



**ImInfo:**

**Public Information Kiosk**

**Final Report**

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# Introduction

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ImInfo is a public information standup kiosk built primarily with a focus on providing its services towards new immigrants arriving in the city of Calgary. Our team has taken into consideration the many difficulties and struggles that new immigrants face when first arriving in a new place and aimed to resolve many of these common major problems by providing a one-in-all access to any information or services that a new immigrant may require. This one-in-all access kiosk provides nine essential applications and services: (1) an interactive map, (2) easy access to local services and government buildings and sites, (3) a consolidated list of our local city bylaws, (4) instructions for utilizing our city public transportation, (5) access to affordable housing, (6) access to a quick means of telecommunications, (7) locations of noteworthy travel destinations, (8) a catalog of ongoing and upcoming local events, and (9) locations of various religious sites and places of worship. Despite being built with its services catered towards new immigrants, anyone is able to access and make use of the public kiosk.



This final report will summarize and showcase the design processes that have gone into creating the kiosk with the use of illustrations and screen snapshots. We will then move into the heuristic evaluations of the final product conducted by all four members of our team, with a condensed summary of all four heuristic evaluations. Lastly, we will discuss the final state of our kiosk design in detail.

## Design Process and Illustrations

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The initial research that our group conducted really helped shape and influenced what applications and services our kiosk would have provided within the lo-fi and hi-fi prototypes, and lastly, what was brought over to the final design of the kiosk. We focused primarily on the issues that we felt were most commonly encountered by many new immigrants which was deduced from both the articles and information that we read online and

our own personal experiences when traveling abroad. This resulted in the kiosk providing the nine essential applications and services outlined in the introduction.

## Low-Fidelity Prototype

During the design process for the lo-fi prototype, we went through two iterations before reaching our final lo-fi prototype. In the beginning, only six (call, map, bylaws, transit, immigration services, and religion) out of the nine applications were included. Between the first two iterations, the design for the overall screens were found to be lacking in aesthetics and the button placements were found to be unintuitive and did not look professional nor polished. After a final discussion among our members, we combined all our ideas together and decided to include an addition of three applications (housing, tourism, events) with a change to how the call application operated. We then finished off with polishing up the appearance and design of the kiosk screen to resemble the screens of most modern tablets and smartphones.



## Horizontal Medium-Fidelity Prototype

In this stage and onwards we used *Windows Presentation Foundation* (WPF) to create our medium-fidelity prototype by transferring our paper lo-fi prototype onto the screen. Once that was complete, we were required to re-evaluate our current design. During the re-evaluation, we decided against implementing a voice narrative option and decided to implement a few additional items such as adding an option for users to create an account and log in and adding an option for users to print select information from the kiosk. Despite the addition of the new features, the overall appearance of the kiosk and application screens and functionalities were preserved and consistent with our final lo-fi prototype.

## Vertical High-Fidelity Product

This is the final product that will be showcased with screen captures which can be found in the appendix of this report with additional details. With the use of C# and our horizontal medium-fidelity prototype, we implemented all functionalities of our applications and reached our final design for our vertical high-fidelity product.

# Heuristic Evaluation

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Due to our group only consisting of 4 members, we all split up and individually did the heuristic evaluation. Each individual was responsible for reviewing the application and checking it against Jakob Nielsen's Ten Design Heuristics presented to us within both the lectures and tutorials. We then compiled each individual spreadsheet into a master spreadsheet. Each



spreadsheet contains four columns: the rule number, the title of the rule of thumb or heuristic, a summary of our findings, suggested fixes, and a rating for the severity of the heuristic violation if any. Additionally, within the summary of findings column the text in **red** indicates all the issues that were found during the evaluations and the text in **black** are comments regarding areas and items that we believe we did well in.

We used the following ratings obtained from the heuristics tutorials in our evaluations:

Rating	Description
0	Not a usability problem
1	Cosmetic problem
2	Minor usability problem
3	Major usability problem, important to fix
4	Usability catastrophe, must fix

Both the individual evaluation spreadsheets and the master spreadsheet can be found below, and lastly, after the master spreadsheet, a summary of the main findings from the heuristics evaluations will be discussed in detail.

**Figure 1: Heuristic evaluation completed by Dora Tan**

\* Red text indicates issues and black text are general comments

#	Rule of Thumb	Description of Findings	Suggested Fix	Rating
1	<b>Visibility of System Status</b>	Icons on main screen do not indicate if they are pressable or not, logout icon is kind of placed in an obscured position and has no label nor does it ask the user to confirm if they want to log out, smooth and quick transitions between screens, all buttons work instantaneously, printing popup is instantaneous	Add glow or shadowing effect to icon buttons on main screen, move logout button to a different position or label it, could add progress bar or message to indicate how many pages are left to print (although most prints are short and will only be a max of a page long)	2
2	<b>Match Between System and the Real World</b>	Kiosk uses simple language (such as done, ok, cancel) and short descriptions/sentences, icons are pretty much self descriptive, replicates the feeling of using a tablet/smart phone	N/A	0
3	<b>User Control and Freedom</b>	No close/exit button for house popup and transit stop pop up, no zoom in/out buttons in transit map, cancel button on call scenario cancels the entire call and makes you start over again, home and back buttons can always be found, most popups have an exit button, users can undo mistakes with the keyboard back button and there is a provided undo button in the call application when entering a number	Add a close/exit button in the house and transit stop details popup, add a different button that only cancels the payment when you don't have enough coins	4
4	<b>Consistency and Standards</b>	Drop pin in religion is not the same as the other ones displayed on the map, "zoom in" and "zoom out" buttons disappear when either one is clicked, map in transit is not centered when showing nearby bus stops, buttons and header sometimes cover information on the screen, cancel label in the call application disappears after the second screen, consistent use of back and home buttons, all clickable buttons are the same (rectangular and grey) with colored buttons to indicate more attention is required	Change drop pin to match the other ones, have both buttons there and if user is zoomed in or zoomed out to the max have a status or icon that indicates that, center the map and make sure it's not clipped off!!!, have a solid header and footer where the buttons and other info can go (time, date, weather), either label all the cancel buttons or don't label them at all	3
5	<b>Error Prevention</b>	When paying for a call there is no confirmation popup from the system for the user to confirm and double check the amount they are putting in, logout button is not labelled and there is no system message asking if the user really wanted to log out or not, system has set applications and buttons which already outlines most choices a user can make and click on which prevents user errors, similar buttons (back, home, exit, cancel) are all in the same positions throughout the kiosk	Add a confirmation popup to prompt users to double check if that is the correct amount of money and talk time they want, label logout button and add a system message/prompt to ask if user actually wants to log out	3
6	<b>Recognition Rather than Recall</b>	Back and home button are always on the bottom which is similar to most tablets/smart phones, all icons are recognizable and are easy to deduce the meaning of or what they do/show	N/A	0
7	<b>Flexibility and Efficiency of Use</b>	System does not provide different ways of completing tasks, user modes (logged in and guest) provide the same options, home button is always provided for quick return to main screen	Implement more functions for users that are logged in (such as favorite places, quick search addresses and locations, etc.)	2
8	<b>Aesthetic and Minimalist Design</b>	System design is definitely minimal with straight to the point sentences and labels	Could condense on screen information some more in some areas	0
9	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	System has pre-determined buttons and routes which prevents most user errors in the first place but other than that, there are no error messages shown when completing tasks, no feedback when entering username and password	Implement clear and straight to the point error messages when users do make an error by providing tool tips or other small messages to help guide user in completing their tasks	3
10	<b>Help and Documentation</b>	System does not provide a help button or any documentation that users can refer to	Implement a help page or help icon on pages which explains how to use the kiosk in particular areas	3

**Figure 2: Heuristic evaluation completed by Mohammed Rakeeb**

\* Red text indicates issues and black text are general comments

#	Rule of Thumb	Description of Findings	Suggested Fix	Rating
1	<b>Visibility of System Status</b>	No delay on button press, smooth window transition, icon label are readable. Main menu application when pressed does not provide any indication of press.	Buzzing animation can be added to the icons so that on press the icons buzz	1
2	<b>Match Between System and the Real World</b>	The system allows user to choose their own language. System provides most commonly Spoken language in the real world. Also provides many features that solves real world problems	N/A	0
3	<b>User Control and Freedom</b>	User can move between different screens within the same application as desired using the back and home button. User can continue from the same state as before simply by logging in. No print option for Maps in the Map option	Add printing option in all the map/location related application	2
4	<b>Consistency and Standards</b>	Transit does not have the zoom in and zoom out option. The Icons in home screen is partially colorful. The top bar with weather date and temperature info in transit can be hard to read. Every screen has back and home button. Every screen has a top bar. Application has balanced content to white space ratio.	Add zoom in and zoom out button in the add a background to the top bar. Make all the icons colorful to have a consistent look	2
5	<b>Error Prevention</b>	Festival is repeated twice once in events and once in tourism. Same feature recalled twice with different content and with different task. The QR option to buy ticket system should have allowed to buy the ticket from the kiosk given there is printing option. Or instead providing the QR for the link Direct the user to the page from the KIOSK	FIX the Festival problem merge them in one application with the merged functionality. Eliminate the QR code option from the appropriate places	4
6	<b>Recognition Rather than Recall</b>	The system user interface is similar to most of the devices user may use daily (Tablet/iphone). The system has grid view menu option which is similar to most of the main menu layout on mobile phones	N/A	0
7	<b>Flexibility and Efficiency of Use</b>	Users can easily access to the what they are looking for. Use as guest option gives the user flexibility to use the system on the go.	N/A	0
8	<b>Aesthetic and Minimalist Design</b>	Design is very straight forward and all tasks are on point. system is graphically soothing to look at.	N/A	0
9	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	Call option does not provide any indication of error when a number is inputted. User using a particular language may abandon the system without logging out making it confusing for the other users to use in a later time, or may even lead the later user to not use the system at all as the user does not have any idea of current state or how to navigate through the system	Dial pad should sanitize user input for correct number. System should automatically logout after 120 seconds of inactivity	4
10	<b>Help and Documentation</b>	System does not provide any sort of "Help or documentation" to the user. A very new user who has very minimal knowledge to touch screen or touch based devices can find it very difficult to even start with from the welcome page	Tutorial option should be implemented. That will play on the screen always until the user touches anywhere on the screen	3

