

COSC368 Semester 2, 2024:

Human Computer Interaction

Assignment Two

Final Design of User Interface:

Café Self Ordering Kiosk

Group 3 – Tuesday 15th October

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Design Brief

“We liked your design concepts and are confident that you are the right consultancy to work with us in finalizing the interface design for our café’s self-ordering kiosk. We want you to give us a final interface design for our café self-ordering setup. We need you to give us an unambiguous description of how users will interact with the interface: what states can be reached and how they are reached; basically, we need to know exactly how the users will interact with all parts of the interface. Don’t over-concern yourself with the fidelity of graphical design – we have a strong team of graphical designers who can beautify your designs and work on the aesthetics.”

Introduction

The purpose of this report is to describe a finalised user interface design for a self-ordering kiosk. This is done by providing a high-fidelity prototype which is to be implemented at the CAF. This design caters to the CAF’s customer and staff needs. Descriptions of the users and their tasks are given to provide background information about the reasoning behind the design.

In a cafe, a self-ordering kiosk is implemented to improve the efficiency of the ordering process. It is a device that allows a user to place and pay for an order without staff interaction. This saves time for users (customers and staff), allowing a higher volume of orders to be processed. To create an efficient kiosk, the design should be intuitive and easy for users to order from. This report has been created to provide the CAF owners more information for their cafe about the design of a kiosk.

This report contains a detailed explanation of a high-fidelity prototype self-ordering kiosk for the CAF. It summarises the expected user groups and the specific tasks required to achieve efficient self-ordering. These are labelled with unique identifiers so they can be directly reviewed and attached to specific elements of the drawn design. An overview diagram follows, which outlines each state of the kiosk and the tasks within each state. A key goal of the design is that users have a positive experience completing tasks in a timely, efficient manner. This report provides an unambiguous user interface description, to clearly portray the design concepts and their relation to users and the tasks they complete. Lastly, the high-fidelity prototype is provided, visually showing the transition between states, the relation to user tasks, and providing an overall visualisation of the finalised design.

Users

U1. Regular customers	The CAF is based on a university campus. This means that the most frequent customer groups are university students (around 80%) and university staff (around 20%). Regular customers will be able to benefit from repeated use of the kiosk, becoming expert users able to handle more complex functions such as navigating accounts, reward schemes, special offers, and order customisation.
U2. First-time or low digital literacy customers	First-time users may include campus visitors, such as prospective students, visiting professionals, alumni, and donors. Along with staff and students, they are likely to vary in their digital literacy. There may be some visitors that struggle with touch screens (e.g. ‘fat finger syndrome’). The kiosk will need to provide orientating details to help customers form a conceptual model of its functions.
U3. Price-conscious customers	This will include students and lower-income staff. These customers will want the price of items clearly displayed and the ability to edit selections to fit their budget constraints. They are also more likely to be interested in special offers or reward schemes.
U4. Coffee connoisseur customers	Cafés are oriented around coffee. Coffee connoisseurs will want the ability to customise their coffee to fit their preferences. They are also likely to be interested in exploring new tastes and combinations.
U5. Dietary-limited customers	Customers with specific dietary needs need options to ensure those needs are met. They may wish to view only food/drink items that fit within their needs, or when viewing specific menu items see an ingredient list and be able to customise accordingly.
U6. Wheelchair-using customers	Customers in wheelchairs may have difficulty reaching and/or viewing aspects of the kiosk.
U7. Managerial staff users	The kiosk needs to improve and integrate smoothly with the existing systems at the CAF. Payments from the kiosk need to integrate with any existing business analytics software. Real-time kiosk order information, including automatic timers, could indicate when assistance is needed for an order that is taking longer than usual.

U8. Service staff users	Service staff need real-time information from the kiosk that they can access easily. Kiosk orders need to be visible behind the counter so that staff can immediately begin preparing them. Orders need to be kept linked with their order number so that customers can be alerted when their orders are ready.
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Tasks

W1. Give estimated wait time for food/drinks	Giving an estimation of wait time for food/drink delivery will provide useful feedback to customers who may be under time pressure. This could be displayed as a generalised message early in the kiosk journey, or a customised estimate toward the end of the kiosk journey. This is an important function that will be used by almost every kiosk customer.
W2. Provide orientating information for new users	New users may need help orientating themselves to the kiosk functions. This is an important task that is likely to be used by most first-time users.
W3. Select dine-in/takeaway	Having an option to select for dine-in/takeaway gives customers the option to sit down or eat/drink on the go. If there is accompanying information about wait times, this can help with easing congestion in the CAF. This is an important function that conveys additional information for many customers.
O1. View food/drink categories	Customers need to be able to see what food and drink is available before making a purchase. This is an essential function that will be used by almost every kiosk customer.
O2. Filter for specific dietary needs	Some customers will have specific dietary needs and will want to know that it is possible for these to be catered for. A filter is one possible way this information can be conveyed.
O3. Make selections	Customers need to be able to select the food and drink options they want to purchase. This is an essential function that will be used by almost every kiosk customer.
O4. Customise selections	Many customers will want to customise their orders by changing quantity or ingredients. Having this function will enable customisation for regular users and encourage efficient group orders. It is also essential for customers with specific dietary needs.
O5. Remove selections	Customers need to be able to undo food/drink selections that they have made accidentally or changed their mind about. This is an essential function that will be used often by kiosk customers.
O6. Review and confirm complete order	Customers need to be able to review their order prior to payment to check that it is what they are expecting. This is an important function that will be used by almost every kiosk customer.
O7. Order number provided to customer	Customers and staff need a clear way to identify an order and its relationship to the customer. A unique order number prevents any confusion. This is an essential function that will be used by customers and staff for every kiosk order.
P1. Provide payment details & user confirm payment	Customers need to be able to perform the selected payment method. This is an essential function that will be used by almost every kiosk customer.
P2. Kiosk confirm payment received/not received	Customers need clear feedback that their payment has been received or not received. This is an essential function that will be used by almost every kiosk customer. If payment has not been received, there needs to be feedback about what can be done to fix the problem and an option to cancel the entire order.
D1. Order number and details provided to café staff	Staff need to know promptly when an order has been made so they can prepare it. This is an essential function that will be used by staff for every kiosk order.

D2. View current orders and status	Providing café managerial staff with an overview of all active orders enables them to monitor staff capacity in real time. This could be important and used frequently if business at the CAF scales up at a fast pace.
D3. Provide alert when order is ready to either the staff members delivering or the customer to pick up	An alert for a ready order is an essential function but may not need to be provided by the kiosk. Staff alerts could be provided through an existing kitchen process, e.g. passing order slips. Customer alerts could be provided verbally by calling out an order number. Customers dining in can place their order slip in a table stand that is visible to waiting staff.
D4. Staff sign-in	Café staff need to be able to sign-in to the kiosk so they can be authenticated to edit key information. This is an essential task for managerial staff that will be used regularly.
D5. Update menu items	Café staff need to be able to update menu items on the kiosk. Different menu items are likely to vary in availability due to changes in season or supply chains. Some menu items may need to be marked as 'sold out' or removed. New menu items will need to be added. Ingredients for different menu items are likely to vary in cost due to changes in season or supply chains. Cheaper items can be discounted. More expensive items may lead to price increases. This is a frequent and important function for the kiosk.
N1. Create customer account	Customers who are making an account need to provide some details that can be used for authentication. Regular customers are likely to want an account to save order favourites or access discounts. This is an essential task for creating a user account.
N2. Authenticate customer details	When making an account, customers details should be verified to check that they are correct. This provides backup in case of customer error when entering details, so is an important task for creating a user account.
N3. Sign-in automatically after successful registration	Once a customer has made a new account, they should be automatically signed in to the kiosk so they can promptly make an order if they desire. This is an infrequent but important task for kiosk efficiency.
N4. Customer sign-in	A customer with an existing account needs a quick and simple way to sign in when approaching the kiosk to make a new order. This is a frequent and important task for regular users.
N5. Display user dashboard	A customer with an existing account needs a quick and simple way to see their account details and any benefits they may have accrued through regular purchases at the CAF. This is a frequent and important task for regular users that reinforces the benefits of having an account.
N6. Log out of account	This is an infrequent back-up function in the case of customers being signed in and deciding not to make an order. It is important to preserve the privacy of a customer's account information.
N7. Redeem points	A customer with an existing account can redeem their points to get a discount on their order. They can gain points through their previous purchases.

