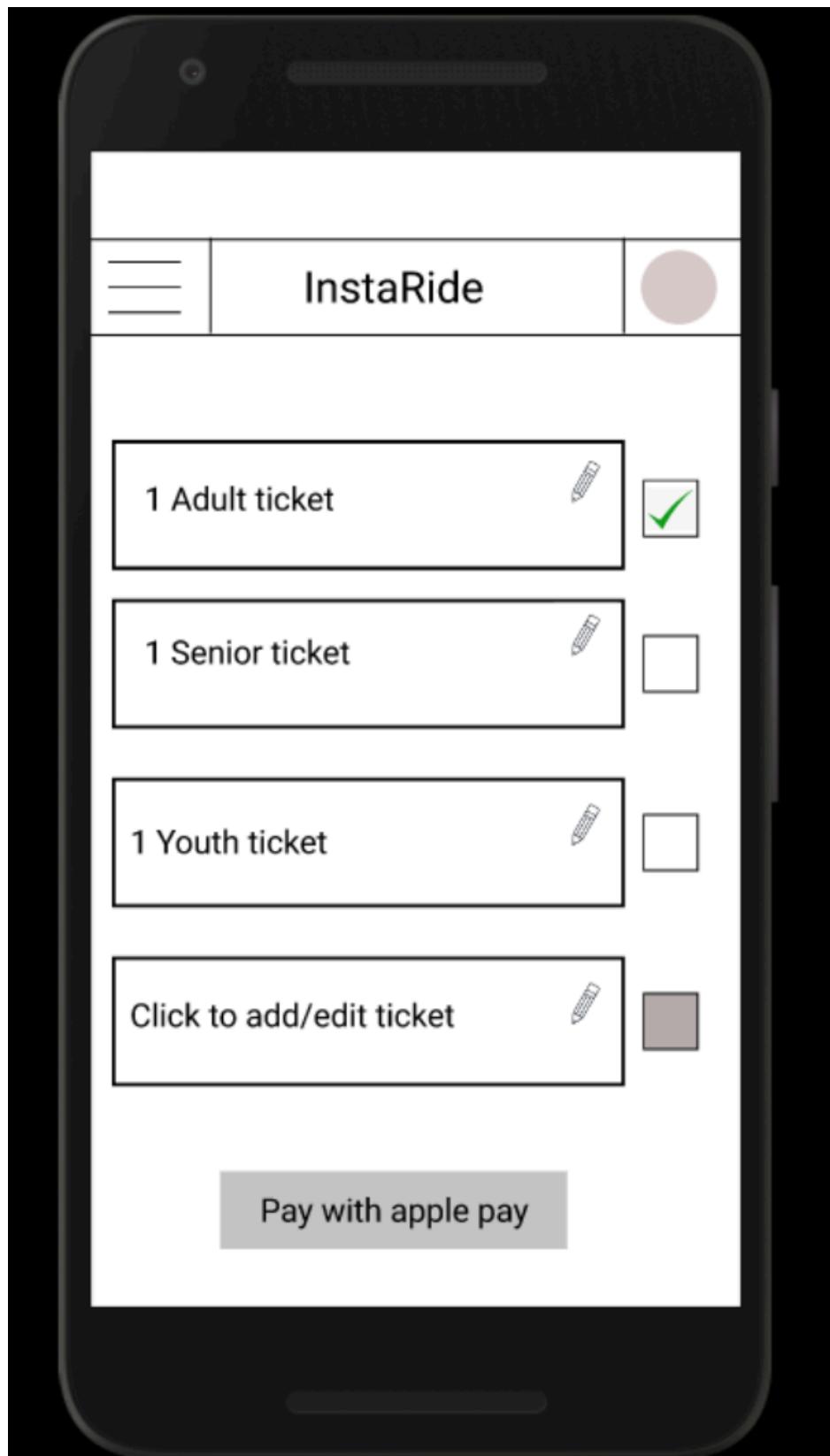
Screen 2  
Picking the method  
to send the code

