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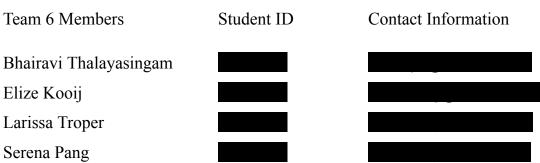Fall 2023

Professor: Oliver Schneider

TEAM MOON 9

Milestone 1

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Identifying an Opportunity for a New System

For the purpose of this project, our team chose to investigate point-of-sale (POS) systems. These systems are used across many service industries to enhance the efficiency and accuracy of order processing, replacing the manual method of writing down orders. Additionally, they assist with managerial duties like tracking and managing inventory as well as sales analysis. Despite these intended advantages, POS systems are often perceived as a source of frustration among service workers.

It is important to note that there are various third-party providers who offer their unique POS systems for small and large-scale businesses. To narrow the problem space, our research mainly focuses on the use of POS systems in local, independent coffee shops who use affordable, smaller-scale POS systems. These shops typically have a limited number of orderable items, consisting of drink and food items made by baristas and kitchen staff, respectively; these shops may also have miscellaneous items, such as bottled drinks and other refrigerated items.

When companies design a POS system, the intent is to create a system that can be effectively distributed and implemented for various businesses. The uniqueness of each business using the system is consequently constrained to the design of their POS system, which is a source of frustrations among users. These frustrations may arise from unintuitive designs and workflows that make it challenging for users to grasp and navigate efficiently, particularly for cashiers and managers who are the key potential users of these systems in coffee shops. These systems are often not easily customizable, and usually require a backend that is accessed through a computer and web browser to make necessary changes.

The lack of flexibility and design complexity can result in slower transaction processes, longer training periods for new cashiers, increased risk for errors and diminished customer satisfaction. Additionally, the lack of customization abilities or ease of customization can result in a POS system that does not accurately reflect the state of the coffee shop (e.g., missing a new menu item). These issues are important to address as cashiers' interactions with these systems are frequent, and small frustrations can quickly accumulate, impacting the core of the customer transaction. Given the pivotal role of these systems in shaping employees' workflow and operational efficiency, our redesign efforts are focused on reducing frustrations, minimizing errors, and optimizing customer service.

Determining Expected Users

To gather information on the potential users and what they do with their POS system, we conducted semi-structured interviews with employees from *The Science Coffee and Donut Shop,* a coffee shop on campus (see Appendix A). These employees consisted of cashiers with varying experience who frequently interact with the POS system, and one of the shop's

managers. These conversations were focused on their typical tasks and their opinions on their POS system.

Following interviews and observations of individuals interacting with the coffee shop's POS system, we created a set of personas. These personas were crafted to embody different user groups: those directly using the redesigned system and others indirectly affected by its design. These personas are further outlined below.

Persona 1: Experienced Full-time Cashier

Figure 1. Persona of Stephanie Cho, an experienced full-time cashier at Cafe ABC

Persona 2: Experienced Part-time Cashier

Williams Cafe
Ben Miller
Experienced Cashier
Part Time

Age: 32
Location: Waterloo, ON

"I strive to increase the rate in which I check out orders so that I can have more down time and customers can have smooth and quick service."

Description
Ben is always looking for a challenge. Now that Ben has put a down payment on his house, he's looking to make additional money for his expenses. He takes on shifts on the weekends and occasionally after his full-time job as a business analyst on weekdays. Ben upholds his responsibilities and contributes when possible, but is not looking to get the most out of this experience. He and his wife are soon expecting a child, and are working hard to prepare for their arrival.

Frustrations & Challenges
- Customers are inconsiderate and often are upset over things beyond my control, such as item pricing.
- The interface is too sensitive and often feels like it clicks items on its own. Fixing the order after the fact is frustrating, especially during a rush.
- With various different coupons, I have to manually type in the discount which is time consuming.