Kiosk states

The kiosk state flowchart diagram below displays the various states of the kiosk that the user can navigate through. Each bubble represents a state in the kiosk and the user tasks within each bubble are represented by their task code identifier.

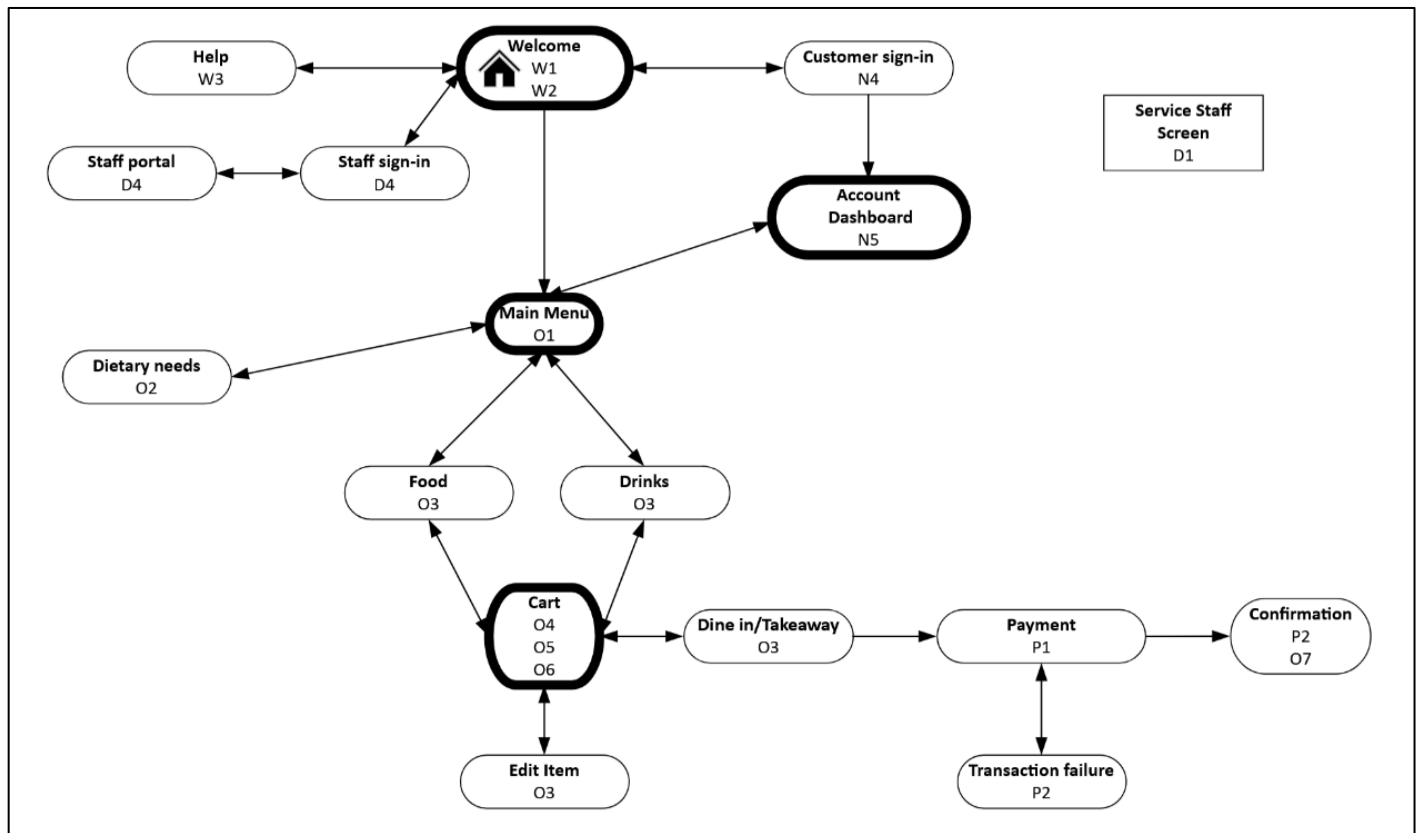


Figure 1 Kiosk state flowchart diagram

Final Design

Our final design centres on uniqueness and eye-catching shapes, which led us to choose a hexagonal theme. This hexagonal shape is carried consistently throughout the UI, creating interest and reducing cognitive load for users.

Our design prioritizes consistency, simplicity, and accessibility, ensuring that it meets the needs of a diverse user base. When we speak of accessibility, we mean features such as wheelchair support, with a remote control that is easily reachable for greater usability. Additionally, the kiosk accommodates a wide range of dietary needs and preferences, allowing users to modify their orders without staff assistance. Given that our primary users are university students, efficiency is an important priority.

Landing Screen

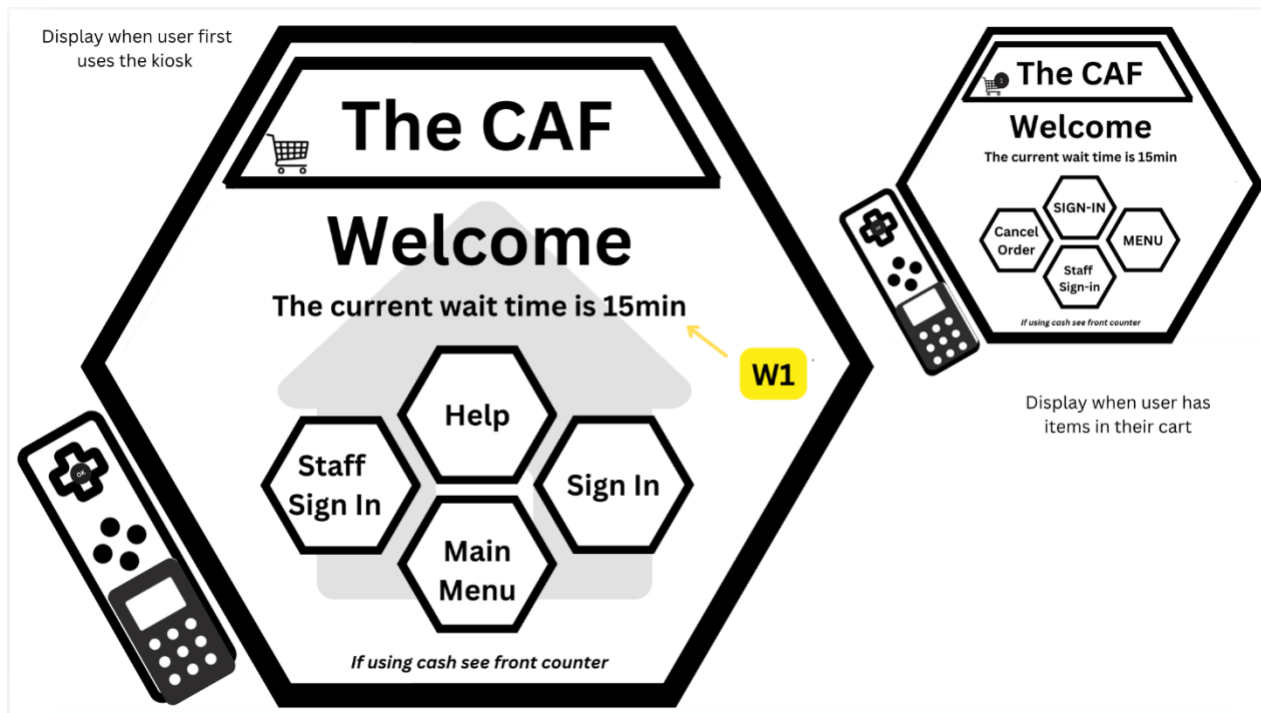


Figure 2 The landing screen of The CAF's kiosk

The Landing Page Screen allows users to customer/staff to sign-in, view the menu, view a help article on how to use the kiosk and displays a welcome message and displays the current wait time. There is also an option for the user to interact with the controller (W3) instead of using the touch screen. If the user already has items in their cart, the landing page will display a small cart with the quantity of items in the cart. This screen is designed to be simple and to provide instant information (W2) so the user can decide whether to order from The CAF or not.

