

GNG1103[A] Proj 13 Deliverable H

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Abstract:

This document outlined the team's third prototype, as well as an updated prototype testing plan, and feedback provided on the current prototype.

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1. Introduction:

This document will discuss the team's final prototype, as well as provide a thorough analysis of what the prototype does, and show how the prototype performs against the testing plan. This document will explore feedback received from potential users and clients, as well outline a plan for the next prototype.

2. Prototype:

This prototype will focus on assigning a value to points when a small business signs up. It also provides a final mockup of what the platform will look like, as well as a business to business conversion once it is fully integrated.

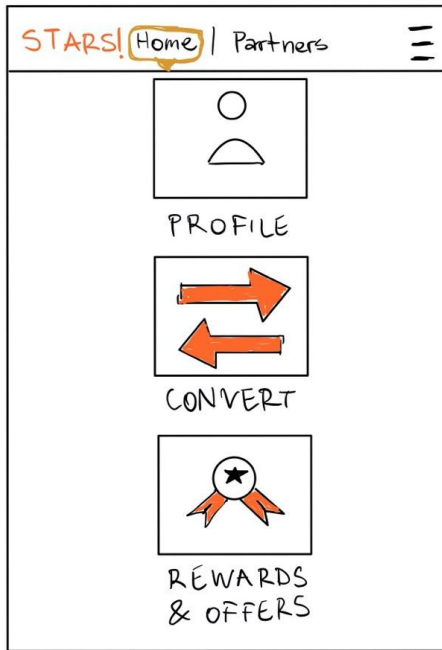
When businesses sign up, they will be suggested a plan for how their rewards should work. All points will be assigned the same value (1 point / dollar spent), but the rewards levels will depend on the average purchase size and frequency of visits of the business (barber shop vs coffee shop). The table below details how the value of points and rewards would be assigned to a business. As more types of business sign up, more categories will be added.

Business type	Visit frequency	Average visit cost	Possible rewards	Sources
Clothing boutique	medium	Medium - high	<ul style="list-style-type: none"> ● According to the above article, average amount spent on clothes per month is about 170\$ CAD ● Assuming people buy from more than 1 store, say approximately 90\$ are spent at 1 boutique per month ● Possible rewards: ● 120 points: 10\$ off ● 240 points: 20\$ off ● 400 points: 40\$ off ● Spend 200\$/year, extra 5\$ off per rewards level ● Spend 300\$/year, extra 10\$ off per rewards level ● Birthday discount 	link
Book store	low - medium	medium	<ul style="list-style-type: none"> ● 100 points: 10\$ off ● 200 points: 15\$ off ● 300 points: 20\$ off ● Birthday discount 	
Vape shop	medium	medium-high	<ul style="list-style-type: none"> ● According to the above article, average monthly spending at vape shops is 75\$/month ● People visit these shops frequently <ul style="list-style-type: none"> ○ Possible reward ideas: ○ 120 points: 10\$ off 	Link Link

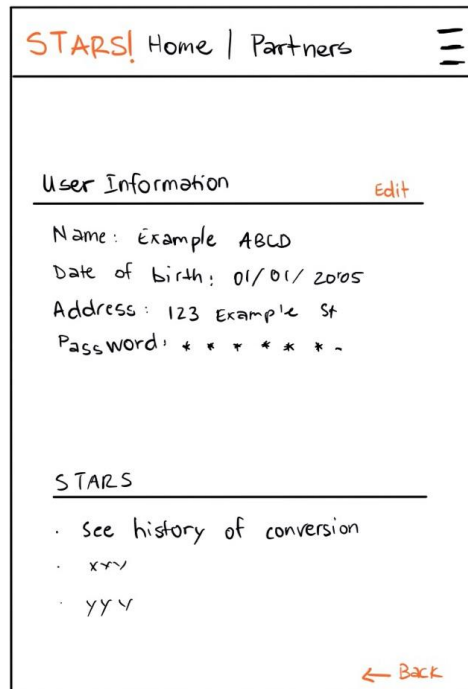
			<ul style="list-style-type: none"> ○ 200 points: free disposable ○ 250 points: 20\$ off ○ 500 points: free vape worth approx 40-50\$ 	
Coffee shop / bakery	High	low-medium	<ul style="list-style-type: none"> ● According to the above source, millennials spend about 2008\$/year on coffee, which is about 5.5\$/coffee ● People can visit a coffee shop multiple times a week, and spend over 40\$/week <ul style="list-style-type: none"> ○ Possible rewards ideas: ○ 30 points: free drink modification (extra shot, milk substitute at no charge, add syrup for free) ○ 60 points: free hot or iced coffee, no add ins ○ 80 points: free bakery item ○ 100 points: free hot/iced coffee and bakery item ○ 150 points: free drink with any add ins (shots, milk substitute, syrups, etc) ○ 200 points: free store merchandise (coffee shops usually have hats, tshirts, etc) ○ Free drink on birthday 	Link
Hairdresser	Low	High	<ul style="list-style-type: none"> ● Average cost of a haircut: 60-80\$ (take 70\$ as average) ● People get a haircut 4 times / year, so rewards should be given in a way that will keep them engaged and spending points <ul style="list-style-type: none"> ○ Possible rewards ideas: ○ 140 points: 30% off next haircut ○ 50 points: 10% off products sold at salon ○ 100 points: 25% off products at salon ○ 200 points: 50% off products at salon 	