**The following screens are not implemented in C#, but is the horizontal fidelity prototype for multiple features; other features may only be shown on the C# prototype.**

### Purchasing Tickets (repeated from C# implementation)



## Quick Checkout Screen

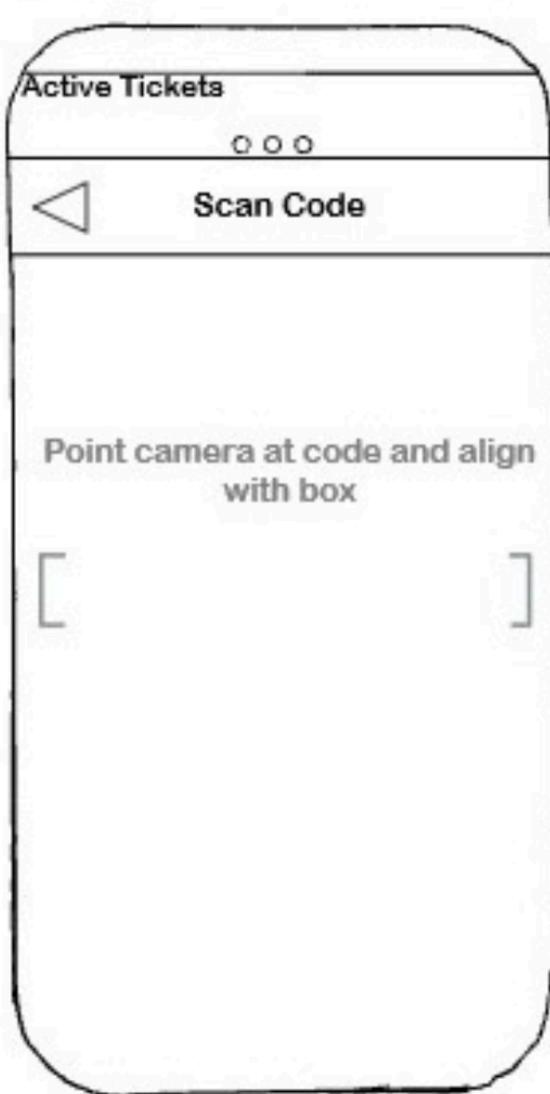


Redeem Tickets/Passes (formally known as “Special Tickets”).  
Accessed via “Add Tickets” button

