IDEATION AND WIREFRAMING

ASSIGNMENT 2

Presented By

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1. Introduction

By digitising restaurant operations, this system will maintain real-time coordination across all departments. In using a login authorization on each work tablet, the system will manage users effectively. There will be a navigation bar for the various actions that staff can take. These include floor plans and table statuses, menu and ingredients, inventories, and shifts. The system will be able to send notifications and updates on table and food statuses as well as inventories to all necessary staff. By integrating these functions into a centralized automated platform, the system helps to improve communication, keep errors minimal, and improves the overall dining experience of customers.

2. Brainstorming Phase

a. As a group, our brainstorming began by drawing out examples of wireframes. We discussed various options for each page and drew them out in order to see the differences visually. From there we were able to notice some issues in our initial ideas and made changes accordingly. We used our assignment 1 submission in order to keep to the system goals, and our original plans for how the system would run. The wireframes that we did not use have been included below.

b. In designing our restaurant management system, different design patterns were used to make navigation easy, keep things organised, and help users find what they need quickly. These patterns help streamline operations by providing a structured and user-friendly way to access and manage information on the system.

Information Structure:

The system follows a hierarchical structure, where content is arranged from general to specific. For example, the menu follows a clear path: Menu > Mains > Menu items. This setup makes it easy for users to go down into detail while keeping things structured and logical.

At the same time, a matrix structure is used to allow multiple ways to access the same information. For example, table details can be opened from the landing page, through the “Orders” section, or by going to “Menu” and adding items to a table’s order. The menu can also be explored based on different criteria, such as filtering by course type (starters, mains, desserts, etc) or dietary preferences (vegetarian, gluten-free). This setup gives users more flexibility and options to find what they need.

Navigation Patterns:

To make moving around the system easy, different navigation styles were used:

- Hierarchical navigation: Breadcrumbs show users the path they’ve taken so they always know where they are, while expandable menus let them open only the sections they need.
- Sidebar navigation: A fixed sidebar provides quick access to key sections, like “Menu”, “Orders”, “Sales”, etc., making it easy to move between pages.
- Card-based navigation: Information is shown in separate, clickable cards, making it easier to scan and select different options. This is used for tables on the restaurant floor plan (the landing page) and for managing reservations.
- Search-driven navigation: A search bar helps users quickly find food and non-food inventory items without having to browse manually.

Content Organization:

To manage and present information effectively, the system organizes content in different ways:

- List-based layouts: Ideal for structured data, list-based layouts are used in areas such as inventory management, staff shifts, and sales records, where information is best displayed in a linear format.
- Progressive disclosure: Hides extra details until they are needed. For example, sales analytics, reservation details, and menu item ingredients that only appear when the user clicks on a dropdown arrow. This keeps the screen from looking cluttered and lowering the user's cognitive load.
- Timeline-based content: Information is arranged in order of events, like how sales pages show transaction history, the food inventory list displays "last purchased" details, and staff shifts and orders are sorted by date and time.
- Card-based layouts: Content is shown in clickable cards, making it easier to scan and interact with. This works well for displaying tables in the restaurant's floor plan (the landing page) and showing reservations.

Search and FIltering:

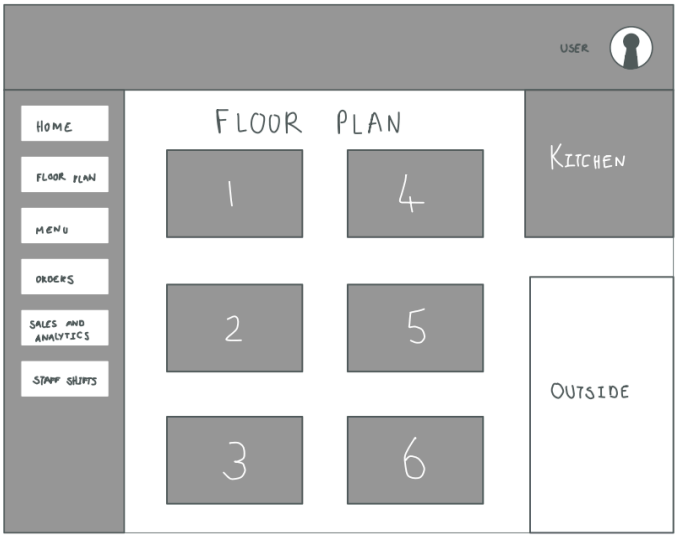
To help users quickly find what they are looking for, different search and filtering options were added:

- Dropdown filters: Lets users narrow down results based on categories.
- Checkbox filters: Allows users to select specific options, like filtering menu items by dietary needs.
- Search bar: A quick way to look up menu items and inventory.
- Sorting options: Lets users organize data by different criteria, like sorting sales by date or inventory by stock levels

By integrating these different design patterns, the system ensures a seamless, efficient, and user-friendly experience, allowing restaurant staff to manage daily operations with ease.