The images below outline what the final product will look like for users, banks and businesses, and how the design will flow.

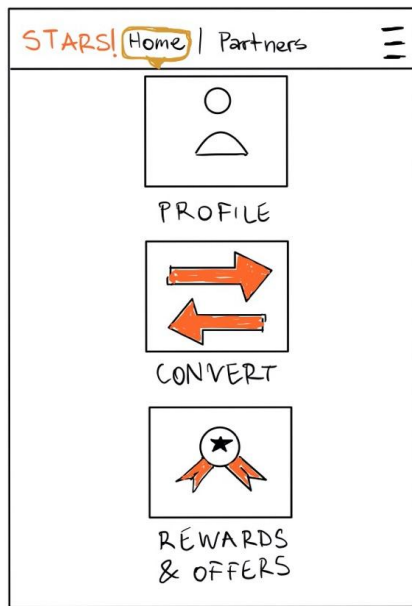
User's Interface - Home



User's Interface - Profile



User's Interface - Home

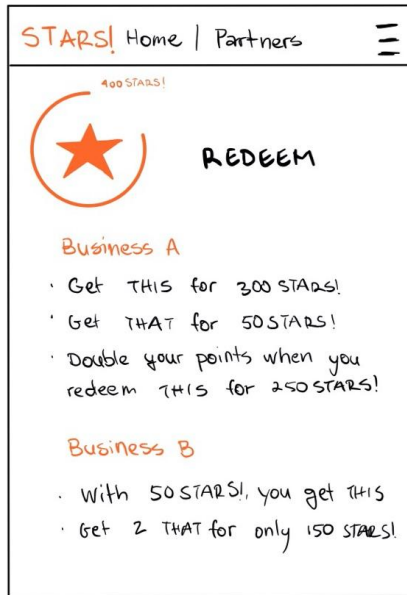


OF POINTS

User's Interface - Rewards



User's Interface - Rewards



REWARDS & OFFERS

User's Interface - Home

STARS! Home | Partners

PROFILE

CONVERT

REWARDS & OFFERS

CONVERT

User's Interface - Convert

STARS! Home | Partners

CONVERT FROM

Business A

5000 pts

CONVERT TO

Business B

3000 pts

CONVERT

User's Interface - Convert

STARS! Home | Partners

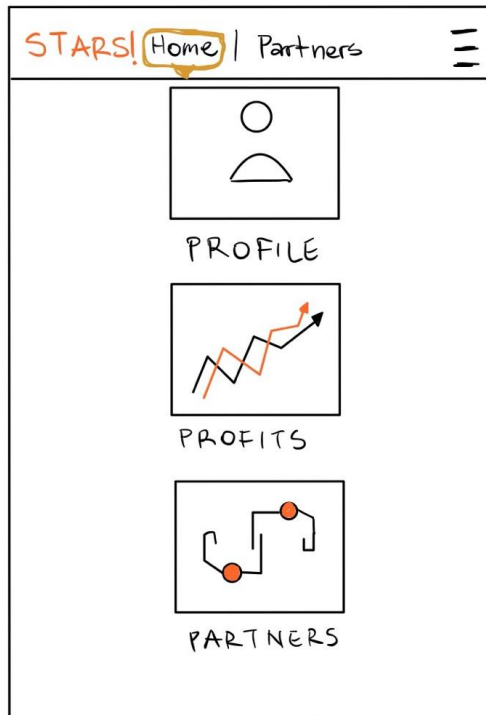
✓

You have successfully converted your points to Business B!