## Redeem Tickets



## Scan Code

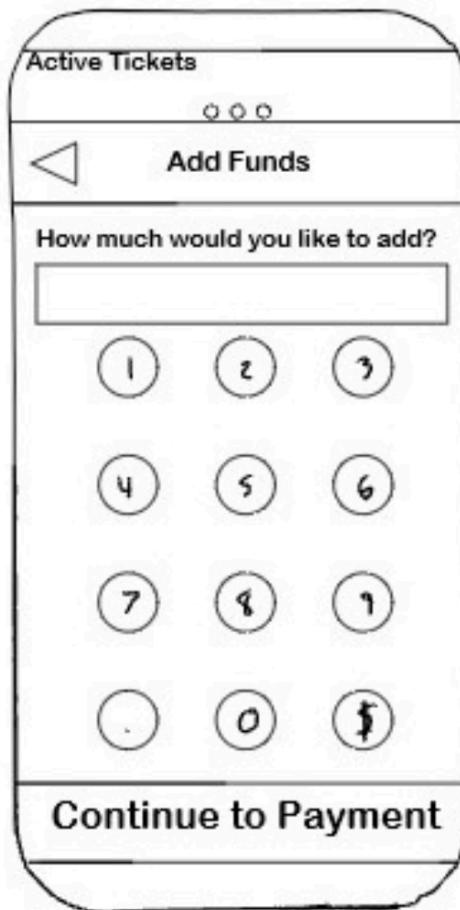


## Drop Down Menu

### Drop Down

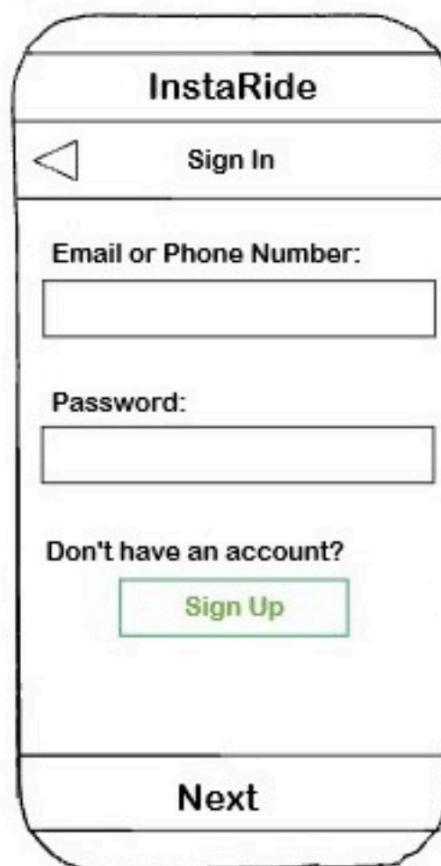


## “History” and “Add Funds” Screen Features accessed via “View Tickets and Passes”