**Figure 3: Heuristic evaluation completed by Priyavart Rajain**

\* Red text indicates issues and black text are general comments

#	Rule of Thumb	Description of Findings	Suggested Fix	Rating
1	<b>Visibility of System Status</b>	Buttons on the main menu do not provide feedback when pressed	Glow can be added when pressed	1
2	<b>Match Between System and the Real World</b>	The icons and labels used represent their purpose pretty well	N/A	0
3	<b>User Control and Freedom</b>	On each screen, the user has the option to go back, or undo their work. They can also choose the language of their choice	N/A	0
4	<b>Consistency and Standards</b>	All buttons look the same and no two buttons that look the same have different functions, avoiding confusion	N/A	0
5	<b>Error Prevention</b>	The map screen does not provide context of where the user currently is. This does not cause problem for people familiar to the city but can cause confusion among users that are new to the city.	A small window can be incorporated that provides a birds-eye view of the user's whereabouts	2
6	<b>Recognition Rather than Recall</b>	Since the application is heavily based on interaction using relevant icons and well-known terms, it supports recognition and minimizes the need for recalling	N/A	0
7	<b>Flexibility and Efficiency of Use</b>	The application is quite flexible for new users. However, due to the presence of a lot of buttons and screens that the user needs to go through, it might become inefficient for experienced users.	Provide shortcuts for frequently used functionalities, e.g. a quick call option	2
8	<b>Aesthetic and Minimalist Design</b>	The application does not use unnecessary graphics or text and uses a minimalist approach	N/A	0
9	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	Although the design of the application tries to minimize the possibility of errors in the first place, they are inevitable. Error recognition, diagnosis and recovery not provided	While signing up/ logging in, if the user makes a mistake, the system can notify them about it by marking the incorrect fields red, a dialog box providing a brief description of the error and suggest a fix.	3
10	<b>Help and Documentation</b>	The app does not provide help/ documentation for the users since the functionalities that it offers are well-known and only a few of them might need documentation. The design of the app is "walkthrough" based which guides the user at each step which eliminates the need of a separate help utility.	A Help page can be incorporated that explains basic features of the system	1

**Figure 4: Heuristic evaluation completed by Sultan Arafat**

\* Red text indicates issues and black text are general comments

#	Rule of Thumb	Description of Findings	Suggested Fix	Rating
1	<b>Visibility of System Status</b>	Print option inside the immigration service doesn't indicate the progress of the pages printed.logout button has no label on it.	Add percent done dialogs to show the progress or time left.label the logout button	2
2	<b>Match Between System and the Real World</b>	kiosk uses simple and natural dialogue.Kiosk doesn't provide unnecessary information or features.	N/A	0
3	<b>User Control and Freedom</b>	User can use the kiosk as a guest without signing up. No logout buttons in all screens to signout from any state.Dialogue boxes which show house and transit doesn't have a cancel button	add logout to leave kiosk anytime.Add cancel button to all popup dialog boxes.	3
4	<b>Consistency and Standards</b>	tourism and religion doesn't have a home button.Drop pin in transit and housing is not consistent with the map.All the buttons look consistent.	add home buttons.Make consistent drop pins.	2
5	<b>Error Prevention</b>	user can sign in without filling all the fields as no error message is displayed.	Make fields to fill mandatory. Do check on input data.	3
6	<b>Recognition Rather than Recall</b>	icons are self explanatory and serve adequate information about the information provided	N/A	0
7	<b>Flexibility and Efficiency of Use</b>	an experienced user needs to go past many screens to get the desired service.This might be helpful for a new user but may annoy regular users	provide shortcuts for important services such as call,transit.	2
8	<b>Aesthetic and Minimalist Design</b>	All dialogues contain relevant information.Design is simple and user friendly	N/A	0
9	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	no error messages displayed to check authentication while sign up/sign in. No text field checks provided	warn users to fill all fields.Show error message if credentials don't match and prevent users from continuing	3
10	<b>Help and Documentation</b>	No help or documentation is provided but using the kiosk is easy as users can navigate through the screens using the simple buttons	provide a "how to use" documentation	2

**Figure 5: Master spreadsheet of all heuristic evaluations**

\* Red text indicates issues and black text are general comments

#	Rule of Thumb	Summary of Findings	Suggested Fixes	Ratings			
#	Rule of Thumb	Summary of Findings	Suggested Fixes	Dora	Mohammed	Priyavart	Sultan
				2	1	1	2
1	Visibility of System Status	(1) Icons on main screen do not indicate if they are pressable or not. (2) Logout icon is kind of placed in an obscured position and has no label nor does it ask the user to confirm if they want to log out. (3) Print option inside the immigration service doesn't indicate the progress of the pages printed.	(1) Add glow, shadowing, or buzzing effect to icon buttons on main screen to indicate that the icon has been selected. (2) Move logout button to a different position and label it. (3) Could add progress bar or message to indicate how many pages are left to print (although most prints are short and will only be a max of a page long).	0	0	0	0
2	Match Between System and the Real World	(1) Kiosk uses simple language (such as done, ok, cancel) and short descriptions/sentences. (2) Replicates the feeling of using a tablet/smart phone. (3) The icons and labels used represent their purpose pretty well. (4) Kiosk doesn't provide unnecessary information or features. (5) System provides many features that solve real world problems.	N/A	0	0	0	0
3	User Control and Freedom	(1) No close/exit button for house popup and transit stop pop up. (2) No zoom in/out buttons in transit map. (3) Cancel button on call scenario cancels the entire call and makes you start over again. (4) No logout buttons in all screens to signout from any state. (5) No print option for maps in the map application. (6) On each screen the user has the option to go back or undo their work. (7) They can also choose the language of their choice. (8) User can use the kiosk as a guest without signing up.	(1) Add a close/exit button in the house and transit stop details popup. (2) Add a zoom in and zoom out function for the transit map. (3) Add a different button that only cancels the payment when you don't have enough coins. (4) Add logout button so that users can leave kiosk anytime. (5) Add printing option in all the map/location .	4	2	0	3
4	Consistency and Standards	(1) Drop pin in religion and transit is not the same as the other ones displayed on the map. (2) "Zoom in" and "zoom out" buttons disappear when either one is clicked. (3) Map in transit is not centered when showing nearby bus stops. (4) Buttons and header sometimes cover information on the screen. (5) Cancel label in the call application disappears after the second screen. (6) Tourism and religion doesn't have a home button. (7) The icons in home screen is partially colorful. (8) All buttons look the same and no two buttons that look the same have different functions, avoiding confusion.	(1) Change drop pin to match the other ones. (2) Have both buttons there and if user is zoomed in or zoomed out to the max have a status or icon that indicates that. (3) Center the map and make sure it's not clipped off!!! (4) Have a solid header and footer where the buttons and other info can go (time, date, weather). (5) Either label all the cancel buttons or don't label them at all. (6) Add home button for tourism and religion screen. (6) Make all the icons colorful to have a consistent look.	3	2	0	2
5	Error Prevention	(1) When paying for a call there is no confirmation popup from the system for the user to confirm and double check the amount they are putting in. (2) Logout button is not labelled and there is no system message asking if the user really wanted to log out or not. (3) The map screen does not provide context of where the user currently is, this does not cause problem for people familiar to the city but can cause confusion among users that are new to the city. (4) There are no error messages displayed when inputting the wrong username/password. (5) Festival is repeated twice once in events and once in tourism - same feature recalled twice with different content and with different task. (6) The QR option to buy ticket system should allow user to buy the ticket from the kiosk given there is printing option. Or instead providing the QR for the link Direct the user to the page from the kiosk.	(1) Add a confirmation popup to prompt users to double check if that is the correct amount of money and talk time they want. (2) Label logout button and add a system message/prompt to ask if user actually wants to log out. (3) A small window can be incorporated that provides a birds-eye view of the user's whereabouts. (4) Make fields to fill mandatory and do a check on input data. (5) Fix the Festival problem, merge them in one application with the merged functionality. (6) Eliminate the QR code option from the appropriate places.	3	4	2	3
6	Recognition Rather than Recall	(1) Back and home button are always on the bottom which is similar to most tablets/smart phones. (2) All icons are recognizable and are easy to deduce the meaning of or what they do/show. (3) Since the application is heavily based on iteration using relevant icons and well-known terms, it supports recognition and minimizes the need for recalling.	N/A	0	0	0	0