Behavioural Considerations
- Prioritizes his full-time day job over his responsibilities at the cafe
- Often has a neutral attitude to situations and doesn't take advantage of opportunities within the organization
- Is interested in on-the-job challenges such as upselling to prevent boredom and demotivation
- Actively searching for higher paying roles with similar flexibility

Goals & Motivations
- I want to encourage customers to consider additional items to increase sales
- I crave challenges so I can ensure that I will be interested and not be bored
- My focus is my full-time day job and am looking to make some extra income

Tasks
- Maintain the register to keep an accurate record of transactions
- Uphold the policies and procedures and organizational beliefs
- Provide friendly and professional interactions

Figure 2. Persona of Ben Miller, an experienced part-time cashier at Williams Cafe

Persona 3: New Hired Cashier (Trainee Cashier)

Cafe XYZ
Alex Wilson
Trainee Cashier
Full Time

Age: 19
Location: Waterloo, ON

"I want to improve my ability to work cross functionally so that I can be a strong team player for the leaders, cooks, and other cashiers and provide excellent service to customers"

Description
Alex is a high school graduate looking to gain interpersonal skills and enter the food service industry. He's passionate about investigating flavour profiles and excels in fast-paced environments. Alex provides top-notch customer service through his tactfulness in making people feel welcome and valued. Though he lacks experience working with the cafe equipment, he has enrolled in online training courses to bolster his capabilities and is determined to provide quality service. When he's not at the cafe, he's playing ultimate frisbee and spike ball at his local park.

Frustrations & Challenges
- Occasionally miscounts change for cash transactions due to inexperience in handling money and basic arithmetic
- If I can't find an item on the system, a line starts to form which makes me anxious, especially during rush hour
- I often make mistakes because I cannot remember store policies and procedures and am not familiar with the products
- I do not know the extent in which the permissions I have, I cannot cancel or refund an order without a manager's approval

Behavioural Considerations
- Always prioritizes the needs of the team before his own
- Expects the employee experience to uphold the organization's values of respect and mutual responsibility
- Interested in contributing new menu ideas and flavour profiles
- Needs to know that his input is valued
- Values the enjoyment of goods and expects metrics to measure customer feedback on the quality of products

Goals & Motivations
- Wants to have accurate transactions to provide satisfactory customer service
- Collaborate with other cashiers to continuously learn a diverse skill set

Tasks
- Participate in technical training
- Learn and grow product knowledge
- Process simple transactions and practice product handling through various forms of payment
- Organize receipts and clean general till area

Figure 3. Persona of Alex Wilson, a cashier-in-training at Cafe XYZ

Persona 4: Coffee Shop Manager

Pilot Coffee Roasters
Maria Johnson
Cashier Manager
Full Time

Age: 41
Location: Victoria, BC

"I want to provide a safe, inclusive, work environment that upholds our company's values and achieves target growth and development rates."

"I want to improve the productivity of our team and exceed sales targets"

Description
Maria has been at the company for 7 years now. Previously working as a cashier, she was promoted to this position after her second year due to her passion and drive. Since then, she's increased sales by 20%, and has implemented weekly employee wellness and feedback sessions at her cafe. She's a go-getter, always looking for operational improvements and taking an active role in engaging customers. She's a hard worker focused on the long-term strategy of the cafe and often recommends new seasonal products to innovate the menu selection.

Behavioural Considerations
- Interested in providing unique benefits to employees and improving processes based on stakeholder feedback
- Thoroughly compares competitors, their new products, and their sales targets
- Confident that the business will maintain relevant in changing markets due to the diverse menu selection and price range
- Expects all staff to be considerate and react responsibly and proportionally to customers to uphold business values
- Expects employees to be timely, active team players, and knowledgeable

Frustrations & Challenges
- It is difficult to train new hires on the system and I have to keep repeating the checkout procedures
- Scheduling employees can be difficult due to the varying availabilities and we are often understaffed during rush hour
- At the end of the day, the total cash-out amount is calculated manually for each till and it is easy to make errors
- Cashiers will get frustrated with me if their till is not updated with the newest items and pricing
- Cashiers will try to mimic managerial permissions that

Goals & Motivations
- Ensure policy adherence for worker safety
- Develop long-term planning by implementing strategies, targets, and mitigating risks
- Improve employee performances and host training and development sessions

Tasks
- Monitor daily floor operations and mitigate inherent risks
- Provide guidance to cashiers
- Facilitate collaborative team culture

Figure 4. Persona of Maria Johnson, manager at Pilot Coffee Roasters

Persona 5: Coffee Shop Customer

Crazy Marketing
Emily Barker
Marketing Coordinator
Customer

Age: 28
Location: Waterloo, ON

"I work best when I have a warm latte and can brew connections!"

"My view on life is always with a glass half full - specifically, a coffee cup!"