Account Creation Screen

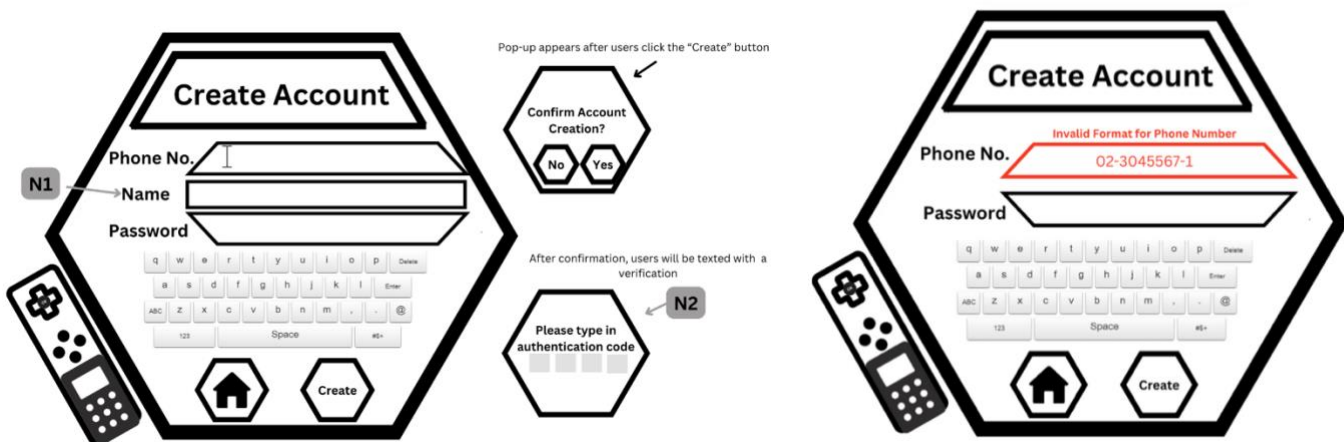


Figure 3 (left) Account Creation Screen and Confirmation Pop-up, (right) Account creation screen showing error for invalid phone number

On the Account Creation Screen, the user must enter their phone number, their name (N1) for their order and a password. If the user enters an invalid phone number, the respective box will be highlighted red with an error message to assist the user on next steps. Once the user has entered valid details, a confirmation message will show on the screen (N2) and the user will be texted with their account details to confirm the account creation and to advise the user of their account details.

Sign-In Screen

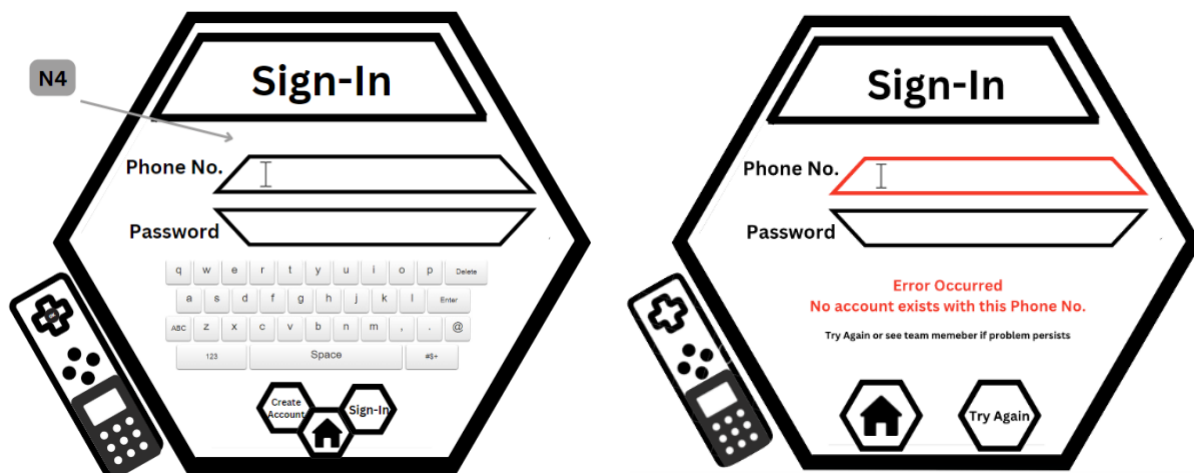
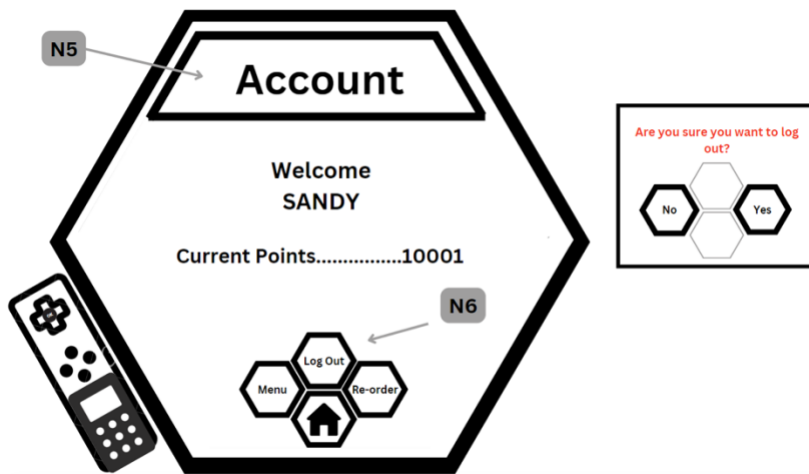


Figure 4 (left) Sign-in Screen, (right) Screen showing error, no account

On the Sign-In Screen, the user must enter their phone number (N4) and password and then press the 'Sign-IN' button. If one of the entered fields are incorrect, the incorrect field will highlight red, and an error message will advise the user to correct. If there is no account associated with the phone number entered, the system will advise the user to create an account.

Account Screen



The Account Screen (N5) allows the user to see details such as their name (N3), their current point balance with the ability to redeem their points and having options to go back to the Menu screen, log out, which is crucial for security (N6), a quick home icon for quick navigation and lastly the ability to quickly re-order their previously ordered meals, which will require the user to be logged in to view their previously ordered meals.

Figure 5 Shows a successfully logged in account page

Menu Screen

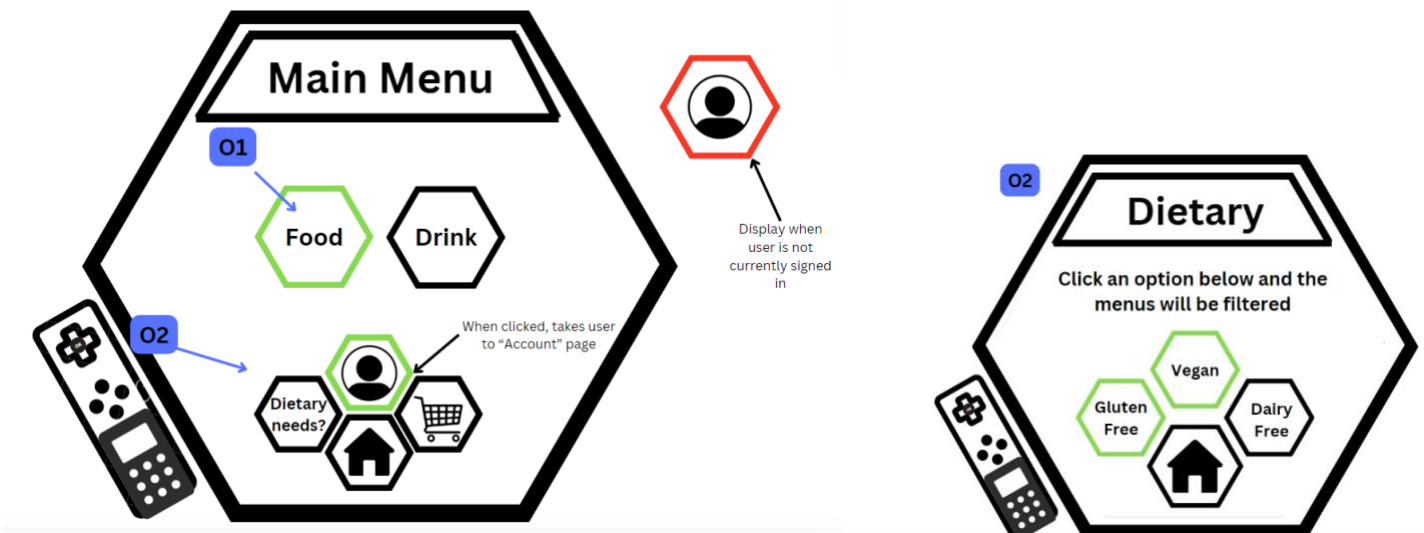


Figure 6 (left) Shows the Menu Landing Screen with options to select Meals or Drinks, (right) dietary options page