7	<b>Flexibility and Efficiency of Use</b>	(1) System does not provide different ways of completing tasks. (2) Due to the presence of a lot of buttons and screens that the user needs to go through, it might become inefficient for experienced users. (3) An experienced user needs to go past many screens to get the desired service. This might be helpful for a new user but may annoy regular users. (4) The application is quite flexible for new users. (5) Users can easily access to what they are looking for. Use as guest option gives the user flexibility to use the system on the go.	(1) Implement more functions for users that are logged in (such as favorite places, quick search addresses and locations, etc.). (2) Provide shortcuts for frequently used functionalities, e.g. a quick call option.	2	0	2	2
8	<b>Aesthetic and Minimalist Design</b>	(1) System design is definitely minimal with straight to the point sentences and labels. (2) The application does not use unnecessary graphics or text and uses a minimalist approach. (3) All dialogues contain relevant information. (4) Design is simple and user friendly. (5) Design is very straight forward and all tasks are on point. system is graphically soothing to look at.	(1) Can make some screens more colorful.	0	0	0	0
9	<b>Help Users Recognize, Diagnose, and Recover from Errors</b>	(1) There are no error messages shown when completing tasks, no feedback when entering username and password. (2) No error messages displayed to check authentication while sign up/sign in. (3) No text field checks provided.. (4) Although the design of the application tries to minimize the possibility of errors in the first place, they are inevitable. Error recognition, diagnosis and recovery not provided. (5) Call option does not provide any indication of error when a number is inputted. (6) User using a particular language may abandon the system without logging out making it confusing for the other users to use in a later time, or may even lead the later user to not use the system at all as the user does not have any idea of current state or how to navigate through the system.	(1) Implement clear and straight to the point error messages when users do make an error by providing tool tips or other small messages to help guide user in completing their tasks. (2) While signing up/ logging in, if the user makes a mistake, the system can notify them about it by marking the incorrect fields red, a dialog box providing a brief description of the error and suggest a fix. (3) Provide checks on all inputted data from the user. (4) Dial pad should sanitize user input for correct number. (5) System should automatically logout after 120 seconds of inactivity.	3	4	3	3
10	<b>Help and Documentation</b>	(1) System does not provide a help button or any documentation that users can refer to. (2) The app does not provide help/ documentation for the users since the functionalities that it offers are well-known and only a few of them might need documentation. (3) A very new user who has very minimal knowledge to touch screen or touch based devices can find it very difficult to even start with from the welcome page.	(1) Implement a help page or help icon on pages which explains how to use the kiosk in particular areas. (2) A Help page can be incorporated that explains basic features of the system. (3) Tutorial option should be implemented. That will play on the screen always until the user touches anywhere on the screen.	3	3	1	2

## Heuristic Evaluation Results

We found the following major issues regarding our kiosk application listed from having the most to least severe ratings:

### 1. User Control and Freedom - Average rating: 3

Due to different parts of the application being put together by different members of the group, we missed a few of the exit/close buttons on the popup detail windows. This was due to a lack of communication and understanding within the group while we were individually working on the application. This leads to a severe feeling of being trapped in a few of the applications during the evaluation since the window could not be closed or moved around and the only way out was to go back to the previous screen or to the main menu. Additionally, there are no zoom in and zoom out buttons within the transit map while these buttons exist in the actual map application. Furthermore, while going through the call task sequence, there is only one button and that is the “cancel” button. While it does provide the user with the ability to escape from their current task, it actually cancels the entire call sequence once clicked and brings you back to the main menu where you will have to go through all the steps once again. However, each screen does have a working back and home button that users always have access to regardless of which screen the user is on.

### 2. Error Prevention - Average rating: 3

Our system was designed to guide users through their tasks in a specific sequence, therefore, eliminating many of the situations in which the user enters the wrong information in text fields or clicks on the wrong application. We did our best to use simple button prompts and labels in hopes to alleviate much of the confusion that may be experienced from our users. However, the system does not provide error messages in the situation that the user does make an error. A few examples would include having no confirmation message from the system for when the user pays for their call, having the logout button in an obscure place and not labelling it assuming that our users understand what the purpose of the button is, the map not providing any context in where the user is currently situated with respect to the city, and having two repeats of “Festivals” which appears one in the tourism application and the second in the events application.



### **3. Help Users Recognize, Diagnose, and Recover from Errors - Average rating: 3**

This violation of this heuristic roots from the violation of the error prevention heuristic.

The system provides no error messages when users complete tasks and provides no feedback either. Although the purpose of the design of the system tries to minimize the possibility of user errors, it is inevitable that the user will eventually one into one and the system will not provide a response for when an error does occur.

### **4. Help and Documentation - Average rating: 3**



Our system does not provide any help buttons nor documentations that users can refer to. We believed that by designing functionalities as straightforward as possible would help eliminate much of the user errors that may occur, therefore, eliminating the need for a help button or documentation. However, we do need to account for users who have minimal knowledge of and who are unfamiliar with how touchscreen kiosks operate by implementing a help page or icon.

### **5. Visibility of System Status - Average rating: 2**

One of the main problems with the kiosk screens is the cutting off or covering of information by the header and footer buttons, especially during the use of the applications which utilize the interactive map. Another important issue to address is that the logout icon is placed in an obscured position within the main screen and not being labeled which may confuse users who do not recognize what the icon means. Additionally, the print function within the immigration services application does not indicate how many pages will be printed nor how long it will take. Although all the printed pages are short and will only be a maximum of a page long, it is still important to indicate how long the printing process will take and provide a cancel button if users change their mind.

### **6. Consistency and Standards - Average rating: 2**

In general, the main concern with our system consists of missing small attention to details which contributed to a larger problem of the overall system lacking in consistency which was mainly caused by having too many people working on the application with little communication in implementing the design of the screens. To name a few issues, we are missing an exit/close

buttons for a few popup detail windows, lack of consistent zoom in and zoom out buttons within the transit application screens, more obscure buttons such as logout not being labeled in the main screen and on the other hand the cancel button in the call application screen only being labelled for one screen and not the rest of the screens while in the application.

## **7. Flexibility and Efficiency of Use - Average rating: 2**

The system does also provide a guest option for when users do not want to make an account or log in which improves the ease of access for the kiosk. However, the system does only provide one way of completing tasks. Due to the presence of the many buttons and screens that the user will have to navigate through, the process can become quite tedious for users who are already familiar with using the kiosk.



# Final Design Rationale

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Overall, the system applications and their functionalities have all been implemented and work as intended. The transitions of the screens are smooth and immediate. We also tried our best to make the application functionalities as simple and straight to the point as possible. The system design is very minimal and aesthetic.

Looking back, there are still many improvements we can make to the system. First of all, adding a solid header for the date, time, and weather information and a solid footer for the back button, logo, and home button would both help prevent the covering and interference with the on screen information especially when using the map. Next is improving the call application procedure as this has the longest procedure the user has to follow through to successfully complete their calling task. The system was not designed using the .NET grid alignment feature which aids with the placement of content in the desired place with more accuracy than just us trying our best to align everything by eyeballing it. If looked at carefully, one can notice the inconsistency in the alignments of the icon and label and the various screens. Although our system design was simple, there were many areas that were lacking in colour such as in the bylaws, call, tourism, events, and religion screens.

One of the major implementations in the system design that needs to be added is the self-logout feature which logs out of the system after a certain duration of inactivity. The current design allows users to abandon the system after the completion of their tasks which may cause unnecessary complications for the next user. For example, a foreign user selects “French” within the wakeup/main screen, goes through their tasks, forgets to log out of the system, and walks away. The next user who comes up to use the kiosk may not understand French. This causes complications in that the user will end up losing all motivation to use the system because they cannot navigate the system to change the language. Apart from all these design issues, all other parts of the system work efficiently and have a consistent user interface. Each screen design was completed by prioritising user motivation, accessibility, and efficiency..

Before designing the system, our team wanted to cover as large a number of user types as possible which lead to a few different user types. This resulted in the need for the system to cover a large scope of functionality and usability. Each function on the kiosk has been designed and implemented by justifying what type of user would interact with it and what tasks each user would perform. All screens, from the very first welcome screen to the last screen a user would see was all designed while keeping in mind that the kiosk was designed to solve real world problems which we compiled through initial research at the very beginning of the project. An example of a thorough and successful use of the kiosk could be shown by one of the users we have - Navjot. Navjot is an immigrant from India with his family, which means that upon approaching the kiosk, he will first select the “Hindi” option. From there, he will select the housing option to search for nearby affordable shelter. This user task successfully solves one of the major common issues that new immigrants face, which is the struggle of finding affordable housing in the new environment. All of our user tasks were written step by step in order to link them back to our initial research of the most common issues that new immigrants encounter. We built the kiosk around our research in hopes that this product will help solve many of these issues. Therefore, we believe that the system will serve its job and work well for our identified users and their tasks.