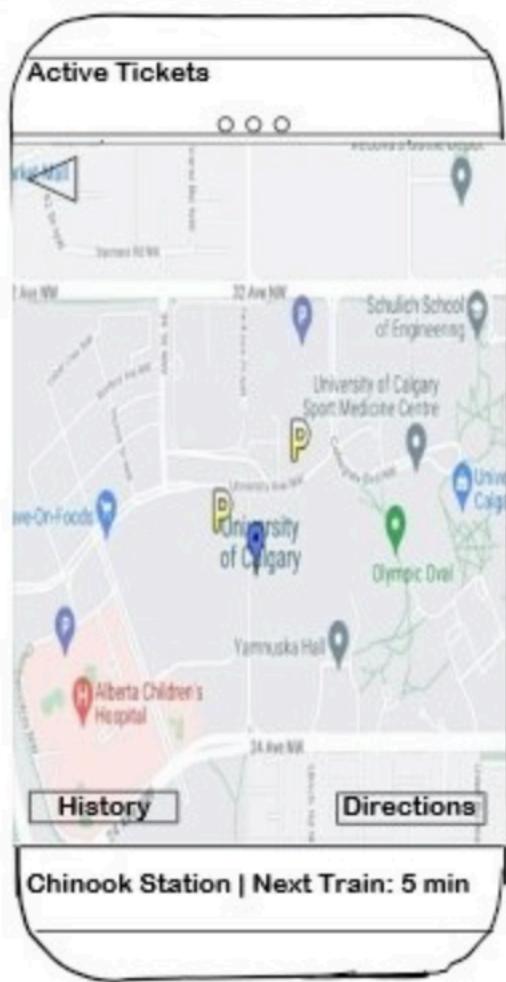
Sign In / Sign Up

Sign In/ Sign Up Pages



# Map Interfaces

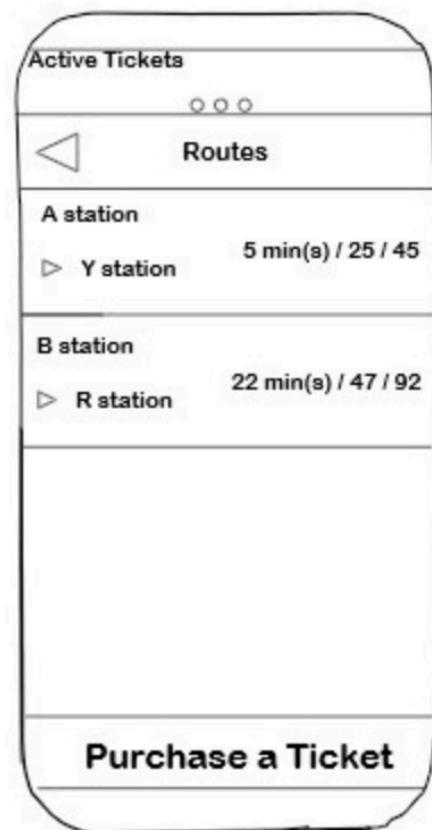
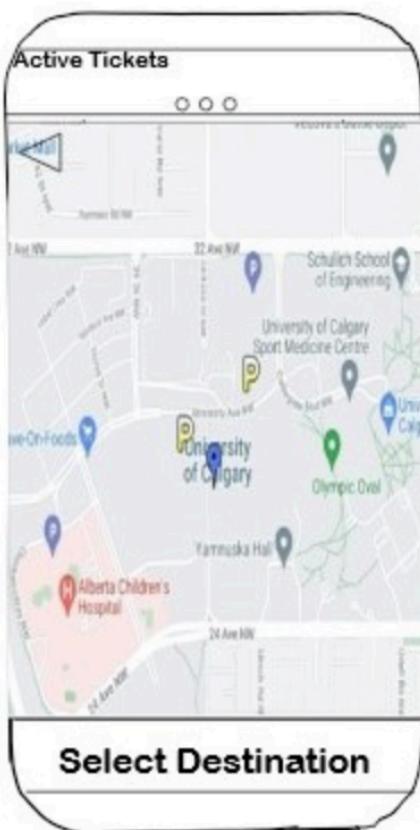
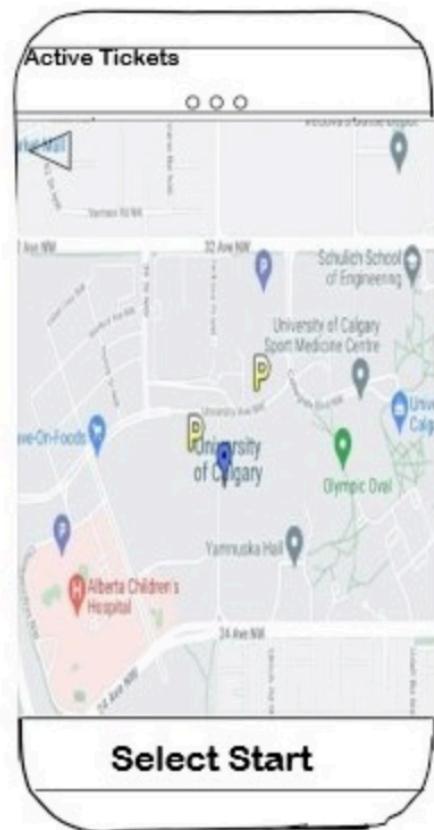
## Map