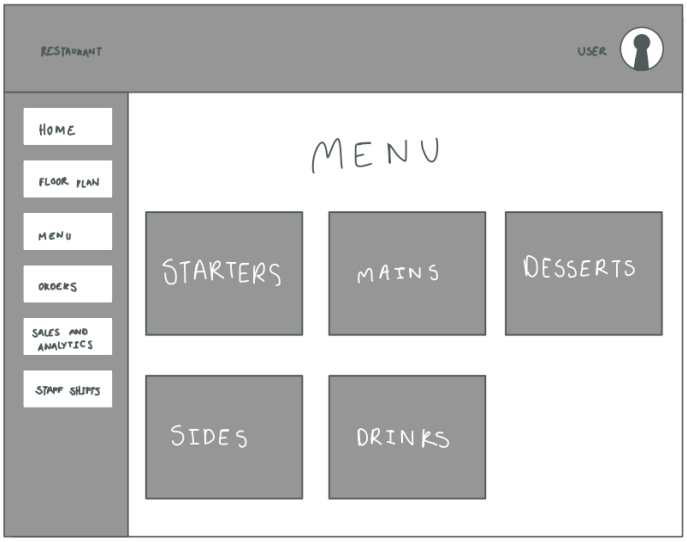
c. Visuals or sketches of brainstormed ideas