Description
Emily is a sociable woman who values her coffee breaks in her busy urban life. She is a regular at her local cafe, but will occasionally visit others to try new flavour profiles. She values the shop's atmosphere, and looks for a balance between quality and affordability. She loves drinking warm drinks when it's cold outside, and tends to lean towards cold ones when the weather warms up. She often finds inspiration in her marketing material from the people she meets at the cafe. When she's not at the cafe, she is taking care of her 6-year-old daughter.

Behavioural Considerations
- Prioritizes convenience over quality
- Mindful of her health and makes conscious discussions in food/beverage intake
- Interested in interacting with people occasionally when welcome
- Asks many questions about ingredients due to her dietary restrictions
- Will try something new once a week, otherwise, sticks to her familiar order

Frustrations & Challenges
- I am frustrated when my beverages or food are lukewarm, stale, or inconsistent
- I don't like waiting, especially when I'm a loyal customer or if I'm in a rush
- I am upset by the increase in price and the costly expenses from non-affordable options
- Staff are often unfamiliar with new menu items and its' ingredients, which is difficult when I'm asking about my allergy accommodations

Goals & Motivations
- I appreciate good presentation and enjoy exploring the local food scene
- I want seasonal menu items to bring inspiration and creativity to my food and work
- I want consistent high quality of goods and service so I can have a new favourite shop

Tasks
- Decides and provides her order to the cashier
- Try new goods at various competitor stores

Figure 5. Persona of Emily Barker, a regular customer of local coffee shops

Task Examples

Insights obtained from the user interviews guided the generation of representative tasks that coffee shop cashiers and managers are expected to do during their shifts. These example tasks are outlined below, accompanied with a discussion section describing their frequency and importance.

Task Example 1: Full-time cashier fulfilling a customer's order

Emily Barker, a regular at the Cafe ABC, stops by to get her usual order. She stands in line waiting for her turn. When she finally approaches the counter, she is warmly greeted by Stephanie Cho, one of the cafe's seasoned cashiers. Stephanie asks Emily for her order of which Emily tells Stephanie that she would like an iced coffee with oat milk and a croissant warmed up. While entering Emily's order into the POS system, Stephanie accidently inputs 'Iced coffee with almond milk' instead of the oat milk that Emily requested. Stephanie removes the item from the order and re-adds the item along with the croissant warmed up. Stephanie then asks Emily about her preferred method of payment. Emily lets her know she would like to pay with her credit card. Stephanie enters the credit payment method into the POS system and hands Emily the card reader for payment. Emily taps her credit card and then Stephanie hands her the printed out receipt. Stephanie begins making Emily's order and hands it to her once she is finished. Emily grabs her order from Stephanie and leaves the cafe.

Discussion: This task contains a combination of smaller tasks that are commonly done when processing a customer order. These tasks include adding menu items, modifying these items, and removing accidentally inputted items. This task also includes the customer payment flow, with the assistance of a credit card machine to process the actual payment. These small tasks are frequently done, and are highly important tasks for cashiers.

This task example was modified based on user feedback to include the task of incorrectly adding items. The modified version was verified by the user.

Task Example 2: Manager performing closing shift duties

Maria Johnson, a manager at Pilot Coffee Roasters, needs to close the coffee shop after a long day. Maria instructs the other employees to begin cleaning up like washing dishes, sweeping the floor and prepping the cafe for the next day. Maria flips the 'Open' sign to 'Closed' and goes to the cashier to begin cashing out for the day. Maria begins by logging into the POS system using her credentials and printing the end-of-day sales report. She opens the cash register and counts the money. She verifies that the cash matches with the sales reported from the sales report. The daily summary sheet from the point-of-sale system also tells Maria refunds and items sold, which helps her in updating inventory and financial

records. Maria keeps the summary sheet in the office and then does an inspection of the cafe to ensure everything is cleaned. Once Maria finishes her inspection, she shuts down the POS system, locks up the shop, and heads home.

Discussion: In this task, the user is the coffee shop manager who is responsible for performing closing duties and preparing the shop for the following day's scheduled employees. These tasks are integral in maintaining a clean environment and keeping track of the current financial and inventory state of the shop. Since these duties need to be performed at the end of each work day, they are frequently done.

This task example was modified based on user feedback to include the task of updating inventory and financial records. The modified version was verified by the user.