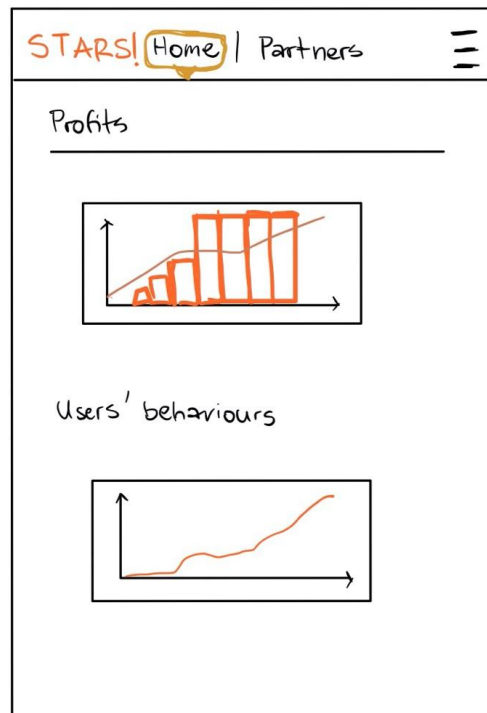
Check Available Rewards

CONFIRMATION

(Business)
User's Interface - Home



(Business)
User's Interface - Profits



The next part of the prototype addresses the business to business conversion. The conversion factor premise is actually very simple. As shown below, this is the basic formula for the calculations, using the bare bones, basic excel functions.

SLOT TO INPUT POINTS			This is the extremely simplified way of doing the points conversion, using basic excel functions.	
5	5	5		
CONVERSION OF INITIAL POINTS			conversion factors, given letter significations (placeholders)	
65	4.42477876	50	F	1.13
			V	13
			M	10
TOTAL IN WALLET				
65	4.42477876	50		

On the left hand side, we have the blue squares, which represent the conversion of points from banks/programs (to still be decided the extent of such programs) to in-store points, to be used at SMALL businesses. This is because the team wants to give that slight edge to small businesses, and help them grow. These points are to be converted (multiplied) with the factor V, shown in red. This was chosen to be a value of 13, mainly for familiarity for the user, to contrast with factor V. To continue, the conversion factor F was chosen entirely for familiarity purposes for the user. This is because HST (harmonized sales tax) in Ontario is 13%. This will allow this to seem like a familiar calculation, because it is! We want the program to feel as familiar as possible for the user, and we also want to be generous with the amount of points that can be accrued.

So, for the yellow squares, this demonstrates the conversion of points from store points, to bank/program points. This is to be done with conversion factor V, which was previously explained. The points decrease when converting to bank/program points, as to essentially not cause the bank to lose. No bank would accept our points system, if they didn't have some kind of advantage. Thus, this rate could be changed even lower, or a higher taxation rate, if the client desires.

Finally, on the right hand side, in the green squares, we have the demonstration of the conversion of points from banks/programs, to LARGE businesses. The team believes that this is a crucial element to the selling of this system, as this is proof to the small businesses that we are trying to support them. Also, as there is more traffic at a large business, a flat rate of 10 is still very welcome to them.

In conclusion, all of these rates are interchangeable! These rates can always be changed out for others, or to whatever the client desires. Also, the coding of said conversion mechanisms can be complicated, to ensure security, among other reasons.