1. Landing page

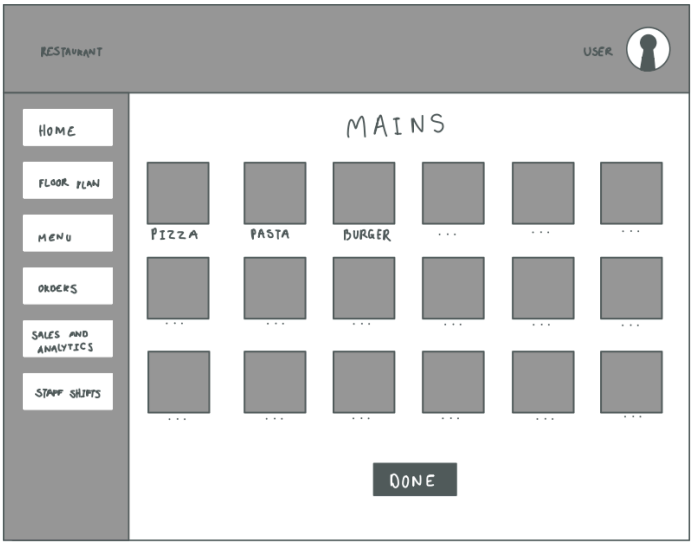


2. Floor plan

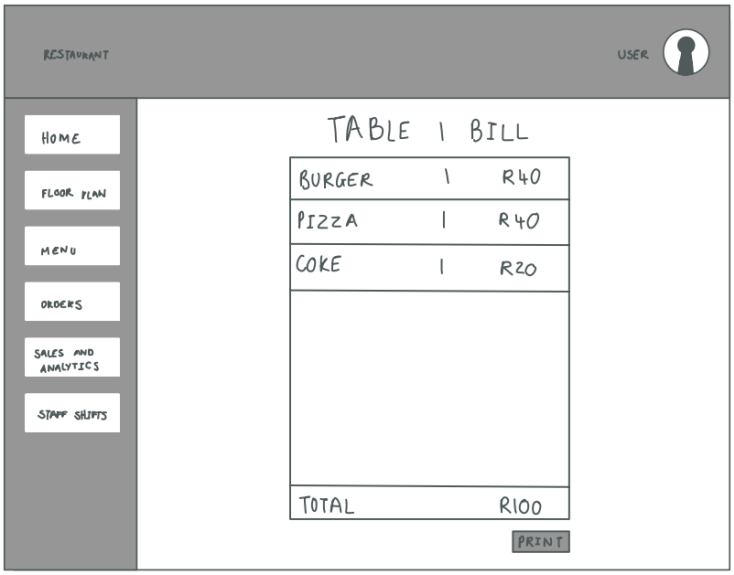
3. Table Info

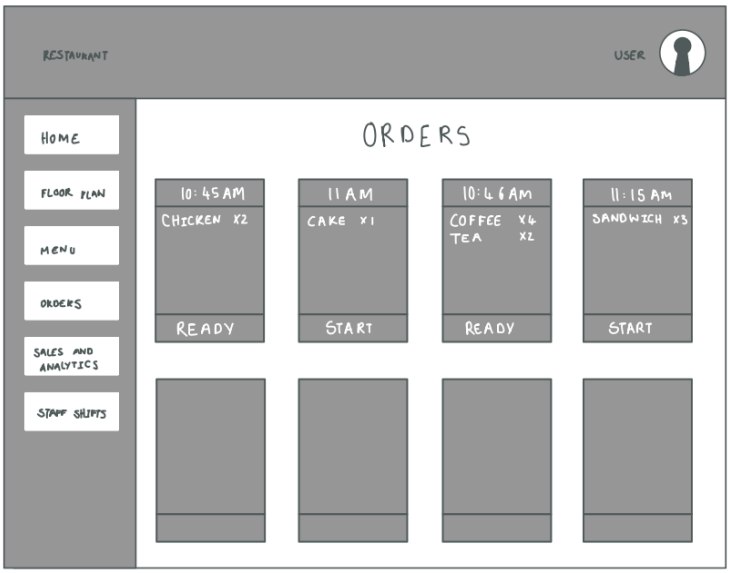


4. Order Menu

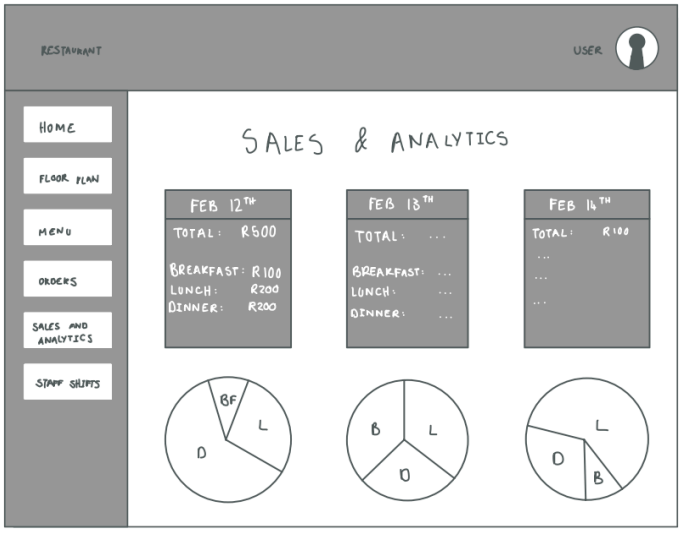


5. Mains Page