Task Example 3: Cashier applying special type of payments

Ben Miller, a part-time cashier at Hipster Cafe, is serving numerous customers during the typical Monday morning rush. On the first Monday of each month, Ben's coffee shop offers 10% off of orders with values equal or greater to $30. One customer steps up and places a substantial order for their office colleagues. The cashier processes the entire order and just as they are about to pay, they mention they have a loyalty card. Based on a combination of previous purchases and the large order just placed, the customer has earned a free coffee on top of the 10% discount. Dealing with multiple discounts at once is not a common task for Ben so he has to ask his manager how to process the discounts. Following instructions, Ben takes a moment to input this into the system, carefully adjusting the total amount due, and the customer happily pays the remaining total. Ben then rushes to fulfill the substantial order, mindful of the line of waiting customers behind.

Discussion: In this task, we can expect Ben to be a moderately experienced cashier who has provided discounts a handful of times. This task which contains a cumulation of discounts identifies a specific activity that is less frequently performed but still important to uphold the expectations and promises to the customer.

Task Example 4: Manager adding a new item to the menu

Maria Johnson, the manager at Pilot Coffee Roasters, has been working with one of the head bakers to add a seasonal item to the menu: a pumpkin chai muffin. The recipe has finally been perfected and added to the menu. For cashiers to be able to ring it in, Maria needs to add it to the POS system. Given the specifications of the shop's POS system, new items have to be added from the backend which can be accessed from a web browser. Maria heads to the office, starts her computer, and loads the POS system software. She adds the new item into a new group for seasonal items and adds a price to the item. She saves the new item and has to wait until tomorrow for the system to run a daily update. The cashiers should be able to see it on the POS system the following day.

Discussion: This task example outlines the manager's flow of adding a new item to the menu. This could be a moderately frequent task for coffee shops who experiment with new menu items or who often introduce seasonal items. Being able to customize the menu item and associated POS system is important for cashiers to process orders with new items and accurately charge customers.

This task was modified based on user feedback to include details on how to add menu items to the POS. The modified version was verified by the user.

Task Example 5: Training shift for a newly hired cashier

Alex Wilson, a newly hired cashier at Café XYZ, is in the process of completing a series of training shifts. Mary, a full-time cashier, is assigned to be Alex's trainer and help him out during his training shifts. On Alex's third training shift, a customer wants to order a vanilla latte. Alex searches through the POS system to add a vanilla latte but cannot seem to find an option for it. He begins to worry and calls out to Mary for help. Mary tells Alex that the system has no explicit option for vanilla lattes and cashiers will usually just ring a regular latte and customize the order to add vanilla syrup to the latte. Alex rings latte and a shot of vanilla syrup. Alex continues the order process, receives payment from the customer and hands them their vanilla latte.

*Discussion***:** This task identifies a special case of processing orders that require a unique sequence of steps to place correctly. Depending on the popularity of the item, these sequence of steps to add an item can be frequent, and necessitate cashiers to have familiarity with them. This is an important task as it is essential to ensure accurate customer orders and to charge the correct prices.

Task Example 6: Customer ordering an out-of-stock item

Ben Miller, a part-time cashier at Hipster Cafe, arrives for his first shift of the week. A customer wants to order an iced coffee with a banana loaf. The banana loaf is a popular item at the coffee shop and became out-of-stock the day prior to Ben's shift. The manager placed a new order but they won't arrive until later in the week. Ben is unaware of the shortage and continues to process the order and customer payment. Once he goes to the back to get the banana loaf, he realizes they are out-of-stock. Ben returns to the front and apologizes to the customer that they are out and will have to process a refund. The manager is called to process the refund to the customer. Ben gives the customer their coffee and the customer leaves disappointed. For the rest of Ben's shift, he keeps in mind that the loaf is out-of-stock and informs other employees who later come in for their shifts.

Discussion: In this task example, we can assume that Ben is only scheduled a couple times a week and is not always aware of the current inventory state at the start of his shifts. This task illustrates a potential scenario warranting a customer refund and how staff deal with out-of-stock items. The task is not very frequent but is important when providing customer service.

Tentative List of Requirements

Must-Have Requirements:

A list of requirements deemed as *must-haves* (i.e., absolutely needed) can be found below in Table 1. The reason for being classified as must-haves requirements is because they are essential to the primary duties of both cashiers and managers–that is, their most frequent and/or important tasks. Some of these must-haves focus on establishing good customer service and hence, are constructed with the customer in mind (e.g., possible payment options).