The Menu screen is what the user will see once they tap the 'Menu' icon on the landing screen. From here, they can access their account, look at the menu, separated to meals and drinks (O1) and log out of their account. Additionally, if the user has dietary requirements, they can navigate to the 'Dietary Requirements?' section at the bottom of the screen, where it will take them to a filter page as below (O2)

Menu: Drink Screen

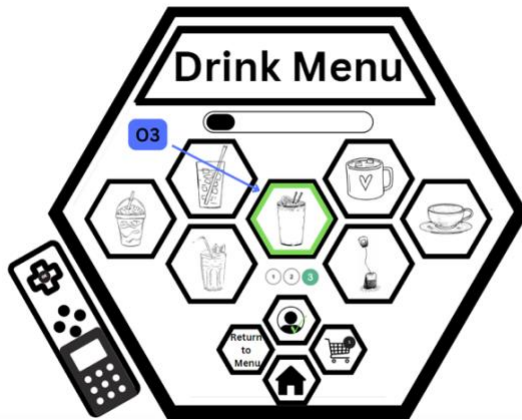


Figure 7 Shows the drink menu with the tea selected

The Drinks Screen allows the user to see a visual representation of the drinks. To avoid overcrowding the screen and overwhelming the user with too many options, there are multiple pages for the drinks as seen in the image (O3). The user can see their progress at the top of the screen where a progress bar exists to assist the user on how far they are from completing their order. Additionally quick shortcuts to see their account page, to view all items in their cart, ability to return to the menu option and the home screen exist.

Cart Screen

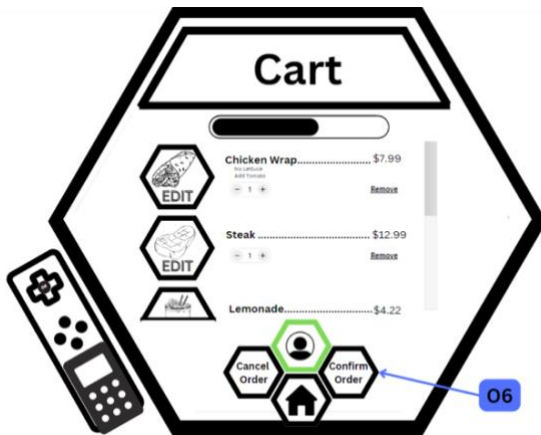
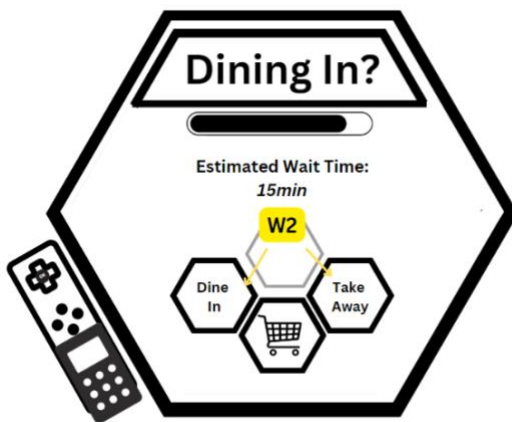


Figure 8 Shows several items already in the cart

The Cart Screen allows user to view all items added to their cart. There are visual representations of each item, and it also displays the quantity of each item, the price, any edits to the item made (if any) and the ability to remove any items as well. The user can easily scroll to see their whole cart if they have ordered multiple items. The design of this page is made so that it is very quick and easy to view. Like other screens, there are also quick shortcuts to view the account page, and to go back to the home screen. The user can also cancel their order (which will take it to where) and confirm their order (O6) allowing them to move on to the next step of the order.

Dining In/Takeaway Screen



In the Dining In/Takeaway Screen, the user is seeing an estimated wait time message to communicate how long roughly their order may take. They also can also navigate to review their cart. The main purpose of this page is to allow the user to have the freedom to choose between Dine-In and Takeaway. Dine-in will notify the staff to prepare the food on plateware whereas with takeaway, the food will be prepared in takeaway containers. (W2).

Figure 9 Shows estimated wait time and options to select dine in or takeaway

Food Edit Screen

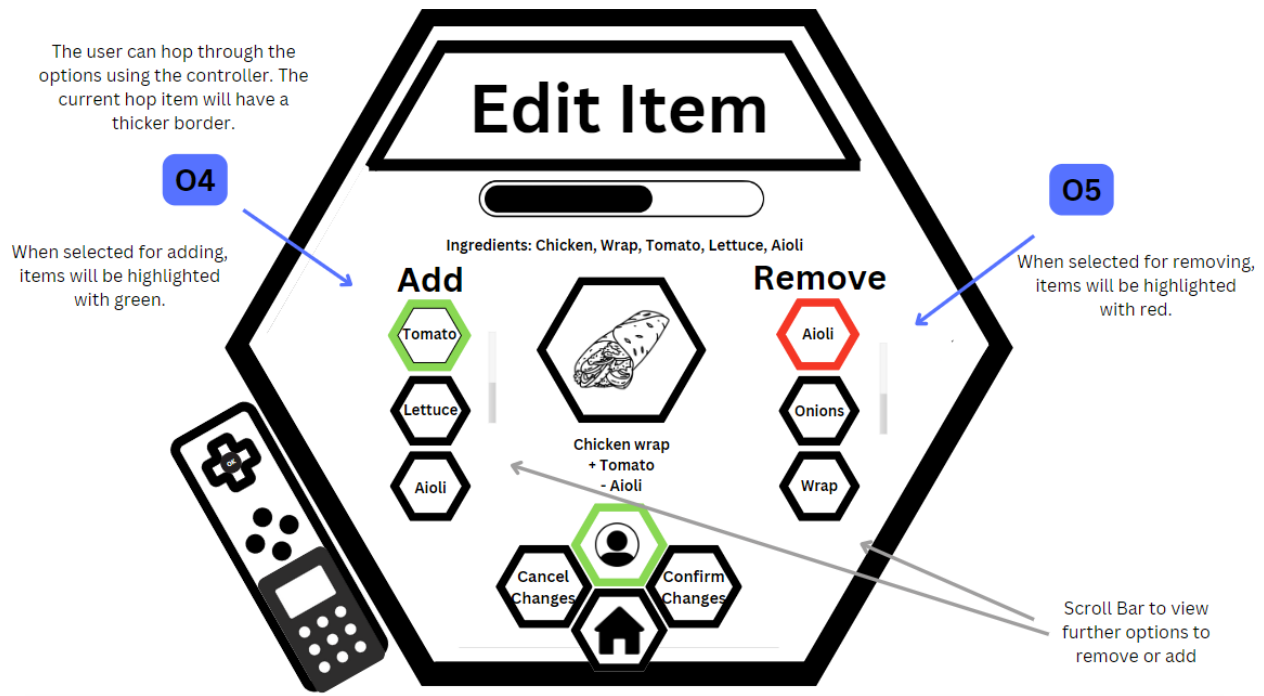


Figure 10 Shows the drink menu with the tea selected

In the Food Edit Screen, users can clearly see the item they have chosen to edit in the middle. The main ingredients are above the image of the chosen food to edit, allowing users to know exactly what is in the food they may want to remove. There are two columns, add ingredients column [O4], where the user can add more of an existing ingredient in the food, and the remove column [O5], where the user can remove ingredients.