Prototype tests

<i>Test ID</i>	<i>Test Objective (Why)</i>	<i>Results</i>
1	Have a prototype that allows a business / commerce X to be able to register and join the platform. It is important to involve small businesses in our platform, which is why the platform must necessarily attract potential partners. The prototype will be for the purpose of learning and communicating to receive feedback	The prototype does allow a business to sign up, and provides a price plan based on the size of their business. Small businesses can be involved, as well as larger ones. The prototype passes test 1.
2	Configure a platform that offers the business two subscription plans. It is important to monetize the platform so depending on the business and its clientele, the platform must be able to come up with a plan that suits the business.	The prototype offers 2 different pricing plans, a base one and a premium one. The premium plan offers more benefits. Therefore, the prototype offers plans based on client base size, and passes test 2.
3	The prototype must be able to show the interactive side between the platform and the partner to ensure a good user experience. This prototype is therefore for communication purposes in order to receive feedback and optimize the interface	The prototype shows users what kind of rewards they can earn with theory points, and has a section dedicated to the businesses that allows them to view their profits. Businesses will also receive a personalized plan of how to offer rewards based on the kind of service and products they offer, and the size of the business. Therefore, it passes the test.
4	The prototype allows user A's points to be converted from business X to business Y. In other words, it efficiently uses points earned in one business into another. This is a goal to measure the performance of the precision of the platform. This objective is more than important because it plays on the good functionality and the performance of the final product. Without good precision, the platform cannot be on the market	The prototype allows bank customers to convert points from business A to business B, in a precise manner using an algorithm. Therefore, the prototype passes test 4
5	The prototype configures the prerequisites, i.e., discounts, participating financial institutions, reward types, payment methods and various rules before assigning users and loyalty cards. This is another essential objective in the success of the platform. Any loyalty program platform must be able to identify this information in advance. This test is for learning	The prototype identifies the types of institutions when they sign up to join, and offers a pricing plan and points value based on business type and size. Therefore, the prototype passes test 5
6	The prototype will have to execute in a fast way, and without latency time the tasks which are requested of it. It is essential that for the proper functioning of the	This test will be performed when the code is integrated into PowerApps

<p>platform, that it can handle large amounts of data without interruption or crash. This test is therefore for de-risking.</p>	
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3. Prototype Testing Plan

<i>Test ID</i>	<i>Test Objective (Why)</i>	<i>Description of Prototype used and of Basic Test Method (What)</i>	<i>Description of Results to be Recorded and how these results will be used (How)</i>	<i>Estimated Test duration and planned start date (When)</i>
1	<p>Have a prototype that allows a business / commerce X to be able to register and join the platform. It is important to involve small businesses in our platform, which is why the platform must necessarily attract potential partners. The prototype will be for the purpose of learning and communicating to receive feedback</p>	<p>The prototype will be focused. This type of prototype was chosen because our prototype is focused on one of the functionality of our subsystem and not on the entire subsystem. Also, since the platform is online, the prototype will not be physical but rather analytical because we will create an online interface that will be modifiable.</p> <p>The prototype will consist in creating an interface that will invite businesses and companies to come and register and open an account on our platform. This prototype can be done from a free online mock-up website after doing several research on different platforms that have similarities to the one we want to create.</p>	<p>The main result that will come out of this prototype is the ease of accessibility and attraction of the platform to future partners. Ideally the prototype will have all the useful information that will allow a business to register.</p>	<p>This test should take 1 day to complete as it is only a mock-up</p>
2	<p>Configure a platform that offers the business two subscription plans. It is important to monetize the platform so depending on the business and its clientele, the platform must be able to come up with a plan that suits the business.</p>	<p>Like Test 1, this test will also be focused and analytical for the same reasons as mentioned above.</p> <p>It will be, like test 1, made as a mock-up that will show how the business can choose between two subscription plans after opening an account. This prototype will be free.</p>	<p>The major result will be, like test 1, to have a prototype whose result will clearly be a good display of the different plans offered by the platform. We will thus note how the display of offers will be influential.</p>	<p>This test should take 1 day to complete as it is only a mock-up</p>