Directions

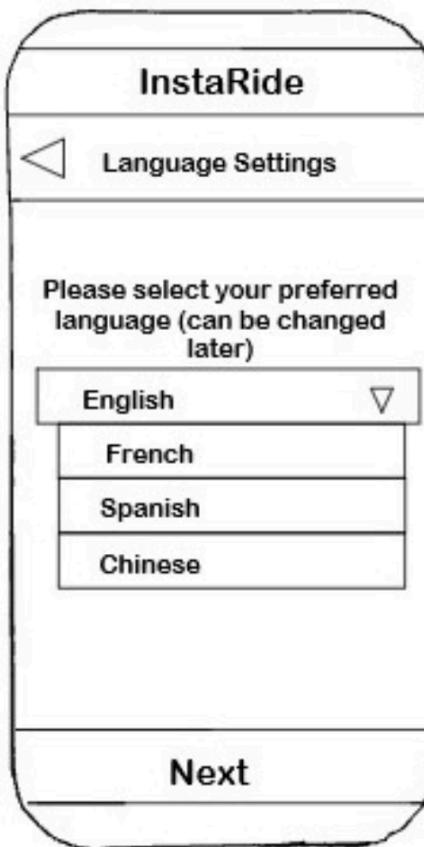
## Plan a Trip

## Routes

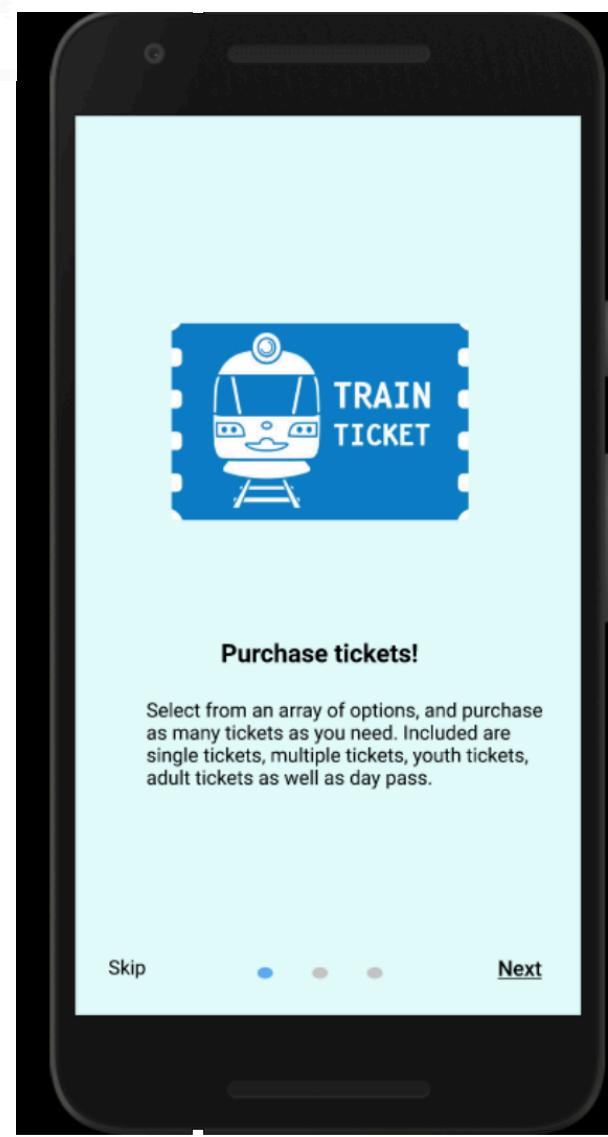


Entering locations  
to find  
directions  
using  
map

# First Time Opening Application Screens



Language Options  
First thing shown when app opened for the very first time



## Application Features Overview



### Personal wallet!

Navigate through and access all your tickets through your wallet. You can also keep a pre paid balance of cash in your wallet.

Skip



Next



### Create and Customize your profile!

Create a profile for ease of use, maximum comfort, as well as making the app tailored towards you.

Skip



Next

# User Preference Questions

The image shows two mobile application screens side-by-side, both titled "InstaRide".

**Left Screen (Sign Up / Sign In):**

- Header: "InstaRide"
- Back arrow icon.
- Text: "Sign Up / Sign In"
- Text: "Are you already a member?"
- Text: "Sign In" button.
- Text: "Would you like to join? (can join later)"
- Text: "Sign Up" button.
- Text: "Or"
- Text: "Continue as guest" button.
- Text: "Next" button at the bottom.

**Right Screen (Accessibility):**

- Header: "InstaRide"
- Back arrow icon.
- Text: "Accessibility"
- Text: "Do you need accessibility transit options? (can be changed later)"
- Text: "Yes" button.
- Text: "No" button.
- Text: "Next" button at the bottom.

The image shows two mobile application screens side-by-side, both titled "InstaRide".