#	User story title	User story description	Priority	Notes
1	Order Taking	A user wants to be able to take a customer's order ***Users:*** *Cashiers, managers*	Must have	The key things we will need to support: ● Adding an order ● Modifying an order ● Removing parts of an order ● Canceling an entire order **Category:** Functional requirement
2	Payment processing	A customer wants to be able to pay for their orders using various common payment methods. ***Users***: Cashiers, managers	Must have	The payment types that must be accepted: ● Credit card ● Debit card ● Gift card ● Cash **Category:** Functional requirement

4	Refund processing	A customer wants to be able to get a refund for an incorrectly charged item	Must have	**Category:** Functional requirement
5	Menu Customizations	A manager wants to be able to customize the system so that it can reflect the shop's menu and future menu changes accurately	Must have	Customizations include being able to: ● Add a new item ● Modify a current item's title, price, or grouping ● Remove an outdated item **Category:** Functional requirement
6	Reporting functionality	A manager wants to be able to generate a report of daily sales, transactions and inventory so they can keep track of payments and inventory levels.	Must have	**Category:** Functional requirement
7	Discountable items	A user wants to be able to apply discounts or loyalty cards to a customer's order **Users:** Cashiers, Managers	Must have	**Category:** Functional requirement

Table 1: Must-Have Requirements

Should-Have Requirements:

A list of requirements deemed as *should-have* can be found below in Table 2. The reason for being classified as should-haves requirements is because they have the potential to significantly impact the user's ability to perform their tasks or provide a smoother workflow. However, the essential tasks of cashiers and managers can still be performed without these requirements. For example, a system with an intuitive navigation layout can help increase the speed at which cashiers process orders, which can be beneficial for accommodating many customers during peak business times. That being said, the cashiers can still process customer orders with a confusing or outdated navigation layout but could hurt the customer experience.

#	User story title	User story description	Priority	Notes
1	Ease of navigation	A user wants to be able to find items within <5 seconds and <8 seconds for popular and less popular menu items, respectively. System should have a SUS score of 80+. **Users:** Cashiers, managers	Should have	**Category:** Non-functional requirement
2	Visual feedback	A user wants to be able to visually see the changes they make so that they can ensure their inputs are properly processed. **Users***:* Cashiers, Managers	Should have	**Category:** Non-functional requirement
3	Permission System	A manager wants to be the only user to have access to performing manager actions, so that non-permitted users cannot make unwanted changes.	Should have	The key functions that managers should be the ones to only have access to include (but are not limited to): ● Conducting refunds ● Applying discounts ● Generating end-of-day reports **Category:** Functional requirement
4	User interface	A user wants to use a system that employs a consistent UI across different pages. **Users***:* Cashiers, Managers	Should have	There will need to be research conducted on good design principles and practices (e.g., layout, color palettes) **Category:** Non-functional requirement
5	Notifications	A user wants to be notified of system updates or relevant news when they sign in **Users***:* Cashiers, Managers	Should have	**Category:** Functional requirement

Table 2. Should-Have Requirements

Could-Have Requirements:

A list of requirements deemed as *could-have* can be found below in Table 3. The reason for being classified as could-haves requirements is because they would have a moderate impact on the user's ability to perform their task but would likely require significant work to implement. Additionally, there is uncertainty around whether these requirements would actually provide benefits to the users or if they would remain unused when implemented. For example, having video tutorials for newly hired cashiers would help them better understand how to use the system before officially serving customers; however, it is a requirement that would not be used frequently, would require significant work to film and play on a screen, and may not be helpful to new cashiers.

#	User story title	User story description	Priority	Notes
1	Training tutorials	A newly hired cashier wants to be able to access tutorials of the system so they can learn and become proficient faster.	Could have	**Category:** Functional requirement
2	Advanced analytics and reporting	A manager wants to be able to obtain more advanced analytics that can assist in planning future inventory orders and making big changes.	Could have	Examples of advanced analytics include: ● Forecasting future inventory demands ● Product performance ● Payment analytics Analytics could help with: ● Predicting optimal delivery quantity and order window ● If a menu item should be discontinued ● If they should begin to accept a new popular form of payment **Category:** Functional requirement

#	User story title	User story description	Priority	Notes
3	Icons	A user wants to be able see icons corresponding to certain options so that they can better understand what they are selecting **Users***: Cashiers, Managers	Could have	**Category:** Non-functional requirement

Table 3: Could-Have Requirements

Excluded Requirements:

A list of requirements deemed as *excluded* can be found below in Table 4. The reason for being classified as excluded requirements is because they would have little to no impact, and require significant effort to implement. Requirements such as error messages may help to inform a user as to why they cannot perform a certain action; however, system constraints would already be implemented into the system that stops non-permitted users from having access to certain actions in the first place. Knowing why a user cannot perform a certain action poses little impact to a user's workflow or experience.