<p>3</p>	<p>The prototype must be able to show the interactive side between the platform and the partner to ensure a good user experience. This prototype is therefore for communication purposes in order to receive feedback and optimize the interface</p>	<p>This prototype will be analytical because it will be done using software and will be comprehensive because it will bring together several attributes of our subsystem which is the accessibility of our platform to small businesses. This prototype will combine tests 1 and 2 by implementing the platform's interaction with partners. The prototype will therefore be made from PowerApps and Excel to find an algorithm capable of forming an interaction with the user.</p>	<p>The best result in this test is the good interaction between the software and the user. We will note how the interaction takes place, that is to say, when the user opens his account and chooses an offer to when he can access his files, his profile and can manage his program. It will also allow us to see how the software will operate. This prototype is the most important of all because it encompasses all the parameters important to the success of the accessibility criterion.</p>	<p>This test should take 4 days. It depends on the first two tests mentioned above. This duration is due to the fact that an algorithm has to be determined in order to have an interaction between the program and the user which might take some time.</p>
<p>4</p>	<p>The prototype allows user A's points to be converted from business X to business Y. In other words, it efficiently uses points earned in one business into another. This is a goal to measure the performance of the precision of the platform. This objective is more than important because it plays on the good functionality and the performance of the final product. Without good precision, the platform cannot be on the market</p>	<p>This test is essentially comprehensive because it brings together several aspects of our precision point conversion subsystem. We want to see how the subsystem will work as a whole. For this prototype, we will be using PowerApps and probably Power Automate to generate an algorithm for converting points. A mock-up will also be made to clearly present what the interface should show. A lot of research will have to be done on the programming for the conversions and the interactive side.</p>	<p>The information to be gleaned from this prototype is its precision in converting points from one business to another. As mentioned in the objectives, it is imperative that the results are positive. To ensure that a user can take advantage of his points in each store (if he has previously subscribed to this offer), the points must be conveniently converted and therefore our results must be conclusive.</p>	<p>This test should take 5 days for completion as it requires a lot of research to come up with a good algorithm that gives accurate results. This task is independent of others.</p>
<p>5</p>	<p>The prototype configures the prerequisites, i.e., discounts, participating financial institutions, reward types, payment methods and various rules before assigning users and loyalty cards. This is another essential objective in the success of the platform. Any loyalty program</p>	<p>This test is focused because it is focused on one of the attributes of data accuracy in the platform. We want to be able to configure a prototype where we will be able to insert certain information beforehand. This information can then be stored in the platform for financial institutions. The prototype, thanks to algorithms, will allow financial institutions to</p>	<p>The result of this prototype is its ability to store certain data entered by administrators and the ability of the prototype to give access to financial institutions to perfectly insert their data and manage their customers. The prototype will clearly have the key parameters, the relevant information for the banks and will adopt the</p>	<p>This test should take 3 days to complete. It will depend on no other task</p>

	platform must be able to identify this information in advance. This test is for learning	define their rules and limits of the loyalty program, assign users (their customers) and assign loyalty cards. We will still use PowerApps to perform this task.	prerequisites that have been set for it.	
6	The prototype will have to execute in a fast way, and without latency time the tasks which are requested of it. It is essential that for the proper functioning of the platform, that it can handle large amounts of data without interruption or crash. This test is therefore for de-risking.	This model will be focused because we will focus on reducing the risk of crash or slowness of the system. We also want to focus on the performance of the platform. The test will always be done with PowerApps because it can collect a lot of data for a simple prototype. It will be a question of implementing several data and testing the responsiveness of the platform when the number of data increases	The most important thing is to be able to measure the speed of the platform and its response time in order to better assess its performance. We will collect the test results to compare them to norms and thus assess whether the test is effective or not. These records will be really important in the success of the project	This test should take a day to complete as it only asks to evaluate the performance of the platform. It is dependent on tests 3 and 4.

4. Prototype Feedback

Annabelle & CaiYuan's Prototypes:

- I like that it uses multiple references to back their work
- Has an easy to understand system
- Prototype is friendly towards small businesses
- Easy to understand
- Prototype is reliable and very detailed

Michael's Prototype:

- The prototype was a little vague
- The prototype was detailed, and clear
- The prototype was very thoughtful, for the values chosen
- The prototype is very straightforward and easy to understand

Hazim & Oumou's Prototype:

- The prototype had a very good design
- The prototype is just a picture right now, so I hope it becomes more functional
- The prototype was very easy to follow
- The prototype lacks some information

5. Conclusions and Recommendations:

In conclusion, the third prototype was very successful, and passed the prototyping tests. From now until design day, the team will focus on refining the prototype and preparing for design day

6. Appendix:

Hazim and Oumou:

The above sketches were done by Oumou, conceptual design was done by Hazim.

CaiYuan:

No. of people	\$	rate(for all)	points
100	1000000	10%	100000
15	1000000	15%	150000
200	10000000	5%	500000
225	20000000	5%	1000000

Those with less than 50 people will get 15% of all funds. Those with more than 50 people and funds between 1 million and 10 million will get 10% of points. Those with more than 10 million can only get 5% of points regardless of the number of people. .

The last N months	Weight	Weighted assignment rate	Customer A's number of purchases	loyalty
1	12	0.153846154	2	0.3076923
2	11	0.141025641	3	0.4230769
3	10	0.128205128	3	0.3846154
4	9	0.115384615	3	0.3461538
5	8	0.102564103	1	0.1025641
6	7	0.08974359	2	0.1794872
7	6	0.076923077	0	0
8	5	0.064102564	0	0
9	4	0.051282051	0	0
10	3	0.038461538	0	0
11	2	0.025641026	0	0
12	1	0.012820513	0	0
Sum	78	100%		1.7435897

1. Weight

In the weighting, different weights are assigned according to the most recent Nth month.