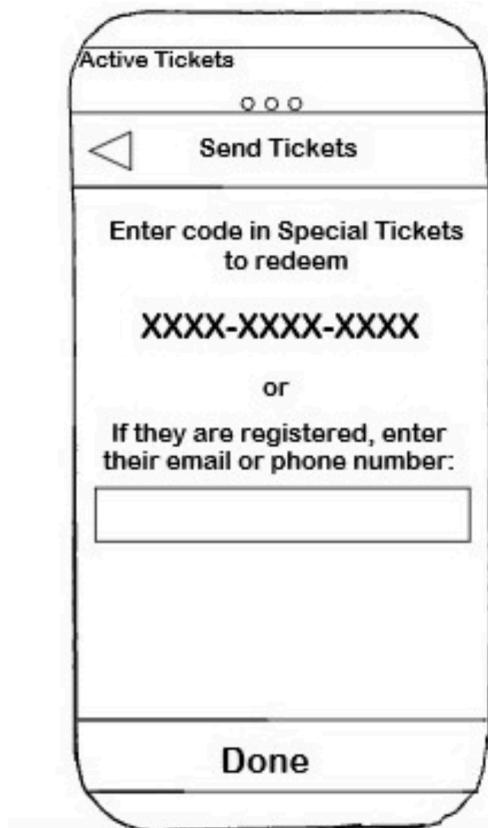
**Left Screen (Guided Use):**

- Header: "InstaRide"
- Back arrow icon.
- Text: "Guided Use"
- Text: "Would you like a guide to help navigate the application? (can be changed later)"
- Text: "Yes" button.
- Text: "No" button.
- Text: "Next" button at the bottom.

**Right Screen (Location):**

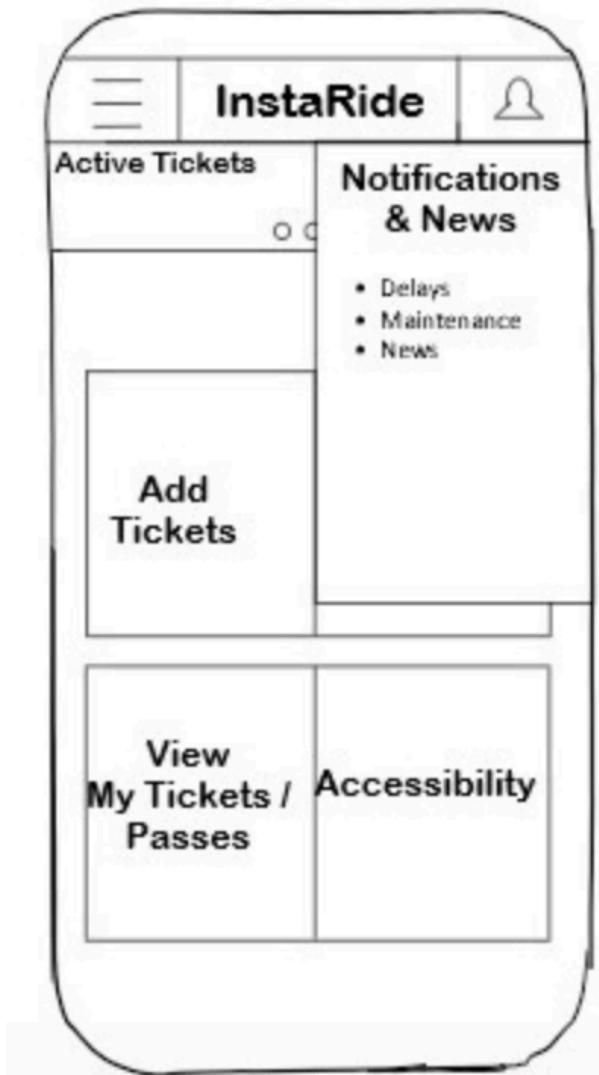
- Header: "InstaRide"
- Back arrow icon.
- Text: "Location"
- Text: "Would you like to enable location services for this application? (can be changed later)"
- Text: "Yes" button.
- Text: "No" button.
- Text: "Finish" button at the bottom.