#	User story title	User story description	Priority	Notes
1	Uncommon payment methods	A customer wants to be able to pay for their order using less common payment methods	Exclude	These payment methods may include out-of-country credit cards, e-transfers, or cash of different currency. **Category:** Functional requirement
2	Error messaging	A user wants to be informed of unpermitted actions through error **Users***: Cashiers, Managers	Exclude	An example of a possible scenario would be if a cashier tries to apply a discount or issue a refund. **Category:** Functional requirement

Table 4: Excluded Requirements

Appendix A - Interviews Transcripts

Held on Sept. 28, 2023

General Structure *(Semi-structured interviews)*

Introduce topic of discussion
Prompt: We're hoping to learn a bit more about your role at work and your typical duties working with a POS system. Would that be okay with you? This is anonymized and informal, so feel free to share anything. Are you comfortable with being transcripted?

List of questions to spark discussion
1. Can you tell us a little bit about your job or role here?
    a. What are some of the daily interactions you have?
    b. How long have you been in this role?
2. Can you describe the Point of Sale (POS) system and how you use it?
3. Was there any training or onboarding processes when you started working with the POS?
4. In your opinion, how effective is the POS system in your daily tasks?
5. What are some common challenges you encounter while using the system?
6. What are some of the features of the system that have made your tasks easier?
7. How is the system organized? Is it easy to navigate?
8. How do inventory and software updates affect your interactions with the POS system?
9. Have you ever encountered any technical issues? If so, how were they fixed?

Interview #1: Recently Hired Cashier

- **Experience:** Cashier has been in the role for approximately a month, with no prior cashiering experience
- **Primary duties:** Their role primarily involves handling customer transactions and providing customer service.
- **Initial training:** When they first started, they had some initial training with the POS system. On their first shift, they were able to play around with the POS system and also were able to shadow experienced cashiers to see how they use the system.
- **Typical performance of duties:** When they clock-in, the first thing they do is grab the register's float and type in their identifier to log into the register. When customers come to order, they will navigate the POS system to find the specified items and click on the items. They confirm the order by reading and repeating the entered items–there is a sidebar on the POS system that displays a list/summary of the order. They then read off the total at the bottom of the sidebar and click on a method of payment. If it is cash, they use their phone to calculate the change; otherwise, the POS automatically loads it into an ipad-esque payment device on the counter facing the customer.
- **Opinion on the POS system:** They find the system to be pretty intuitive with the big display. The POS system is effective in their daily tasks, given that all they really need to do is press on the right buttons.
- **Challenges with the POS system:** They reported having challenges with the system's sensitivity. For example, if they have damp hands after washing dishes or

clearing tables, and return to cashiering, it sometimes results in misclicking a nearby button. They mentioned how the credit and cash payment options are very close together, and once one is clicked, the other is greyed out. This can be a bit frustrating since they usually need to ask their manager for assistance.

