We began the lo-fi milestone with a card sorting exercise. We asked users to sort general items that needed to be included in the information architecture into piles that were similar and then asked to label those piles. For the 3 customer users, we tested items like coffee, tea, and hot chocolate quickly fell into a hot drinks category. Lemonade, smoothies and iced coffee into a cold drinks category. When presented items like brownies, muffins, scones, cookies or bagels users were divided as to whether they would be considered bakery, pastries, breakfast or desserts. We reviewed our interview notes and decided on breakfast and desserts as main menu categories options. For the employee card sort, it was difficult to find many employees to take the time to do the activity. We kept initial cards to a minimum because of this and found 2 employees to go through the exercise. The card sort revealed that employees felt editing menu items and customization categories fell together, and ingredient management of new, in, and out of stock items fell together. From these results, we discussed the information architecture and outlined it for both the customer end (Figure 1) and the employee end (Figure 2).

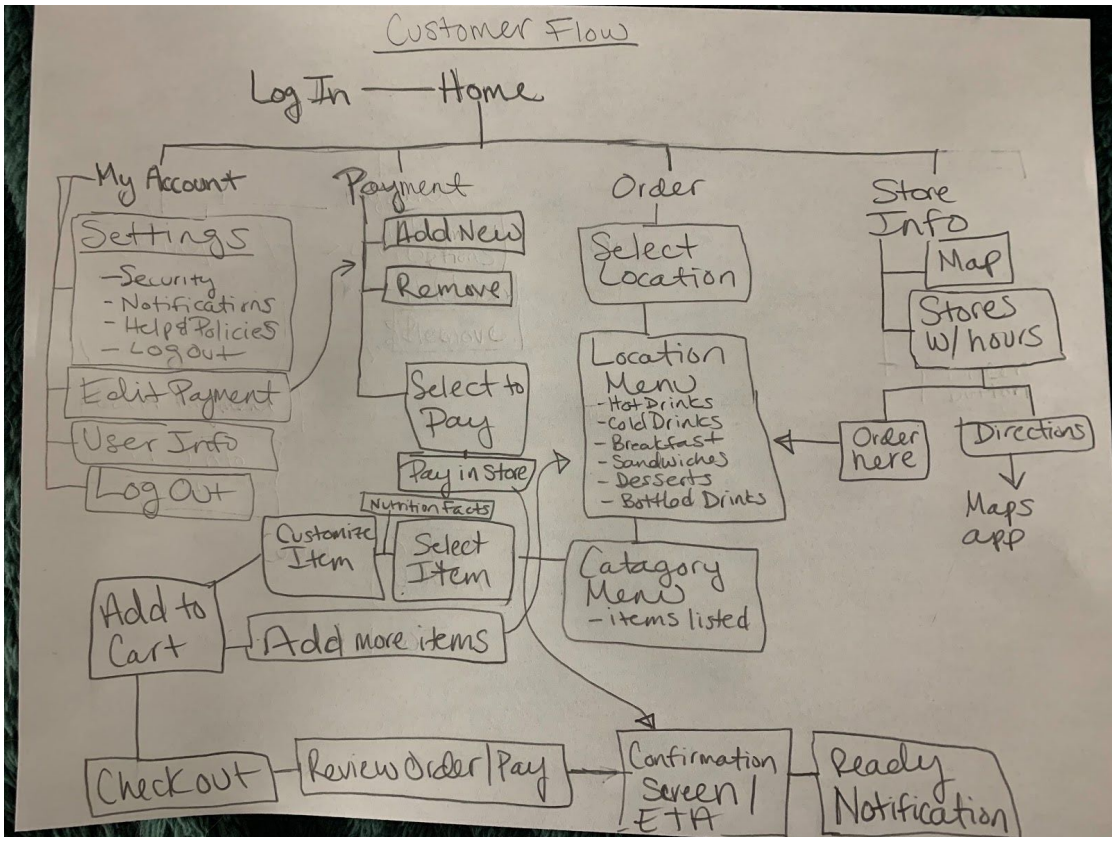

Figure 1: Customer end information architecture

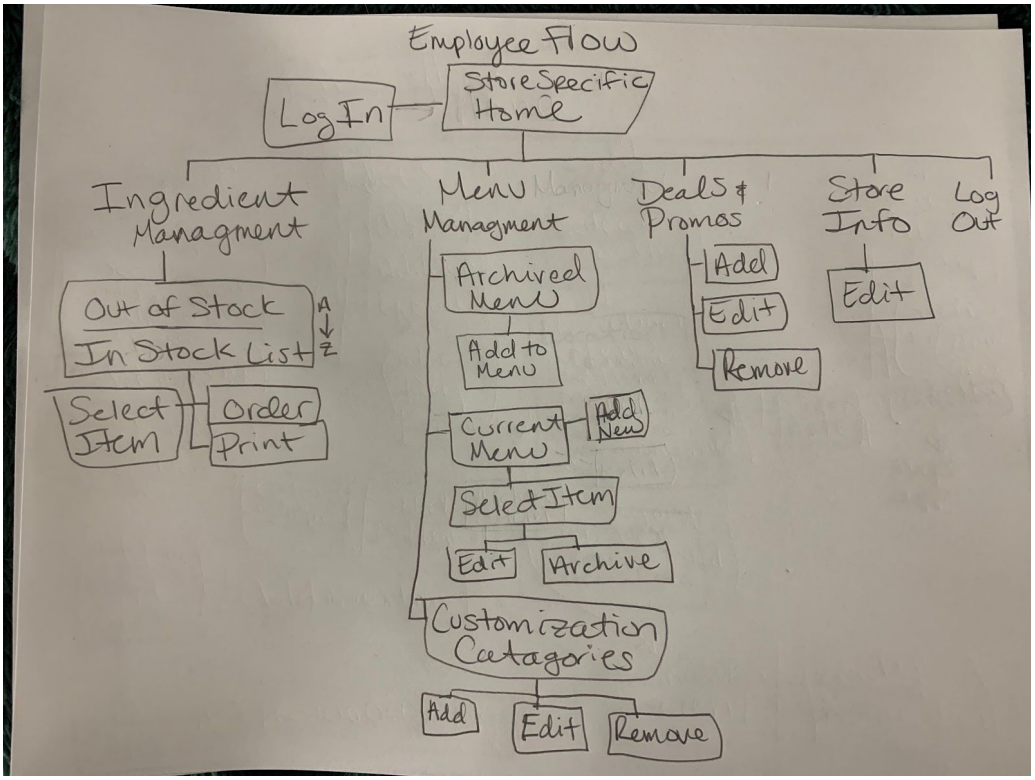

Figure 2: Employee end information architecture