## Alternative “Send Ticket” Screen

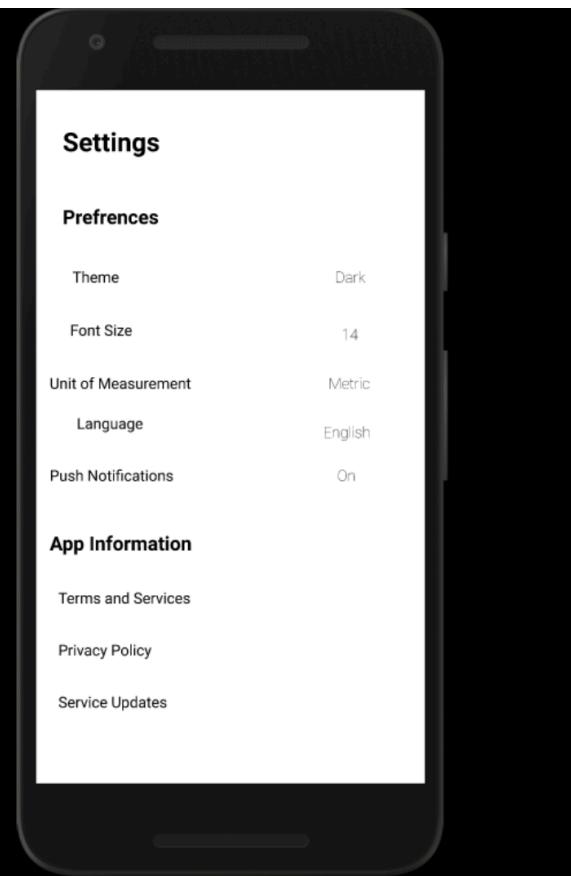


Notification/News Dropdown

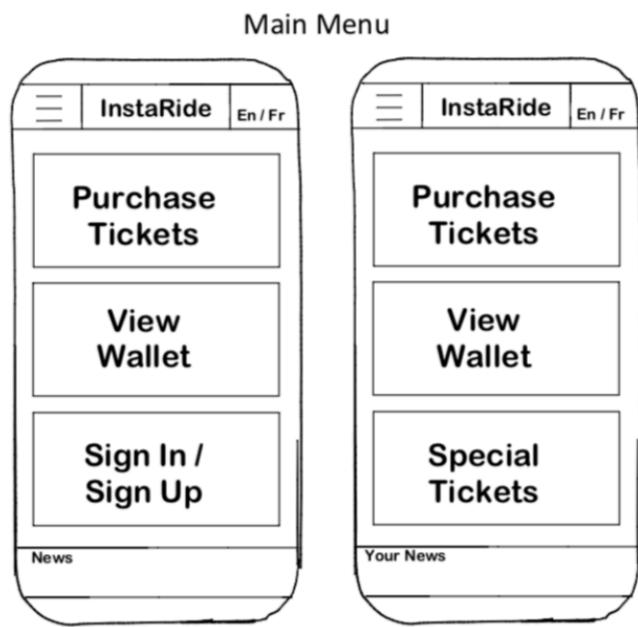
Noti / News



## Application Settings

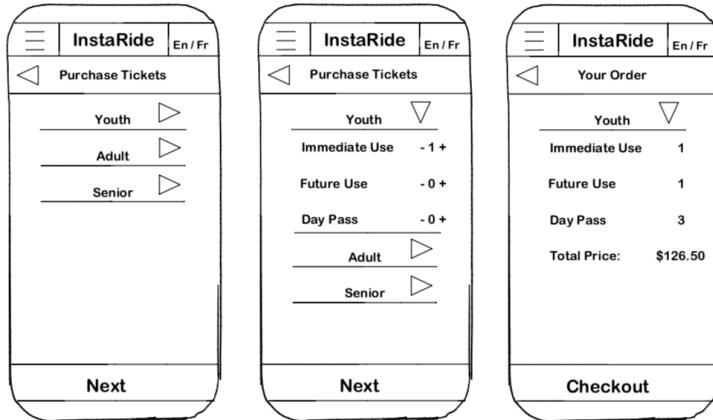


# Original Lo-Fi Prototypes from Assignment 1



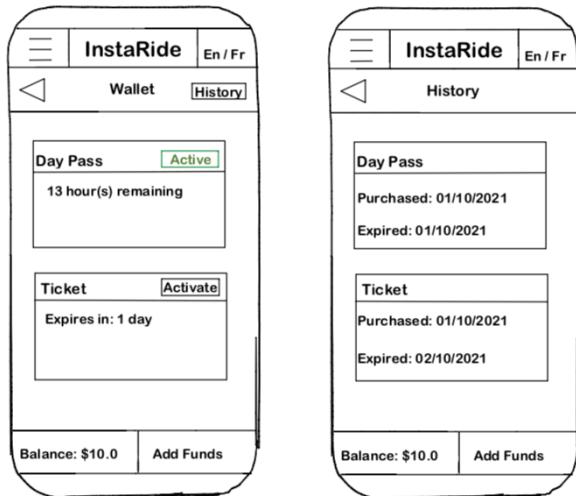
When application is opened, this will be the first things that users see. The screen on the left is for users not logged into the application, while the screen on the right shows what logged in users will see.

### Purchase Tickets



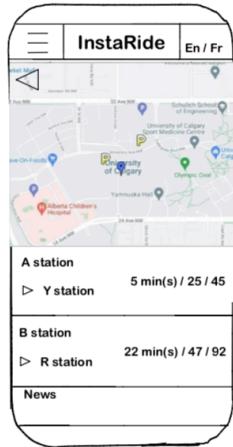
These 3 screens show how the users can purchase tickets after clicking “Purchase Tickets” on the main menu, in order from left to right. Note that the payment page has to be implemented.

### Wallet / History



From the “view wallet” button on the main menu, customers can bring up their active tickets/passes and view their ticket history.