Interview #2: Experienced Cashier

- **Experience:** Cashier has been in the role for approximately over a year as a part-time job while they are working on finishing their masters program.
- **Primary duties:** Their role primarily involves handling customer transactions and providing customer service. Due to their experience, they are often scheduled during peak hours to help deal with rushes. Their experience also makes them ideal trainers for new hires–where they teach them the basic operations, including how to use the POS system.
- **Initial training:** When they first started, there was some training on how to enter amounts to charge for credit/debit transactions, as well as deal with one-off cases like returns or exchanges.
- **Reported challenges with the POS system**: They find it frustrating when new items are added to the menu (e.g., specialty items) and their manager does not know how to update the system properly. Sometimes the managers are too busy or are not too knowledgeable on how to update the POS system with new items, which results in making it hard to order these new items for customers. During peak hours when managers are too busy, they will perform functions that require managerial permissions (e.g., discounting orders) by having memorized the sequence of steps–hence, they would like having more control of the system during these scenarios.
- **Challenges with the POS system:** They have generally poor eyesight so the small text amongst a bunch of options jumbled together can be straining. There are also a lot of items that can be ordered so it can be confusing which one to ring in (especially less commonly ordered items). For example, they have two different types of wedge sandwiches that go under two vastly different categories.
- **Good features of the POS system:** The design of the system uses a lot of different colors which I've used to memorize. For example, all the drinks are stored in a blue category, and all the sundries are stored in a black-bordered box.
- **Technical issues:** A pretty common technical issue is adding new items to the POS system. They said it usually takes around 24 hours to update with new items, which can make it hard to accept orders for those new items pre-update. They end up having to find alternative items that can closely add up to the cost of the new item. For example, if a new product is $4, they have to order another product or products to create a total of $4. If this is done too many times, it can mess up their inventory count which is important for managers to track inventory.

Interview #3: Manager

- **Experience**: The manager has been working at the coffee shop for a few years. They have had previous experience in customer service industries, with some cashiering exposure.

- **Primary duties:** They oversee the operations of the coffee shop which involves making sure they are fully staffed, and ensure service and financial success. They work closely with the cashiers in the front and the kitchen staff to assist them when needed and make sure everything is up to standards. They use a lot of non-client-facing tools since they deal more with the organizational aspect of the store.
- **Opinion of the POS system:** They generally do not use the system too often, with the exception of checking sales, and more rare tasks such as adding new menu items or software updates. When they are understaffed, they tend to lend a hand at the checkout but do not frequently interact with the system as much as the cashiers.
- **Challenges with the POS system:** It can be a steep learning curve for new employees–they often ask a lot of questions when they first start out and usually takes a few shifts to get a decent grasp of it; it can be really time consuming for myself and other cashiers to reiterate to them common tasks on the system. Customizing the system is also a pain point for the manager as it's not a common task so when they do need to make modifications, they have to try to remember how to do so.
- **Technical issues:** It is rare but they said that the POS system can sometimes freeze. In this case, they usually need to call the third-party provider and have them try to troubleshoot the problem.

Appendix B - Task Example Iterations

Task Example 1 – Iteration #1:

Emily Barker, a regular at the Cafe ABC, stops by to get her usual order. She stands in line waiting for her turn to order. When she finally approaches the counter, she is warmly greeted by Stephanie Cho, one of the cafe's seasoned cashiers. Stephanie asks Emily for her order for which Emily tells Stephanie that she would like an iced coffee with oat milk and a croissant warmed up. Stephanie enters the order into the point-of-sale system and then asks Emily about her preferred method of payment. Emily responds by opting for credit. Stephanie enters the credit payment method and hands Emily the card reader for payment. Emily taps her credit card and then Stephanie hands her the receipt. Stephanie begins making her order and hands it to her once she is finished. Emily grabs her order from Stephanie and leaves the cafe.

Task Example 2 – Iteration #1:

Maria Johnson, a manager at Pilot Coffee Roasters, needs to close the coffee shop after a long day. Maria has worked 8 hours and is tired from standing all day, assisting with taking and making orders, and cleaning. Maria instructs the other employees at the cafe to begin cleaning up like washing dishes, sweeping the floor and prepping the cafe for the next day. Maria flips the 'Open' sign to 'Closed' and goes to the cashier to begin cashing out for the day. Maria begins by logging into the POS system using her credentials and counting all of the money in the cash register. She verifies that the cash matches with what is supposed to be in the cash register. Once she confirms the amounts matches, Maria then prints out the daily summary sheet from the point-of-sale system which tells Maria the daily sales, refunds, items sold, etc.. Maria keeps the summary sheet in the office and then does an inspection of the cafe to ensure everything is cleaned and once Maria finishes her inspection, everyone is allowed to go home.

Task Example 4 – Iteration #1:

It's a quiet afternoon, and the staff at Moon 9 cafe is doing regular maintenance and housekeeping tasks. The manager Maria Johnson has been working with one of the head bakers to add a seasonal item to the menu, a pumpkin chai muffin. The recipe has finally

been perfected and it's time to add it to the system so they can start serving them just in time for autumn. This is a new specialty item, and the management at Moon 9 like to experiment with their offerings. Maria heads to the POS system and enters it into the system, grouping it under seasonal items, and adding the agreed upon pricing.