The design of each functionality from a philosophical perspective narrates a story of solving a problem which is inevitably non-fictional. One of the most noticeable strengths of the system design is that it provides a process and solution to help solve real problems that most newcomers encounter when they come to Calgary. The design provides a very user friendly service to all types of user. The design is minimal and has straight to the point sentences and labels. It will be appropriate to say that the design voluntarily tries to make a newcomer’s stay at Calgary as pleasant as possible. Moreover, with Calgary’s fast growing and developing economy, many tourists are attracted to visit the city, which helps highlight the need for the system to support several different languages. This makes the kiosk more flexible and easy to use and in turn, broadening the range and type of users the system can cover. The design has room for all of the latest topnotch technologies which makes it visually and physically standard in the modern technological society.

However, the design also has some minor issues and weaknesses. From a security perspective, there are some caveats which can cause significant harm to the user. The design is for public use but it has some features that make the system more accessible and efficient to use but can also work against us in introducing a vulnerability to the design. In the call option there is a pay by credit/debit option, the user can be vulnerable to various attack vectors at this point. One of the attacks could be shoulder surfing where the adversary looks over the shoulder of the victim to steal information. On the other hand, another weakness is the scale of the design scope. The kiosk was planned by considering the fact that the kiosk will be in various locations in Calgary but considering its big design scope and system constraint, it makes it difficult to implement in several locations.

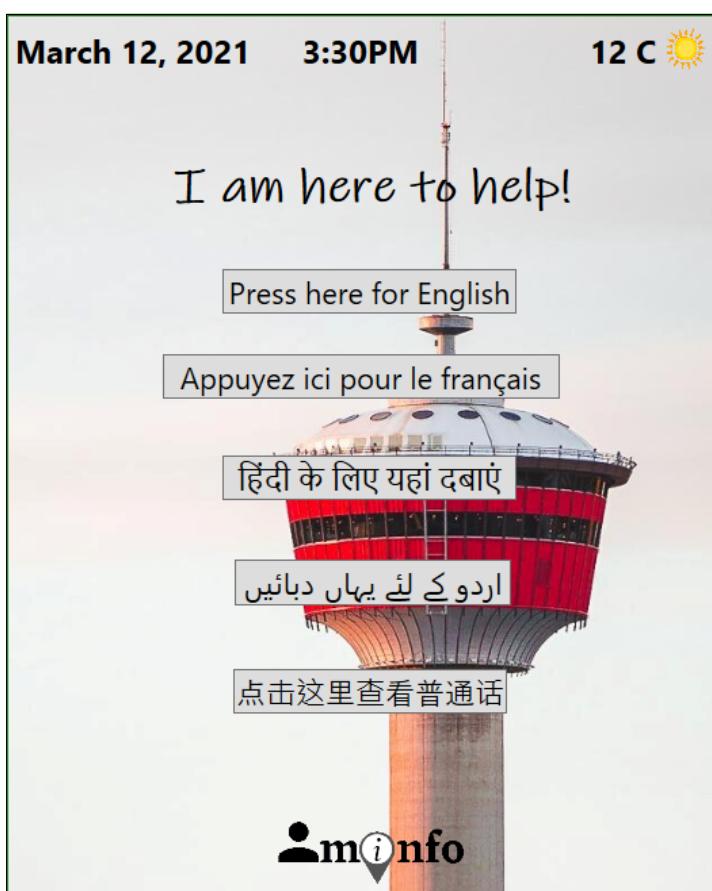
# Appendix: Final Design Illustrations



This is the design of the entire stand up kiosk. Starting in the top middle is the main touch screen. Moving to the top left is the coin slot that will be used for when users decide to use cash to pay for the call feature. Underneath that is the handphone which will be in use for when the user goes through the call sequence. Moving to under the screen are two slots. The slot on the right is

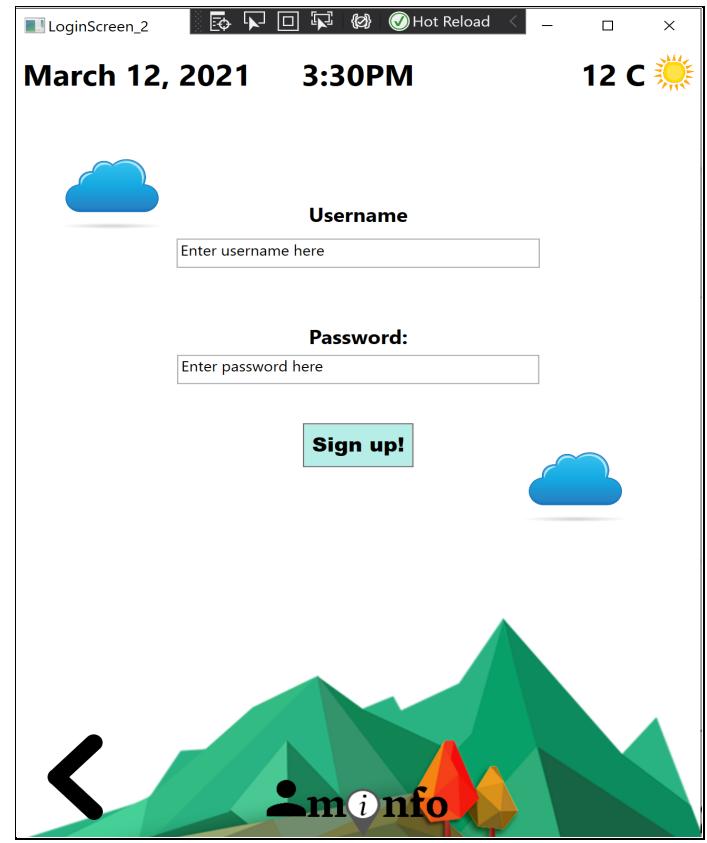
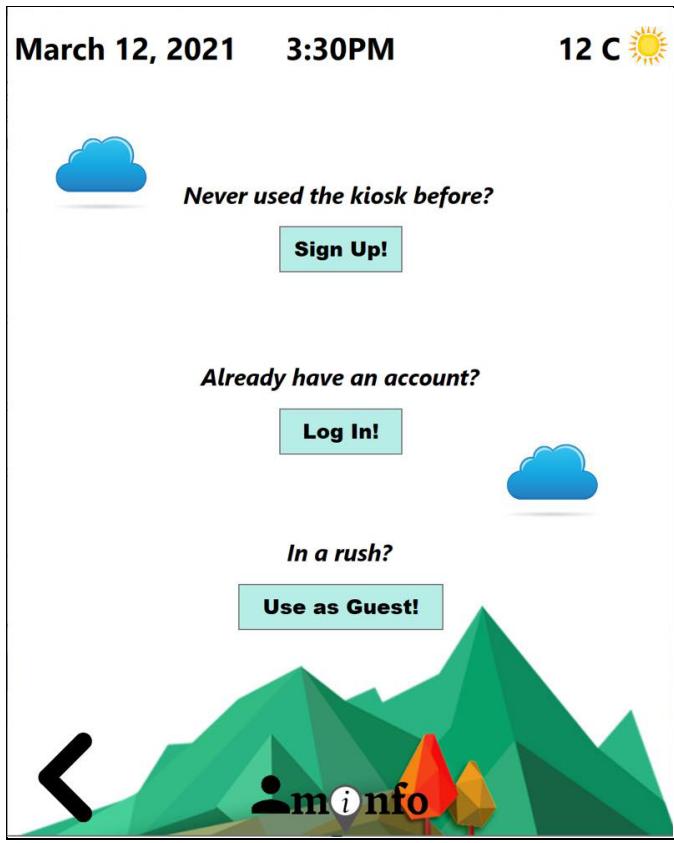
used for taking in credit cards used for payment and the left slot will be where the printed papers come out from. Finally, underneath the slots sits the touchscreen virtual keyboard which displays

the appropriate keyboard based on the language the user selects.