Payment Screen

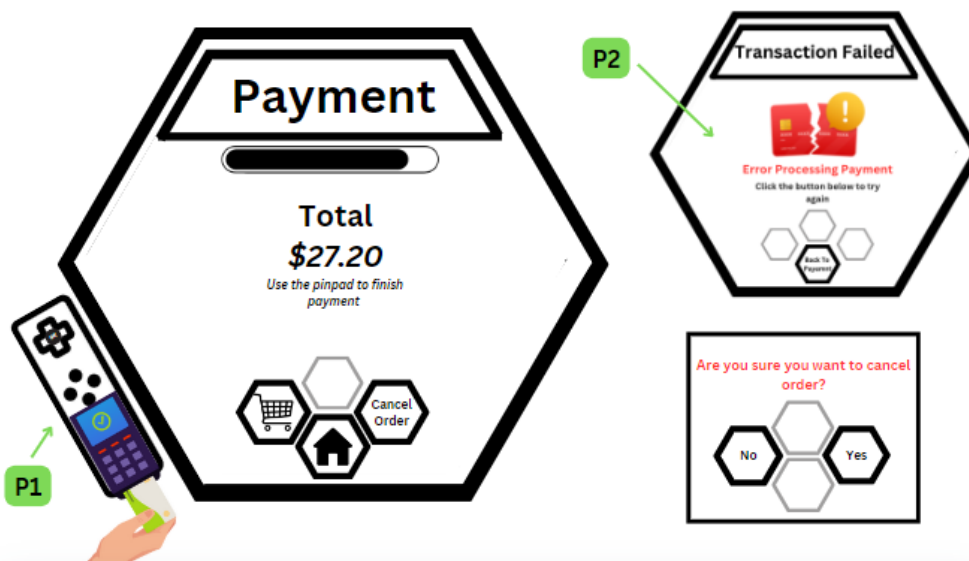


Figure 11 Shows the total amount due and the EFTPOS machine in use

The Payment Screen allows users to see their total displayed clearly and largely in the middle. There are also quick actions to go back to the cart to review their items, cancel their order, where a confirmation box will appear to confirm this choice, and the ability to go back to the home screen. The user will be prompted to make payment using the EFTPOS machine, which is connected to the bottom half of the remote controller (P1). If the transaction fails, the user will be notified clearly with a Transaction Failed Screen (P2).

Confirmation Screen

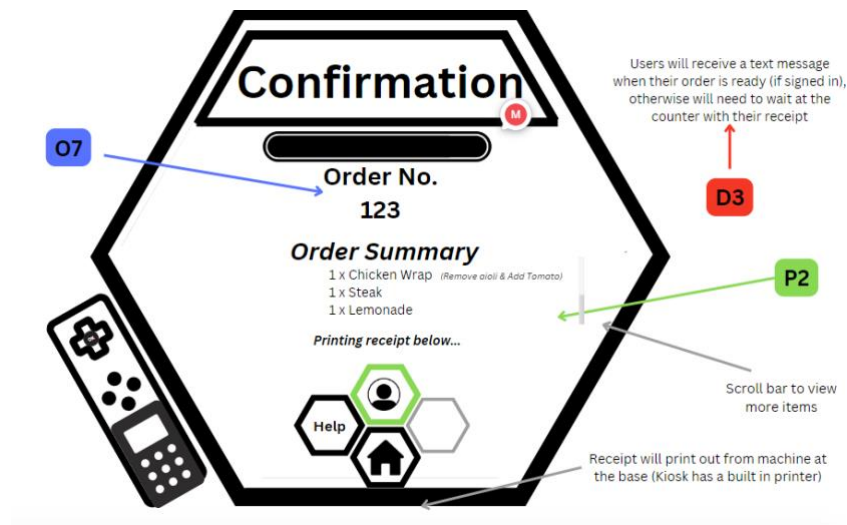


Figure 12 Shows the order confirmation

The Confirmation Screen is the last stage of the ordering process. The user will have successfully made their payment (P2) and will be able to see their order number (O7). They will also be able to see their order summary which will be scrollable if the user has multiple items. Users will also receive a text message only if they are signed in, indicating the order is ready, otherwise they will need to wait at the counter with their receipt (D3). The receipt will be printed from the bottom of the kiosk as the kiosk has a built-in printer.

Staff Portal: Current Orders

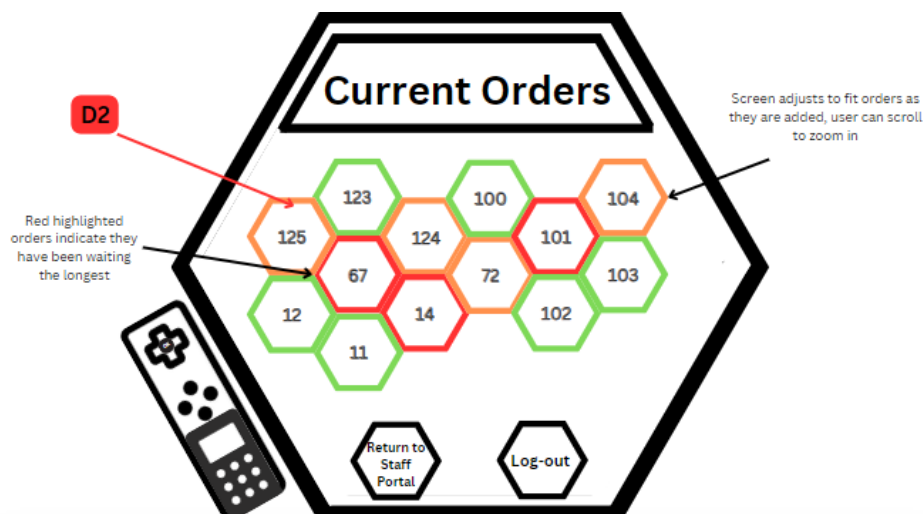


Figure 13 Shows the current orders screen with active orders

The Staff Current Orders screen enables staff, after logging in, to view current orders **(D2)**, along with their order numbers and a quick visual indicator of how long each order has been waiting. The colour-coded system helps staff easily assess the urgency of orders: red signals that an order has been waiting for a long time, orange indicates it is approaching a critical wait time, and green shows the wait time is within an acceptable range. This screen is designed for simplicity and clarity, providing key information immediately.

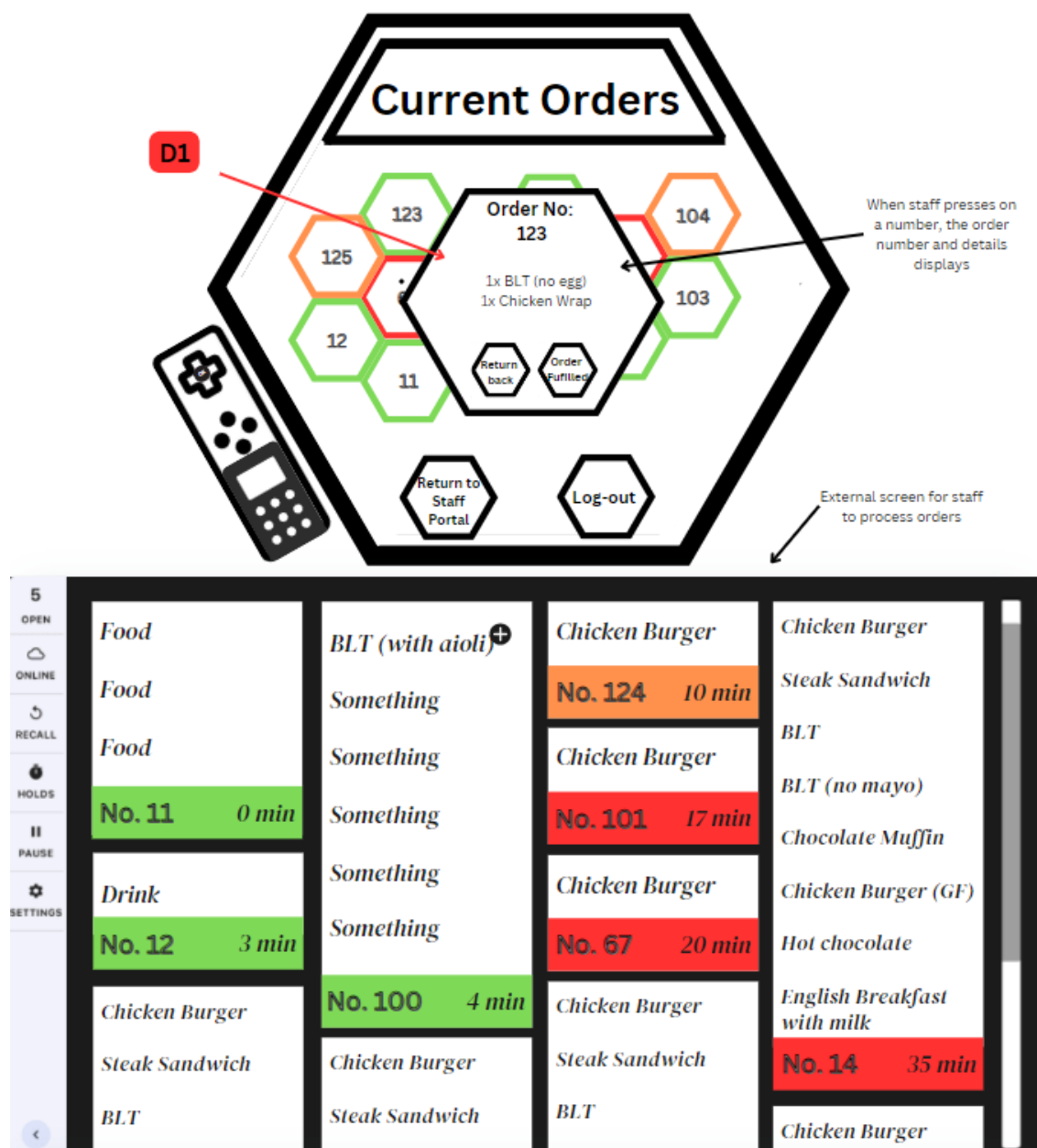


Figure 14 Selected order pop-up and staff external screen

Once the order has been fulfilled from the Current Orders screen, the staff can tap on the order to tap the ‘Order Fulfilled’ button. The Kiosk will then be able to communicate the order to an external system **(D1)**.