Next we each sketched our ideas for the home screen, the order process, the payment process, and the pickup notification. We met and discussed our ideas and created our combined paper prototype. The header includes an icon to home, my account and displays the shopping basket. The footer includes icons to update payment information, store location and to begin an order. Many of our original sketches had signup (Figure 3) and login (Figure 4) elements included in the initial app screen. The signup screen included the basic elements, first name, last name, email, username, and password, but users felt that since they are RIT students that were unnecessary. Users wanted to access the app with their RIT ID and password followed by the duo authentication so we adjusted the home screen to accommodate this request (Figure 5). This change was consistent with our personas and fit their needs as well.

Figure 3: Original sign up screen

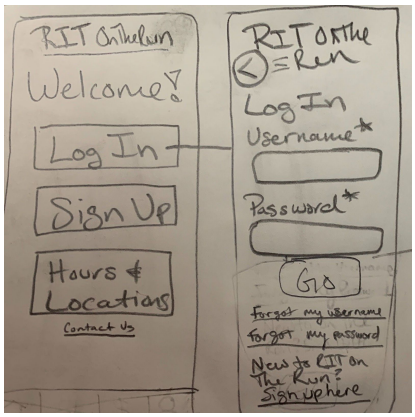

Figure 4: Original login screen

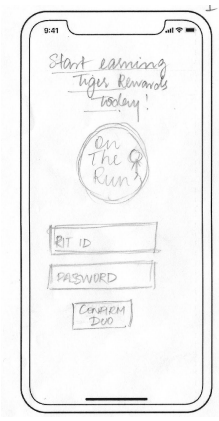

Figure 5: Home screen

The app home screen houses the current rewards in the user's account along with a listing of previous orders. Users thought to have the ability to quickly reorder items directly home the home screen was a great feature. Following the home screen, users were asked to order by selecting order on the bottom menu. directed to the locations screen and liked that the screen displayed each coffee shop along with the hours of operations with a highlighted area indicating if the shop was closing soon (Figure 4). Users did request an opening soon message as well that will be implemented in the hi-fi prototype.