## Map



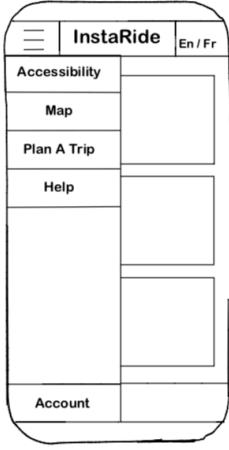
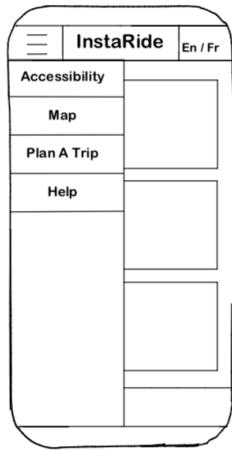
## Accessibility



The interface on the left shows a map design from trip planning features such as estimated transit time.

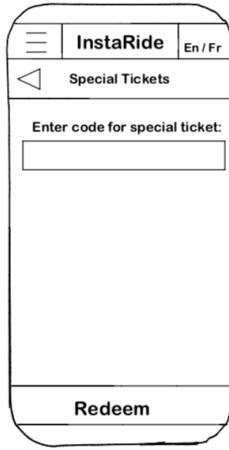
The interface on the right shows how users who need personal forms of transportation for accessibility reasons can request a trip.

## Drop Down



Hamburger button reveals a drop down menu revealing multiple features. These 2 screens only differ because the screen on the right represents a logged in user.

## Special Tickets



Screen to enter codes for special tickets/passes like university transit passes.

## Sign In / Sign Up



Sign In / Sign Up interfaces. Users could sign in to any device so they won't lose their tickets saved.