Staff Portal: Add Item Screen

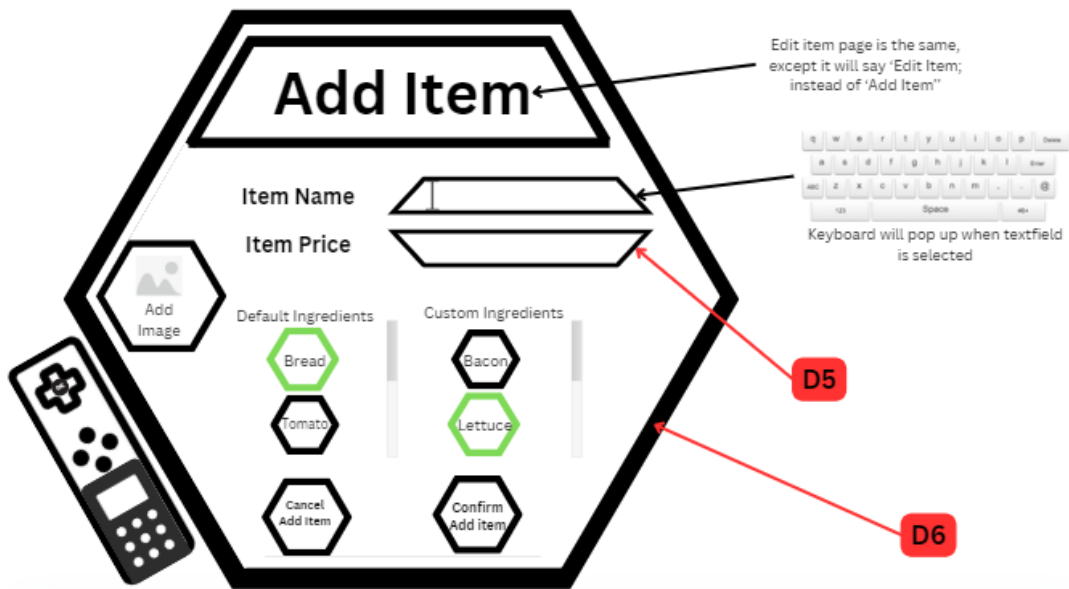


Figure 15 Shows the add item screen

The Staff Add Item **D6** screen allows Staff, once logged in to add new items to the kiosk menu. Staff must upload an image, provide the item's name, and set its price **D5**. The layout closely resembles the Edit Item Screen, featuring two columns that display available ingredients for easy selection when adding new items to the menu.

Staff Portal: Item Availability Screen

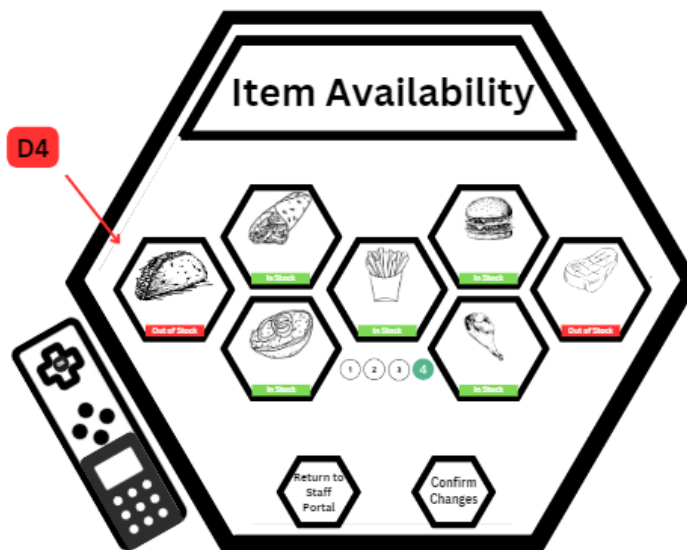


Figure 16 Shows the item availability

The Item availability screen enables logged-in staff members to update the availability of items on the kiosk for ordering. It features a simple, user-friendly layout with clear images of each food item, its name, and a highlighted box indicating whether the item is in stock and available or out of stock. Designed for easy of navigation, the screen is intuitive, easy to read and presents a lot of information in a clear manner.

Task Completion

W1. Give estimated wait time for food/drinks

When a customer is viewing the 'Welcome' page or the 'Dining In?' page, a message is displayed that details what the current expected wait time is. The time given on the 'Welcome' page is an average wait expectancy based on the average order. The wait time given on the 'Dining In?' page is personalised to show what the expected wait time is for their specific order.

W2. Provide orienting information for new users

The kiosk is equipped with a help screen. This is accessible from the home screen, when nothing is in the user's cart, by selecting the 'Help' button at the top of the navigation buttons. The help screen contains information and directions on how to interact with the kiosk using the provided remote. This is to help lessen the learning curve for those who are novice users of the system.

W3. Select dine-in/takeaway

Once the customer has confirmed their order, they are directed to a screen where they can select whether they would like to dine in or get their food to takeaway. To pick dine-in, users select the button with the 'Dine In' title on it. To pick takeaway, they can select the button with the 'Take Away' title on it.

O1. View food/drink categories

From the 'Welcome' page, users can select the 'Menu' button. This opens up the 'Menu' screen where they can choose whether to view the drinks or meals menu. On selecting either the 'DRINKS' or 'MEALS' the menu viewing screen for the respective selection is opened. On this screen, up to seven menu items are displayed at one time. The user can scroll through the menu items using the scroll bar up the top of the screen.

O2. Filter for specific dietary needs

To filter the menu based on dietary needs, the customer can select open the 'Dietary' screen from the 'Menu' screen by pressing or selecting the 'Dietary Requirements?' link on the bottom of the screen. On the 'Dietary' screen, a customer can toggle multiple different filters between being on and off by selecting the button that represents their specific dietary need. Filters that are on have a green border whereas filters that are off will have a black border.

O3. Make selections

From either the Drinks or Meals menu viewing page, when a user finds an item that they would like to select, they can click on it which will add the item to their order. Editing of the item such as changing its ingredients can be done through task O4. The item is now added to their cart, and item button now has a green highlight around it in the menu viewing page to indicate this state. To change the quantity of this item in the order, the customer will open the 'Cart' screen by selecting the button with the shopping cart icon at the bottom of the screen. Here they can scroll through the items in their cart, each row in the scroll pane contains the information about each individual selection. The customer will identify which selection they want to increase the quantity of and can select the '+' or '-' buttons underneath the name of that item until the quantity reaches the number they require.

Given a customer has signed into an account (N4) and are viewing the user dashboard/'Account' screen (N5), they can access the 'Re-Order' screen by selecting the 'Re-order' button which is the right of the four navigation buttons on the screen. On the 'Re-Order' screen, a customer can scroll through the orders they have made previously, from most recent to least recent. The order/orders that they would like to re-order can be selected by clicking the 'Reorder' button on the left of the scroll pane which will give the button a green highlight to show this state. To confirm adding these orders to their cart, the customer will select the 'Add selected to cart' button which is the right of the four navigation buttons.

O4. Customise selections

To customise a selected item, the desired item must have already been added to the order via task O3. The 'Edit Item' page for that specific item can be opened from the 'Cart' screen by selecting the button representing the item which has an 'Edit' label on the bottom of it. On this 'Edit' page, users can add ingredients by selecting them on the left. Any added ingredients are highlighted as green. On the right, users can select ingredients to be removed from the item. Removed ingredients are highlighted as red. To confirm the changes to this item, the customer will select the 'Confirm Changes' button which is the right one of the four navigation buttons.