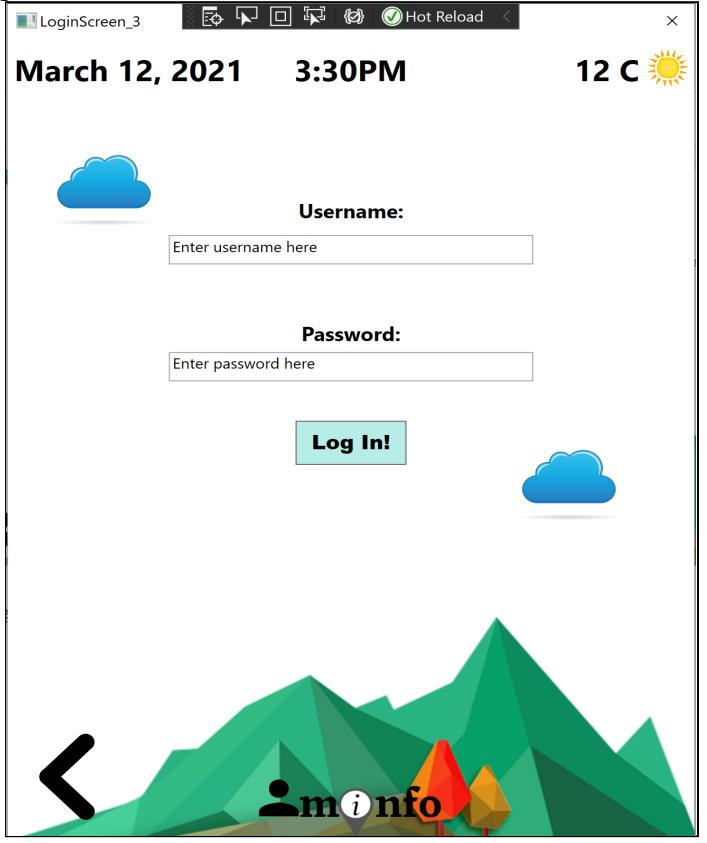
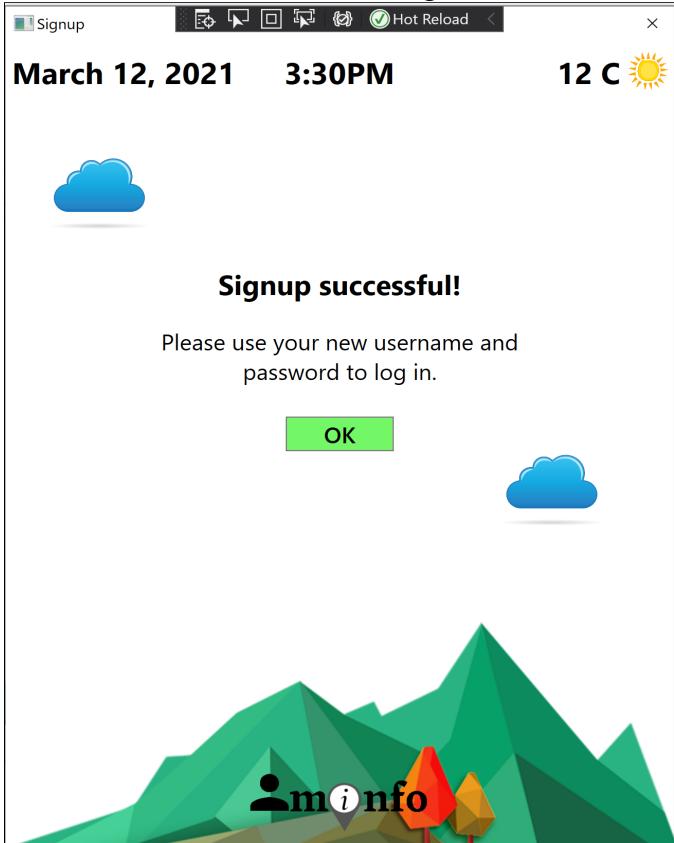
## Wake up/Main Screen:

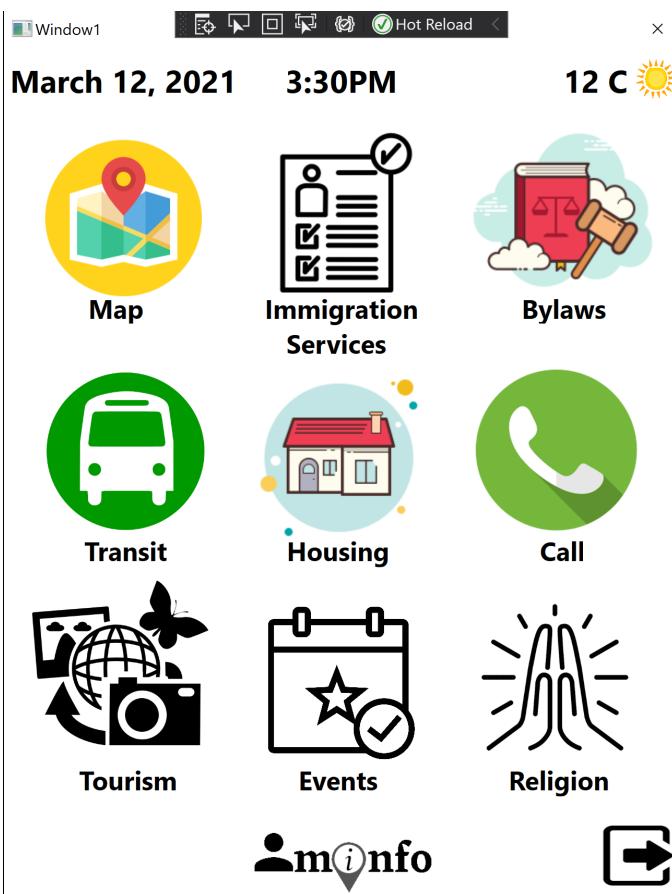
This is the first screen which appears when using ImInfo. It asks the user to continue to the home screen by selecting their preferred language. In turn, the virtual touchscreen keyboard will adjust to and show the corresponding keyboard in the language the user has selected.



Users have the option to sign up, login or use the kiosk as a guest.

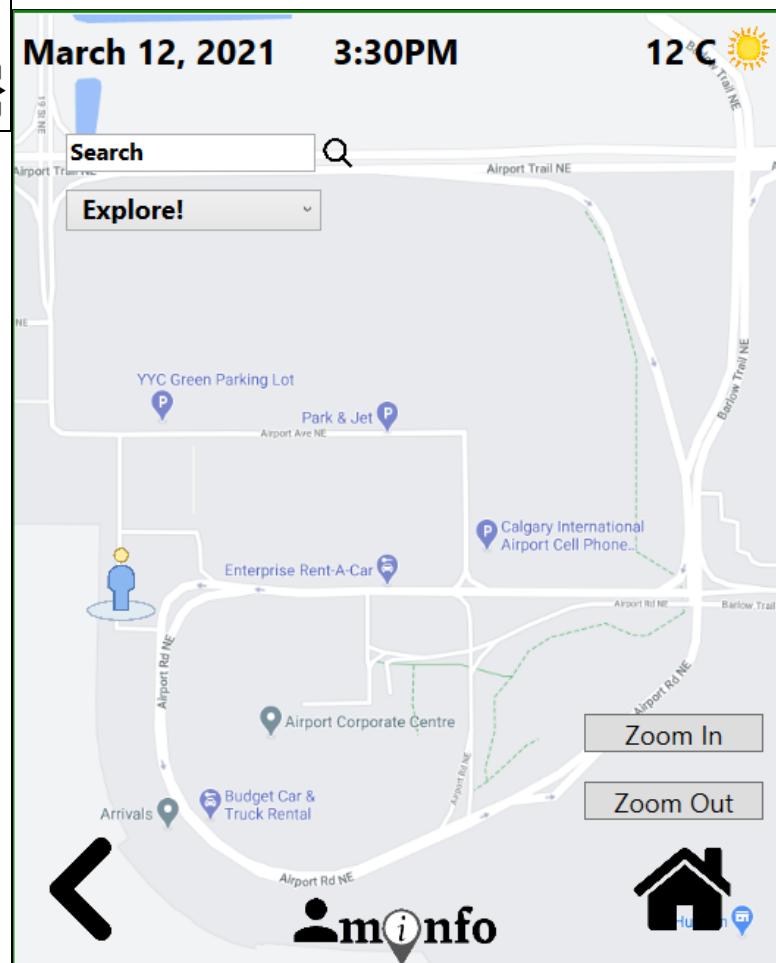
If users decide to create a new account, they will be prompted with the following success message and will be able to sign in with their credentials





### Home Screen:

After selecting a login option, users are taken to the home screen. This screen displays all nine features and services provided by the kiosk. Pressing each menu will take the user to a separate screen consisting of the information relevant to that application. The logout button is on the bottom right of the screen, tapping on the button will log the user out and bring them back to the wakeup/main screen.