The first month of the most recent month is the closest to the present, so the assignment is the highest; the most recent 12th month is the farthest from the present, so the assignment is the lowest.

I use a one-year calculation method. Of course, if your customer life cycle reaches 2 years, you can also assign values from 24, and assign values from the most recent January to the most recent 24th month.

Then use $12+11+\dots+1=78$ as the sum of assignments.

In the weighted assignment rate, $15.38\%=12/78$, $14.1\%=11/78$

2. Loyalty

The number of purchases made by the customer in the past N months is multiplied by the weighted assignment rate of the corresponding month to obtain the loyalty of the current month.

Then add the loyalty of all months in a year to get the total loyalty of the customer.

Annabelle:

Business type	Visit frequency	Average visit cost	Possible rewards	Sources
Clothing boutique	medium	Medium - high	<ul style="list-style-type: none"> According to the above article, average amount spent on clothes per month is about 170\$ CAD Assuming people buy from more than 1 store, say approximately 90\$ are spent at 1 boutique per month 	link

			<ul style="list-style-type: none"> ● Possible rewards: ● 120 points: 10\$ off ● 240 points: 20\$ off ● 400 points: 40\$ off ● Spend 200\$/year, extra 5\$ off per rewards level ● Spend 300\$/year, extra 10\$ off per rewards level ● Birthday discount 	
Book store	low - medium	medium	<ul style="list-style-type: none"> ● 100 points: 10\$ off ● 200 points: 15\$ off ● 300 points: 20\$ off ● Birthday discount 	
Vape shop	medium	medium-high	<ul style="list-style-type: none"> ● According to the above article, average monthly spending at vape shops is 75\$/month ● People visit these shops frequently <ul style="list-style-type: none"> ○ Possible reward ideas: <ul style="list-style-type: none"> ○ 120 points: 10\$ off ○ 200 points: free disposable ○ 250 points: 20\$ off ○ 500 points: free vape worth approx 40-50\$ 	Link Link
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			<ul style="list-style-type: none"> ○ 150 points: free drink with any add ins (shots, milk substitute, syrups, etc) ○ 200 points: free store merchandise (coffee shops usually have hats, tshirts, etc) ○ Free drink on birthday 	
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Michael:

The conversion factor premise is actually very simple. As shown below, this is the basic formula for my calculations, using the bare bones, basic excel functions.

SLOT TO INPUT POINTS			This is the extremely simplified way of doing the points conversion, using basic excel functions.	
5	5	5		
CONVERSION OF INITIAL POINTS			conversion factors, given letter significations (placeholders)	
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			V	13
			M	10
TOTAL IN WALLET				
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On the left hand side, we have the blue squares, which represent the conversion of points from banks/programs (to still be decided the extent of such programs) to in-store points, to be used at SMALL businesses. This is because we want to give that slight edge to small businesses, and help them grow. These points are to be converted (multiplied) with the factor V,

shown in red. This was chosen to be a value of 13, mainly for familiarity for the user, to contrast with factor V. To continue, the conversion factor F was chosen entirely for familiarity purposes for the user. This is because HST (harmonized sales tax) in Ontario is 13%. This will allow this to seem like a familiar calculation, because it is! We want the program to feel as familiar as possible for the user, and we also want to be generous with the amount of points that can be accrued.

So, for the yellow squares, this demonstrates the conversion of points from store points, to bank/program points. This is to be done with conversion factor V, which was previously explained. The points decrease when converting to bank/program points, as to essentially not cause the bank to lose. No bank would accept our points system, if they didn't have some kind of advantage. Thus, this rate could be changed even lower, or a higher taxation rate, if the client desires.

Finally, on the right hand side, in the green squares, we have the demonstration of the conversion of points from banks/programs, to LARGE businesses. I believe that this is a crucial element to the selling of this system, as this is proof to the small businesses that we are trying to support them. Also, as there is more traffic at a large business, a flat rate of 10 is still very welcome to them.

In conclusion, all of these rates are interchangeable! These rates can always be changed out for others, or to whatever the client desires. Also, the coding of said conversion mechanisms can be complicated, to ensure security, among other reasons.

7. **Wrike Snapshot:**

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=IpJVvdv7hrqAlQu5eUgT5CAPRseZRHsG%7CIE2DSNZOGUZDMLSTGIYA>