O5. Remove selections

From the 'Drink Menu', 'Food Menu', 'Edit Item', 'Dining In?', and 'Payment' screens, users can click the cart button at the bottom of the screen. This is button with the shopping cart icon. This will open the 'Cart' screen. This screen shows all the current items in the user's cart. The user can scroll through these items until they find the item that they wish to remove. To remove this item, a user can click the remove button to the right of where the item is displayed.

O6. Review and confirm complete order

From the 'Drink Menu', 'Food Menu', 'Edit Item', 'Dining In?', and 'Payment' screens, users can click the cart button at the bottom of the screen which will open the 'Cart' screen. Here, the user can scroll through all the items in their cart and confirm that they are all the items they wish to be in the order. Any items that they want to remove can be removed via task O5. If the user is happy with this, and they want to confirm their order to carry on to payment, they click the 'Confirm Order' button which will take them to the 'Dining In?' screen.

O7. Order number provided to customer

Upon a successful payment confirmation, the 'Confirmation' screen is opened. The order number is displayed in the middle of the screen, along with a summary of the order.

P1. Provide payment details & user confirm payment

Once the user has selected whether they are dining in or taking away, the 'Payment' screen opens. Using the pin pad in the controller on the left of the kiosk, users can complete their payment by either swiping their card and entering their pin number or using payWave.

P2. Kiosk confirm payment received/not received

Once P1 has been attempted, if the payment was successful, the kiosk directs to the 'Confirmation' screen. If the payment method was unsuccessful, the kiosk directs to the 'Transaction Failed' screen where the user is prompted to try their payment again. The user can click on the 'Back to Payment' button which will re-open the 'Payment' screen where they can attempt task P1.

D1. Order number and details provided to café staff

Once a successful order has been made, this will be updated on the 'Current Orders' screen to show a hexagon with the respective order number inside. The kiosk will also be able to communicate with an external system, likely through an API, where the order number and details will be sent through to be displayed by the external system.

D2. View current orders and status

Given a staff member is logged into a valid administrative account, from the 'Staff Portal' screen, they can click the 'Current Orders' button to be directed to the 'Current Orders' screen. This screen shows the order number of all orders in process. Each hexagon has a coloured ring around it to show the time that has passed since this order was placed. Green orders are

those that have been recently placed. Orange orders are those that were placed a while ago and are due to be completed soon. Red orders are those that are taking longer than expected to be finish. This is to indicate to staff which orders are the highest priority to be finished.

The kiosk will also be able to communicate with an external system. All order numbers, statuses, and details will be sent to the external system where they can be displayed in a more intuitive design where each order is laid out in a more detailed view. The kiosk will remain coordinated with the external system. If an order is marked as complete on the external system. This will be reflected on the kiosk too; the order will be removed from the 'Current Orders' screen.

D3. Provide alert when order is ready to either the staff members delivering or the customer to pick up

When an order is ready to be collected by a customer who has selected to order takeaway, a text will be sent to the mobile number connected to their account to tell them to come and collect their order.

Otherwise, the staff members will manually handle this task.

D4. Staff sign-in

There are two separate ways users can be signed in, as a customer, or as a staff member. The 'Staff Sign-in' screen is accessible from the welcome page by selecting the 'Staff sign-in' button. If there are items in the cart, this is displayed as the bottom navigation button. Otherwise, it is the left button. To be authenticated, staff members will need to enter both their admin username and password. This can be done by clicking on the relevant field which will add a line to the field to indicate that it is being edited. On the keyboard below staff members can select the buttons to enter in their details. To confirm their sign-in, the staff member can press sign-in. If an error occurs with validating their details, a red message appears below the text fields that says 'Error Occurred, Could not sign in as ADMIN'. The respecting text field is not highlighted as staff can be assumed to more likely be expert users and confirming which field is correct/incorrect could pose as a security risk. To reattempt sign-in after fixing their entered details, staff members can select 'Try Again' at the bottom of the screen.

D5. Update menu items

Given a staff member has successfully logged into an admin account (D4), they can add new items to the menu by going to the edit menu page by selecting the 'Edit Menu' button on the 'Staff Portal' page. To begin adding an item, they will select the top of the navigation buttons that says 'Add New ITEM' which will open the 'Add Item' page.

On the add item page, the item's name and price can be entered by selecting one the two relevant text fields in the top right of the screen. By selecting one of these fields, a keyboard will pop up on the screen where the staff member can enter the name or price. To finish entering the name or price, they can press 'Enter' on the keyboard to save their values. To upload an image to the new item, they can select the 'Add Image' button which will open a screen that allows them to select an image for the item. There are two scroll panes in the middle of the screen. The one on the left will allow the staff member to select which ingredients are in the item by default. The one on the right will allow the staff member to select which ingredients can be added to the item by the customer. Each ingredient can be toggled to being included in the list of ingredients by selecting it. Items in the correlated list have a green border, items not included will have a black border. To confirm adding the item to the menu, the 'Confirm Add Item' button which is the right navigation button must be selected.

To edit items already on the menu, the staff member will have to navigate to the item they want to edit on the 'Edit Menu' page and select it. This will open the 'Edit Item' page. This is the same as the 'Add Item' page in both interaction and layout, except that it will say 'Edit Item' instead of 'Add Item' and will edit the selected item on confirmation rather than create a new one.

To change which items are currently available to customers, a logged in staff member can open the 'Item Availability' page by clicking on the 'Item Availability' button on the 'Staff Portal' page. Each item on this page can be toggled between 'In Stock' and 'Out of Stock' by selecting the button representing the desired item.

N1. Create customer account

From the 'Sign-in' page, a customer can open the 'Create Account' page by selecting the 'Create Account' button which is the left navigation button. On the 'Create Account' page, a customer will need to enter in their phone number, name, and password. Each of these can be done by selecting the relevant text field which will add a line to indicate that it is being edited. On the keyboard below, users can click on the buttons to enter in their phone number, name, and password. Once this is done, the customer can confirm creating their account by selecting the 'Create' button. A popup will appear to confirm that the customer wants to create an account. If they select the 'Yes', an account will be attempted to be created. If the first part of account creation was successful, the user will be prompted to authenticate themselves through task N2. If it was not successful, an error message will be displayed on the 'Create Account' page e.g. 'Invalid format for phone number' and the relevant text field will be highlighted.

N2. Authenticate customer details

When customers create an account, they will be sent a text message with a code that must be typed in to the kiosk to authenticate their details. If the correct code was typed in, the account will be created, the customer will be automatically signed in, and directed to the 'Account' page. Otherwise, they will be prompted to try again.

N3. Sign-in automatically after customer registration

When a customer successfully completes tasks N1 and N2, they will be automatically signed into the kiosk so there is no need to complete task N4. This means that will automatically be displayed the user dashboard and can complete task N5. This task makes the registration functionality more efficient.

N4. Customer sign-in

There are two different ways users can be signed in, as a customer, or as a staff member. The 'Sign-in' screen is accessible from the welcome page. The customer sign in screen is opened by clicking the 'Sign-in' button, the right of the navigation buttons. If there are already items in the customer's cart, this is the top button. To be authenticated, customers will need to enter both their phone number and password. This can be done by clicking on the relevant field which will add a line to the field to indicate that it is being edited. On the keyboard below users can click on the buttons to enter in their phone number and password. To confirm their sign-in, the customer can press sign-in. If there is no account registered with the entered phone number, the phone number field is highlighted red, and a red message appears below the text fields that says, 'Error Occurred, No Account exists with the Phone No.'. If the password does not match with the given phone number, the password field is highlighted red, and the error message says, 'Error Occurred, Password Incorrect'. If any errors occur, the customer can attempt to sign-in again by fixing their entered details and pressing 'Try Again' at the bottom of the screen.

N5. Display user dashboard

Given that a user has successfully signed in to a customer account, they can view the user dashboard by clicking the 'Profile' button on any of the 'Menu', 'Drink Menu', 'Food Menu', 'Cart', 'Edit Item', 'Confirmation', or 'Re-Order' screens.

The user dashboard is also displayed immediately after a successful login or account registration (see tasks N1 – N4).