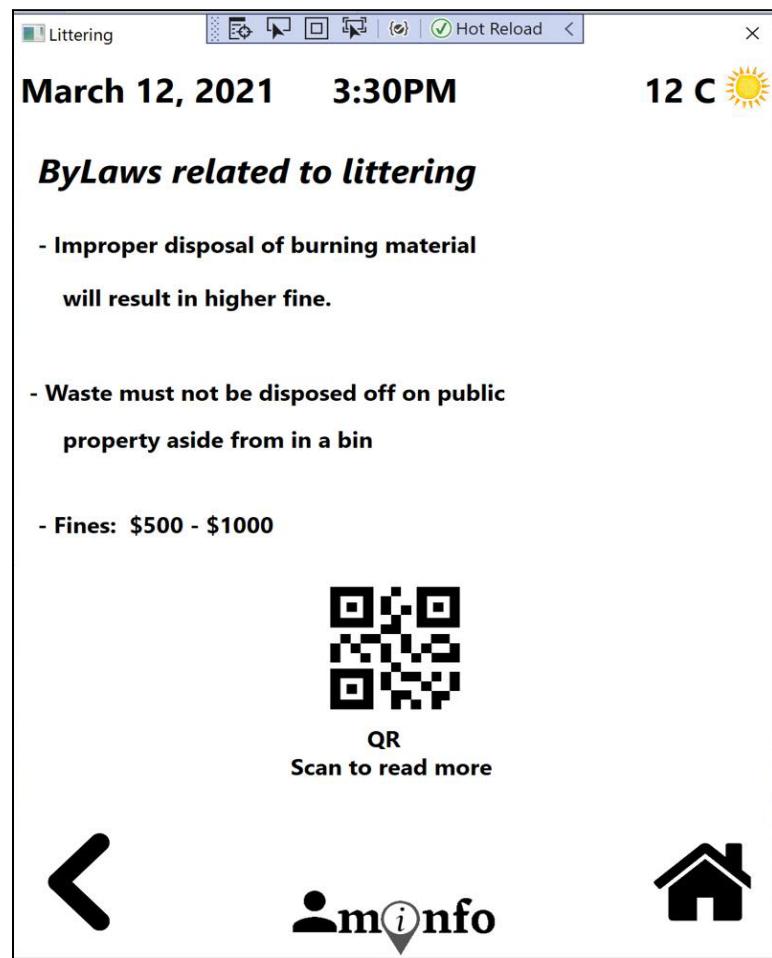
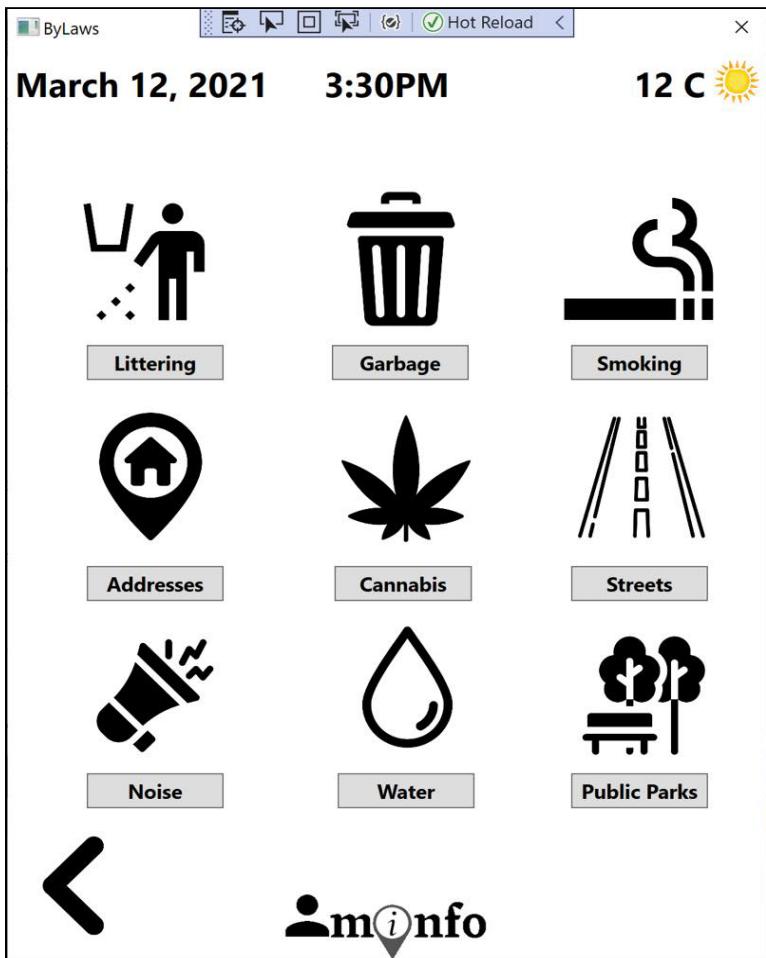


### Map Application:

Map allows a user to search for a place or explore using the drop down categories provided. The user can zoom in and out for better visuals.

## Bylaws Application:

Bylaws display the rules and regulations associated with different actions within that city. It provides a user with the general information and any expected fines associated if the rules are violated. Users can also scan the QR-code on their phone to be redirected to the official government website to read more about the rules.



March 12, 2021 3:30PM

12 C ☀

**Select your status in Canada**

Skilled Worker

Student

Tourist

Permanent Resident

Citizen

Sponsored

Refugee

**Immigration Services Application:**

ImInfo also provides information about immigration services to any newcomers.

Users can select their status and see the necessary documents required, how to apply for them, and where to apply for the documents.

March 12, 2021 3:30PM

12 C ☀

***Documents you must prepare***

1> Study Permit

Health Card

3> -----

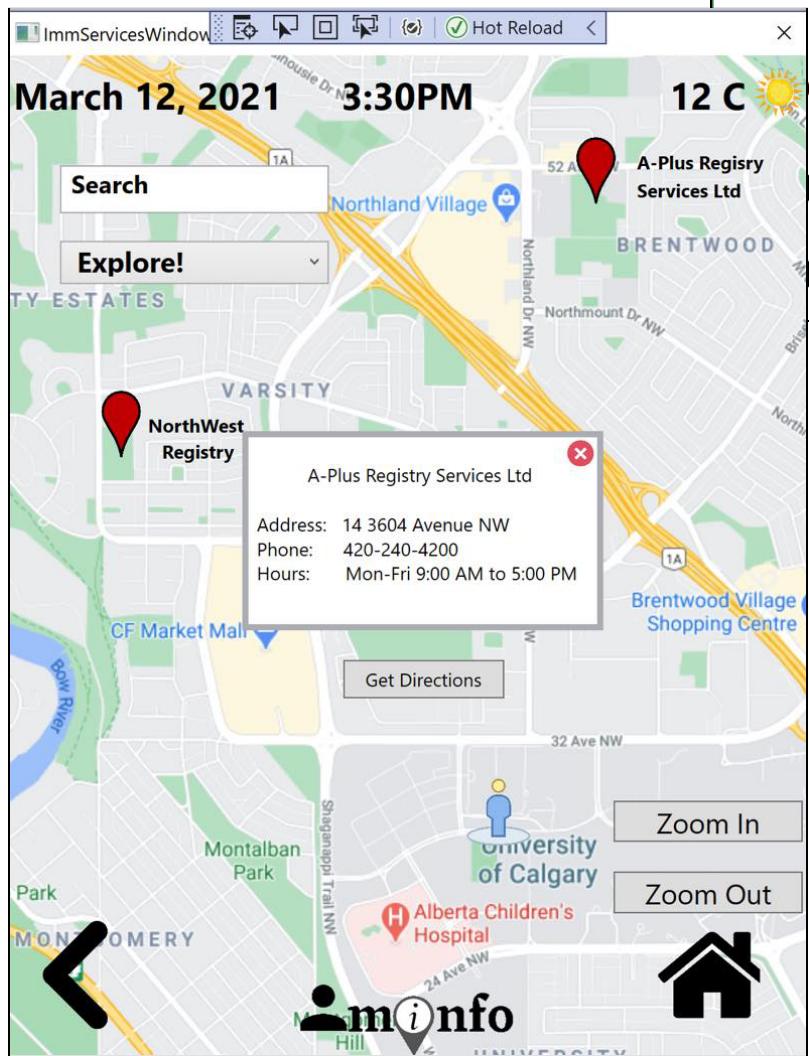
***Documents we recommend***

1> -----

2> -----



Users have the option to print out any forms they will need by pressing the print button. Under the “Where to get” section is a button that locates all nearby registries and buildings where the user can turn in the forms to apply for the select documentation



**March 12, 2021 3:30PM**

**12 C** ☀

## Health Card

An Alberta health care card is a piece of government-issued identification that gives eligible residents of Alberta access to medical services. To receive these services, you just need to show your Alberta health care card and photo identification at a licensed medical office.

### Documents You'll Need to Bring



Government Issued Photo ID.