Once a user selects a location, the main menu (hot drinks, cold drinks, breakfast, desserts, and sandwiches) is displayed. They then select an option from the main menu (hot drinks, cold drinks, breakfast, etc.) and the category menu (coffee, tea, hot chocolate, latte, etc.) is displayed. Users' overall reactions to the two menus were positive. They found the two menus easy to navigate and were pleased with the design consistency and menu organization.

Users were then asked to select an item from the category menu. In the resulting order item menu, the user will select the size and/or quantity of an item and have the ability to customize the order. The customization categories are pre-populated when the item selected is made with customization ingredients (flavors, toppings, dairy, espresso). For example, a vanilla latte is made with 4 shots of vanilla flavor so the flavor customization box is pre-populated with 4 vanilla shots. The user can touch any customization field and the available options will fold out allowing the user to edit it to their liking. Users were pleased with the ability of the app to customize their order, but it was a bit difficult to demonstrate with customization options interaction with a paper prototype so this will be tested further in the hi-fi prototype. Users then touch the *add to order* button and a fly up is displayed indicating the item has been added and giving the user two options: *checkou*t or *add more items*. This feature was well received by users. In the original design, individual prices were not displayed on this screen just the overall total. Users suggested we show prices next to the different options so prices will be included in the hi-fi prototype next to small, medium and large and any customization options that are an upcharge. At the bottom of the order item menu, nutritional information has been included as our contextual inquiry revealed that users are interested in this information and users in the lo-fi testing were pleased to see it.

Once an order is complete, the review order screen is displayed. The review screen contains an order summary and an estimated pickup time. Users were pleased that the customization was included in the order summary, but indicated they would like to select a pickup time. This change will be implemented in the hi-fi prototype and allow users to select 10, 20, or 30 minutes. Users then submit the order and are taken to the payment screen.

The payment screen allows users to pay with dining dollars, tiger bucks or a debit card. Users may select a previously saved payment method or add a payment method. Users suggested a pay in-person option for those that want to pay with cash and still take advantage of the rewards system. This change will be implemented in the hi-fi prototype.

Once payment has been made, users see a confirmation screen. The screen displays an order summary and an estimated pickup time. Users and employees suggested adding an order number to the confirmation screen and this will be included in the hi-fi prototype.

Once the order is ready, the user receives a notification on the app. The notification informs them that the order is ready for pickup and includes the overall points they have accumulated in the rewards system and the order number.

The next design was for the employee management of the customer system. These designs were created for desktop due to feedback from employees about how they edit their current system during the contextual inquiry. The employee system was meant to be as simple as possible for employees to add, edit, and remove menu options, ingredient availability, and promotions. Through discussion, we determined that employee logins would correspond with the store they manage. For example someone with a Javas log in could only make changes to their menu or ingredients. This was done because different people manage each shop and this would be a logical constraint to reduce mistakes. Comments from an employee user can be seen throughout the employee designs. Their overall reaction was positive, with some concerns about the logistics of implementing the system. They were unsure who would have access to edit the system and how quickly it could be updated if only a few people had access. Deals and promotions may not be a valuable feature to make available and may be removed upon further discussion. A feature like that may require more investment from the university and be beyond the scope of this project to make it viable. We plan to improve this design in milestone 5 and work with more employee users to improve them.

The lo-fi prototyping exercise enhanced our design. Our initial discussions allowed us to agree upon overall flow through the information architecture and an overall design layout. Conscious decisions were made to use consistent menu layouts and buttons throughout the design and users seemed to appreciate the consistency. We are particularly proud of the features included in this app: the rewards system, multiple payment methods, and the ready notification as they were all stressed by users during the contextual inquiry. Users' feedback was invaluable. Users suggested connecting to the duo authentication system, adding 'opening soon' to the locations screen, and including a pickup time selection on the order review screen. These suggestions will allow us to expand our design during the hi-fi prototyping activity.