The user dashboard displays the name of the logged-in user below the screen title, under the welcome back message. Underneath this, the customer's current number of points is displayed. To carry out task N7 they can select, the 'Redeem Points Here' link underneath the points number.

N6. Log out of account

A customer user can log out of their account from the 'Account' screen. To do this, the customer can press the 'Log Out' button at the top button of the navigation buttons at the bottom of the screen. Once this is done, a popup opens that makes

the user confirm whether they intended to log out or not. To confirm logging out, the customer can select or press 'Yes'. This will take them back to the 'Welcome' page. If the button was pressed accidentally, the customer can press 'No'. This will close the popup, and the customer will remain on the 'Account' screen.

N7. Redeem points

A customer with an existing account can redeem their points to get a discount on their order. To this they must click the 'Redeem Points Here' link on the 'Account' page. This will convert their points to the relevant currency and apply that as a discount to their order. If the customer has more points that can be converted to a discount on their order, only the amount of points needed to cover their order will be subtracted from their value.

Conclusion

The CAF has asked us to give a final interface design for a self-ordering kiosk. They also require a detailed description of how the users will interact with all parts of the interface. To meet these needs, we summarized the main user groups and analyzed their key tasks, ensuring that the development of the high-fidelity prototype aligns with user requirements while providing an efficient and intuitive ordering experience. We have summarized key user groups to be regulars, first-time users or those with low digital literacy, price-conscious customers, coffee connoisseurs, customers with dietary restrictions, wheelchair users, the managerial CAF staff, and the CAF service staff.

To meet the needs of these user groups we identified a variety of tasks, we have considered the general needs of users, such as dining preferences, feedback on the estimated time of their order, and important accessibility features. We prioritized the customer ordering process, identifying the key tasks each customer will need for an efficient experience which include being able to smoothly view, select, customize, and review their order. Recognizing that to some customers, it is important that clear indication is shown meeting their dietary needs. It is also important to both the customer and staff that the payment process runs smoothly, providing clear feedback to confirm the success of each transaction. In terms of staff-centered tasks, it is important the kiosk supports clear communication between the customers and staff as well as capturing tasks related to managing and tracking customer orders. To achieve this, we have included providing a unique order number for the customer and staff. Providing active orders overview should they need to intervene, and indication of a finished order. Accounts are important for regular customers and the tasks to authenticate, manage and access their user account, with details or rewards enhance the CAF's engagement. Additionally, we have included tasks to manage items and their prices which is a good tool in marketing/business strategies.

To clearly describe how the user will interact with our interface design we have encoded each task with an identifier code that is shown in the high-fidelity prototype. We have also described how to navigate the kiosk referencing to the tasks as well as providing a general kiosk task state diagram. We believe that our design improves operational efficiency of the CAF as our design is simple and intuitive and was created by following usability heuristics.

Primary contributions of each team member

Claire

- Contributed to team discussions
- Added to low fidelity type heuristic evaluation
- Contributed to slides regarding introduction, user groups and tasks, animation and participated in presentation
- Conclusion
- Formatting and general editing

Laura

- Contributed to team discussions
- Introduction, labelling of designs with task IDs and annotations
- Editing/addition to final designs
- Presentation slides and presentation

Hannah

- Contributed to team discussions and group meetings
- Descriptions of how tasks are implemented by the design (Task Completion)
- Added the 'Add Item' design and general editing of the design to make the flow work
- General editing of the document to get it ready for submission

Isabella

- Contributed to team discussions and group meetings
- Created the initial iteration of 25 high fidelity designs
- General proof reading of assignment

Melanie

- Contributed to team discussions
- Summary of users and tasks, state flowchart
- Overall editing, integration and consistency

Michelle

- Contributed to team discussions
- Compiled heuristic evaluations
- Final design images and descriptions
- Contributed to slides regarding key features and participated in presentation

References

UC Key Facts Summary. Accessed from <https://www.canterbury.ac.nz/about-uc/corporate-information/quick-stats>, on 25/09/24.

Appendix

Heuristic Evaluations of Initial Low Fidelity Prototype

Problem	Heuristic Violated	Violation Severity	Recommendations
The 'Return' button could be confusing as it is unclear if it means to exit or go back one step, and there is confusion between the 'Void' and 'Return' buttons at the payment screen	User Control and Freedom / Consistency and Standards / Error Prevention	High	Rename 'Return' to something more specific like 'Back' or 'Main Menu,' and replace 'Void' with a clearer label like 'Cancel Order' to avoid confusion between voiding and navigating back.
No confirmation to remove items from the cart and no easy way to remove individual items at payment (users can only void the entire order)	Error Prevention	High	Include a 'Remove Item' button for individual items in the cart to give users more control, and add a confirmation popup when removing items to prevent accidental deletion.
Users cannot remove incorrect entries or wrong phone numbers	Error Prevention	High	Restrict phone number inputs to valid prefixes and formats (e.g. +64, 02) and provide a way to delete or modify incorrect entries
Lack of feedback or notification when the user clicks a button (possible multiple accidental clicks)	Visibility of System Status / Error Prevention	High	Use visual, haptic, or audio feedback (e.g. button click sound or vibration on the controller) to confirm actions like clicking buttons on the controller or tapping buttons on interface. Add a loading page to indicate a change in the GUI and to prevent confusions during navigations
Unlimited customization options (e.g. adding +100 of sugar) could lead to errors	Error Prevention	Moderate	Add constraints such as a slider (0-100%) for sugar customization to avoid unintended extreme values
No progress bar to indicate which stage of the process the user is at	Visibility of System Status	Moderate	Add a progress bar that displays the users' current stage in the process to provide clarity on where they are in the transaction flow
The menu display feels overwhelming with no focus on any specific item.	Aesthetic and Minimalist Design	Moderate	Highlight one item with colour or enlarged hexagons or allow filtering, to reduce the cognitive load on the user.
Unfamiliar hexagonal shape design causing cognitive overload and clutter on the drinks page with too many hexagon icons and unclear groupings	Consistency and Standards / Flexibility and Efficiency of Use	Moderate	Simplify the hexagonal design, group similar items (e.g., coffee, tea), and use a clearer layout to avoid overwhelming users.

Buttons on the home screen are too small and there is a lot of empty space	Minimalist Design	Moderate	Increase the size of important buttons on the home screen and make better use of whitespace for visual balance
The green colour on re-order and menu screens has different meanings (in cart vs re-order)	Consistency and Standards	Moderate	Use distinct colours for different states, such as yellow for selection and green for confirmed items, to avoid confusion between the two screens
No key to signify what the different colours mean on the current orders screen	Visibility of System Status	Moderate	Add a key or legend to explain the meaning of different colours on the current orders screen
No skeuomorphic elements to make the design familiar	Match between System & Real World	Moderate	Introduce familiar visual elements like trash Bin icons or '+' '-' signs for adding/removing items to align with real-world conventions
No support for undoing accidental actions beyond the back button	User Control and Freedom	Moderate	Add an undo button to allow users to quickly reverse recent actions, or provide clearer back navigation
No help or documentation for the remote controller or for staff and customers in general	Help and Documentation	Moderate	Include help screens, tooltips, or contextual documentation for both the remote controller and overall system usage. Ensure documentation is easily accessible for both staff and customers.
Lack of error messages when user input invalid details or perform invalid actions	Help Users	Moderate	Implement meaningful error messages and feedback for invalid inputs or actions, such as adding more items than available or inputting incorrect account information
Lack of familiar controller design	Match between system and real world	Moderate	Ensure the controller resembles familiar already existing designs (e.g. Wii, Apple TV remote, PS5 controller). This will ease the learning curve for users
Lack of guidance messages	Help User	Moderate	Add small, short pop-up messages to guide the user through the ordering process
No shortcut to quickly navigate from the re-order screen to the payment screen	Flexibility and Efficiency of Use	Moderate	Include a shortcut from the re-order screen to the payment screen to improve user efficiency
Menu categories like snacks/meals/drinks may be too limited	Recognition rather than Recall	High	Have better categorization (e.g., dine-in/takeaway, large meals/small meals, hot meals/cold meals) to improve user understanding
Staff portal labels like 'log out of stock item' and 'add daily special' are too specific	Aesthetic and Minimalist Design	High	Replace with clearer, more general terms like 'Edit Item' and 'Edit Specials'
Lack of customer account details in the interface	Help and Documentation	Medium	Show how customer accounts function within the kiosk (e.g., logged-in indicators, cart with item count)