Pre-Filled Form:

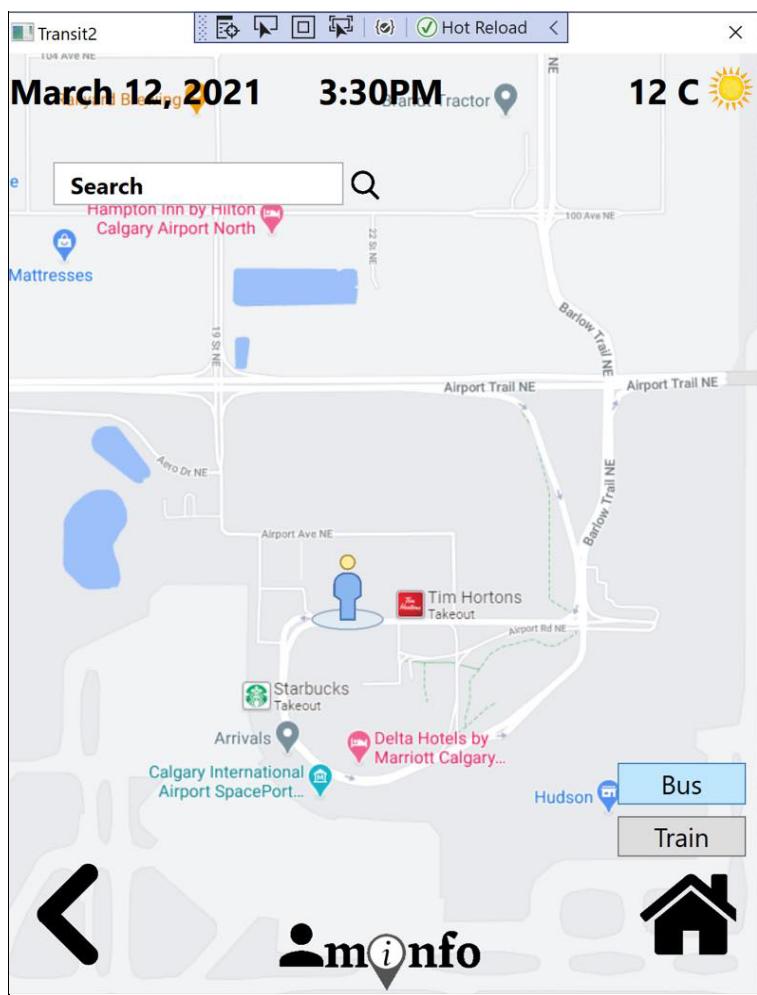
[Print](#)



Proof you are allowed to live in Canada

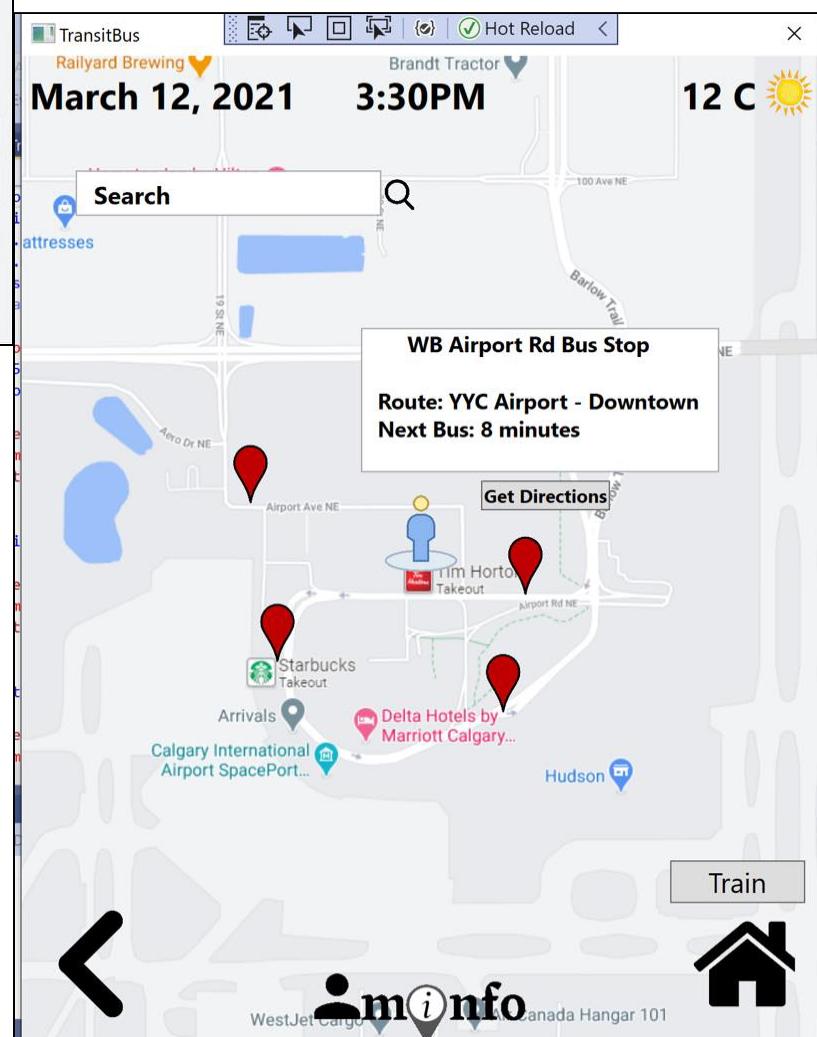
[Alberta Registry Locations](#)





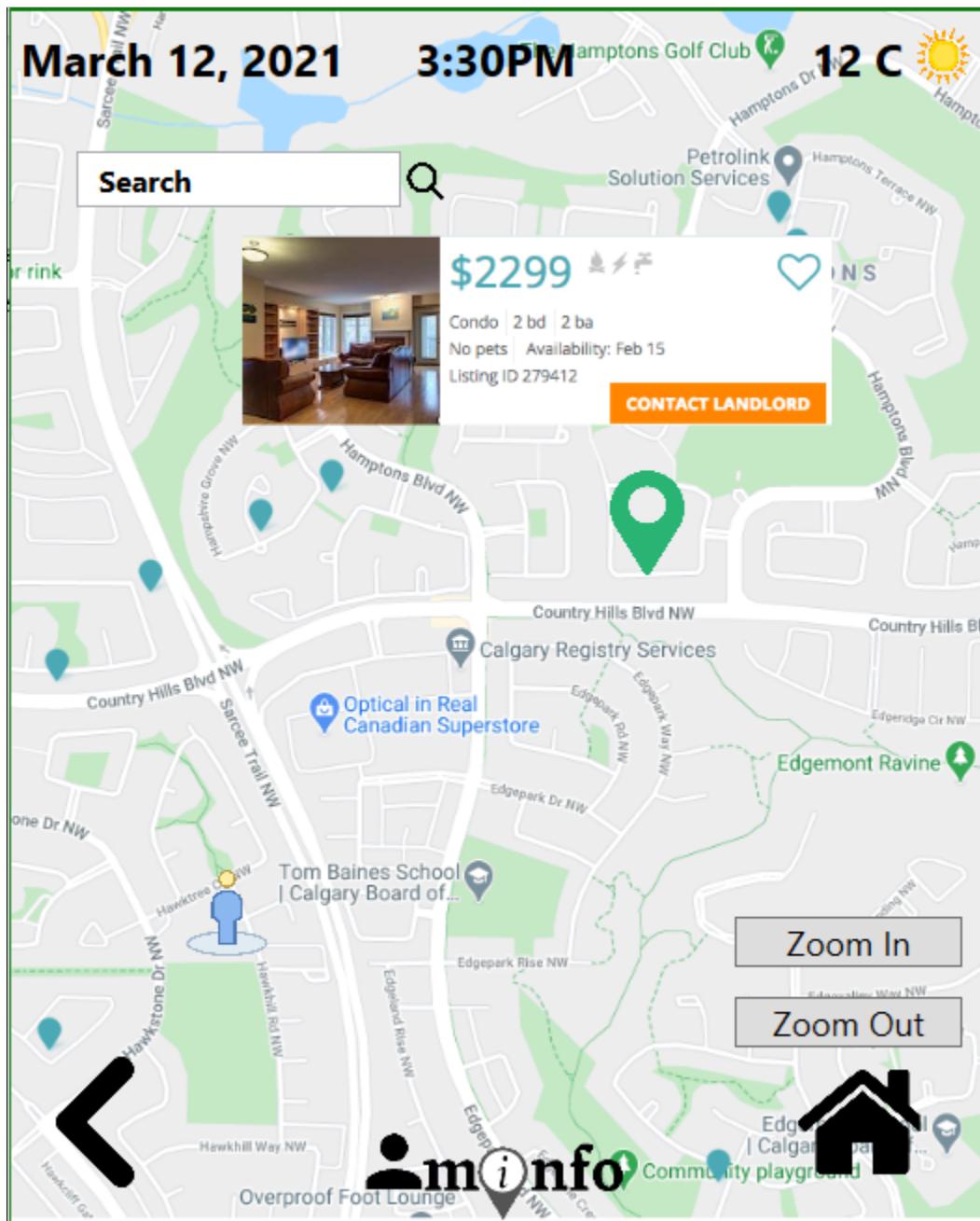
## Transit Application:

The transit application helps the user plan their trip and allows them to see schedules for any bus and train routes. They can also see the route on the map which will help figure out their pathing throughout the city. Clicking either “Bus” or “Train” will display all nearby bus or train stops.



## Housing Application:

Housing allows the user to find quick and affordable housing in the nearby neighbourhood. Any available houses are marked by green pins and clicking on the pin will bring up a popup details window which will display the necessary details about that specific house.



**March 12, 2021 3:30PM**

**12 C** ☀

**Choose call type**

**Personal - Paid**

**Emergency - Free**

**Call Application:**

Users can use the call feature to contact their family members or any other individuals. They can choose between personal or emergency calls. Personal calls require payment either through cash or credit/debit card. Emergency calls are free!

**March 12, 2021 3:30PM**

**12 C** ☀



**Choose payment method**

**Cash**

**Credit/Debit**

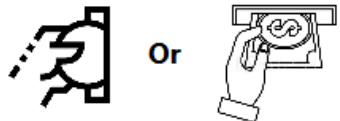
**Cancel**



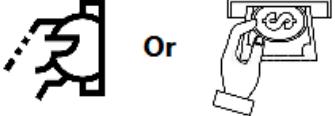
March 12, 2021 3:30PM

12 C ☀

**Insert Coins / Bills Into the Slots**



Or



Balance: \$3.25

Your Talk Time: 4 mins

Press When Done:

OK

Users first have to buy talk time. Once satisfied with the time, users will press “OK” to continue to the dial pad.



March 12, 2021 3:30PM

12 C ☀

5896545



1 2 3  
4 5 6  
7 8 9  
0



Cancel



**March 12, 2021 3:30PM**

**12 C ☀**



**Pick Up Hand Set**

After dialing the number, users are prompted to pick up the handset and speak.



Once the handset is picked up, the screen will automatically change to a new screen which displays the elapsed call duration. users can collect their change and press ok to go back to the menu screen.

**March 12, 2021 3:30PM**

**12 C ☀**

**Call Duration**

**2 m 33 secs**

**Done**



**March 12, 2021    3:30PM**

**12 C** ☀

**Call Complete**

**Total Charge: \$1.20**

**Please Collect Change**

**Press When Done:**

**OK**



Finally, once the user is finished with their call, the total charge will be displayed and the user will be prompted to collect any change.

**March 12, 2021    3:30PM**

**12 C** ☀

***Choose what interests you!***



Natural Areas



Winter Sports



Heritage



Architecture



Festivals



Parades

### **Tourism Application:**

Tourism is a rather straightforward application. Users will be prompted to select what interests them and all noteworthy locations will be displayed with their corresponding details and information.

**March 12, 2021**

**3:30PM**

**12 C** ☀

#### **Calgary Stampede**



Details: Details about the event go here.

Hours: Monday to Friday 9 AM to 11 PM

[Get Directions](#)

#### **Lions Festival of Lights**



Details: Details about the event go here

Hours: Monday to Friday 8PM to 12 AM

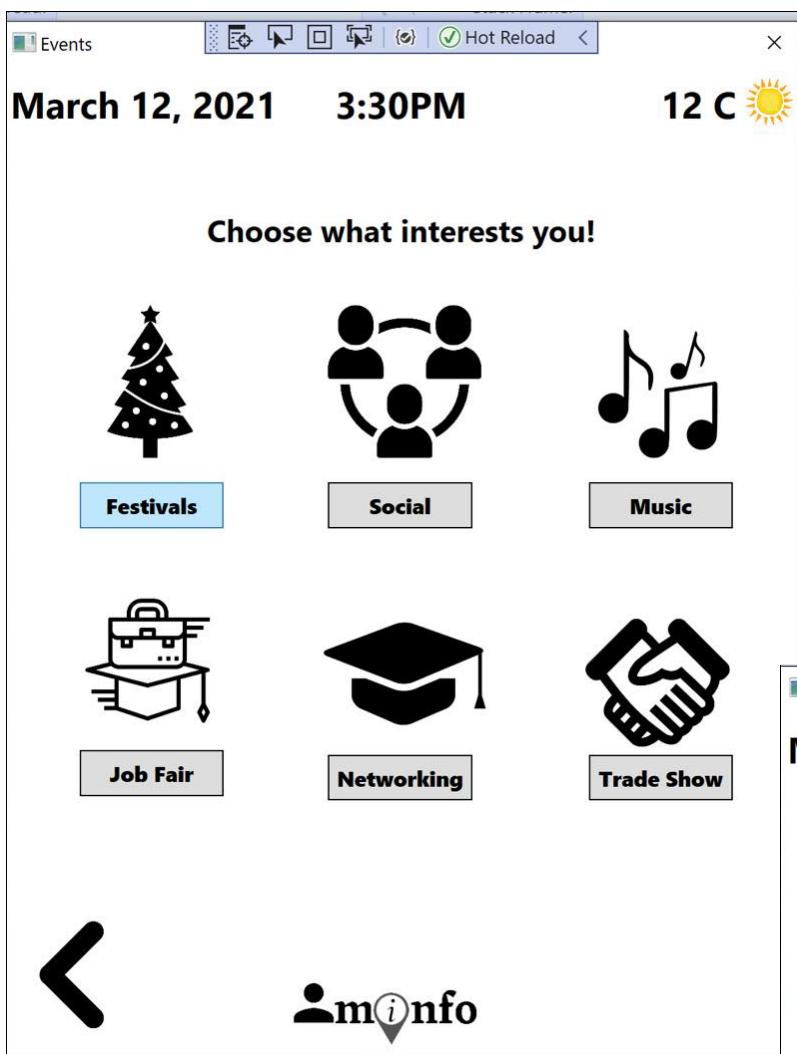
[Get Directions](#)

Clicking on “Get Directions” will pull up the map and the location of the attraction will be displayed.



**m*i*nfo**





### Events Application:

Events are categorized. Clicking on a category will show all nearby related events taking place in the city. If tickets are required, users can purchase them right from the kiosk by scanning the QR-code with their mobile devices.

**March 12, 2021    3:30PM    12 C**

**Herp Alpert**  
  
 Details: Details about the event go here.  
 Date and Time: March 29, 2021 @ 9 AM to 11 PM  
[Get Tickets](#)

**Home Free Vocal**  
  
 Details: Details about the event go here.  
 Date and Time: April 5, 2021 @ 8 AM to 3 PM  
[Get Tickets](#)

**mInfo**

**March 12, 2021**

**3:30PM**

**12 C**



**Herp Alpert**



Details: Details about the event go here.



**Home Free Vocal**



Details: Details about the event go here

Date and Time: April 5, 2021 @ 8 AM to 3 PM

[Get Tickets](#)



**m*i*nfo**



March 12, 2021 3:30PM

12 C ☀

*Select your religion:*



Buddhism



Confucian



Christianity



Hinduism



Islam



Judaism



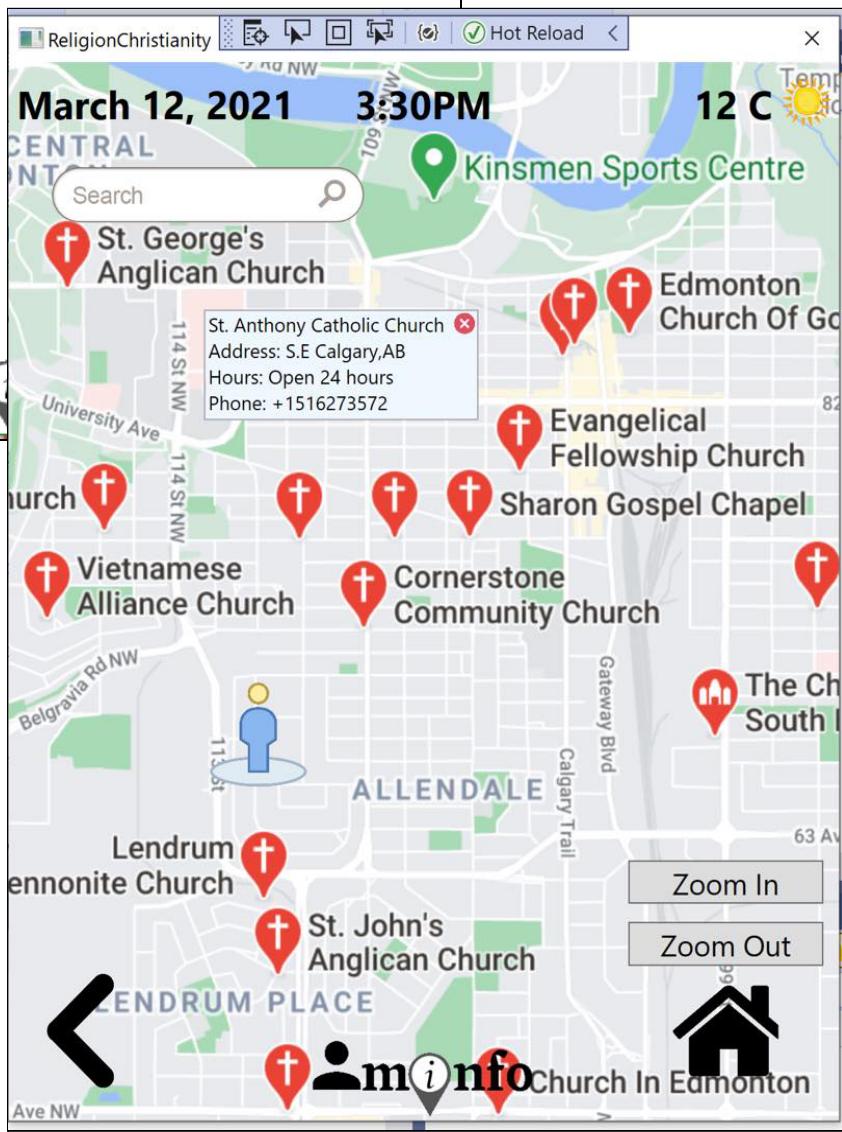
Shikhism



Shinto



Taoism



### Religion Application:

With our religion application, users can find an easy way to help integrate into their new surrounding culture with the help of the members of their ethnical community. ImInfo helps the user find any nearby religious communities which match their ethnicity in the city. Clicking the pin opens a dialog box with details about the location.