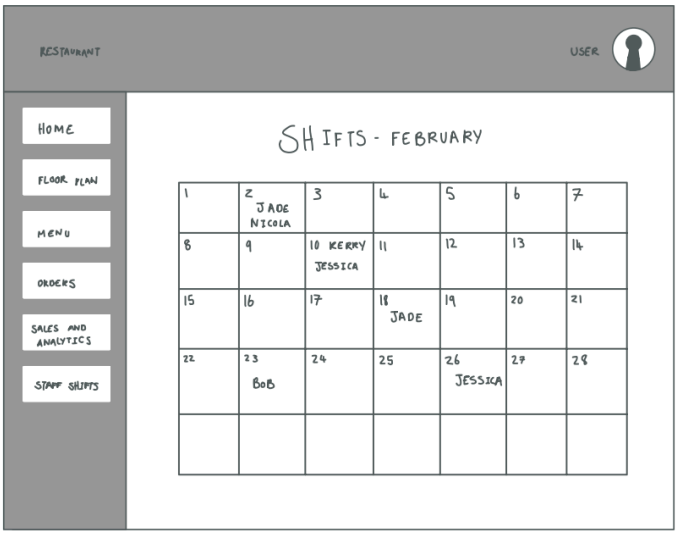




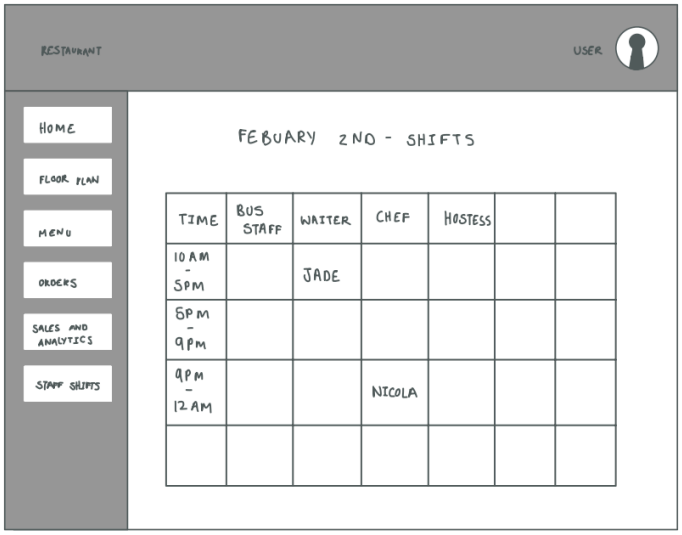
6. Bill



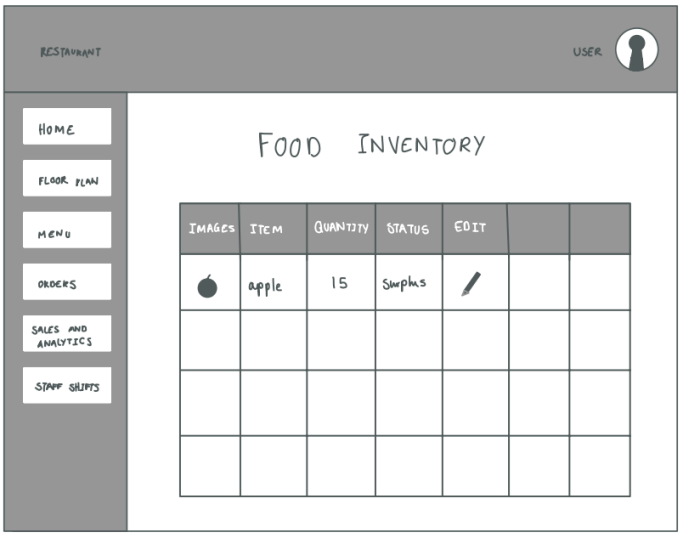
7. Orders



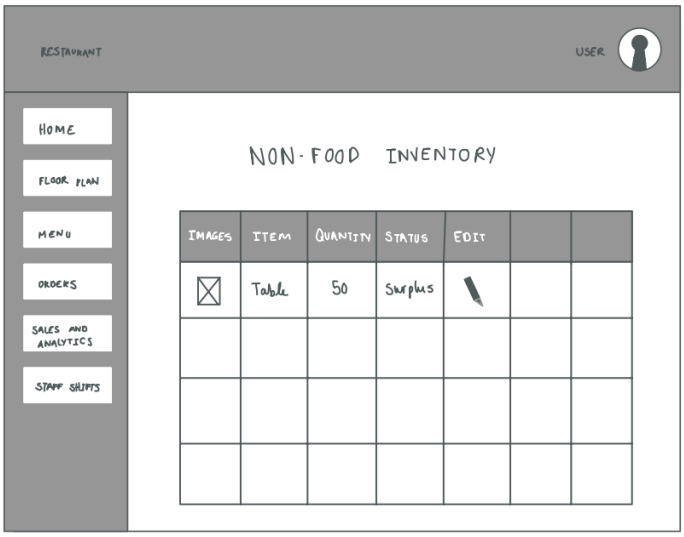
8. Sales and Analytics



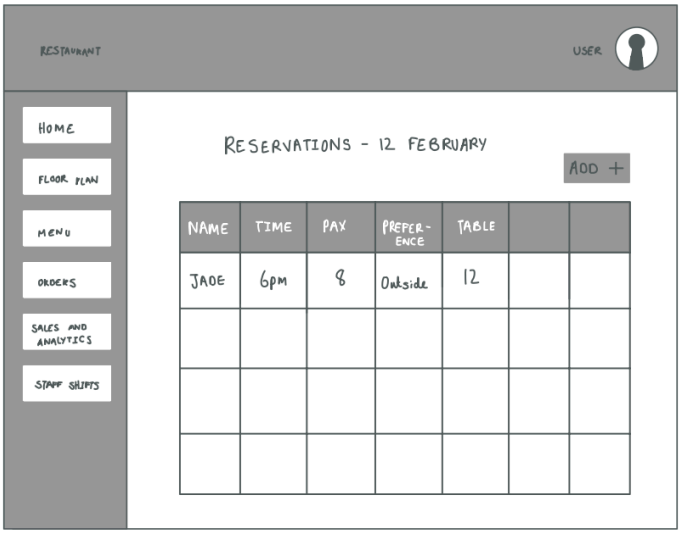
9. Staff Shifts



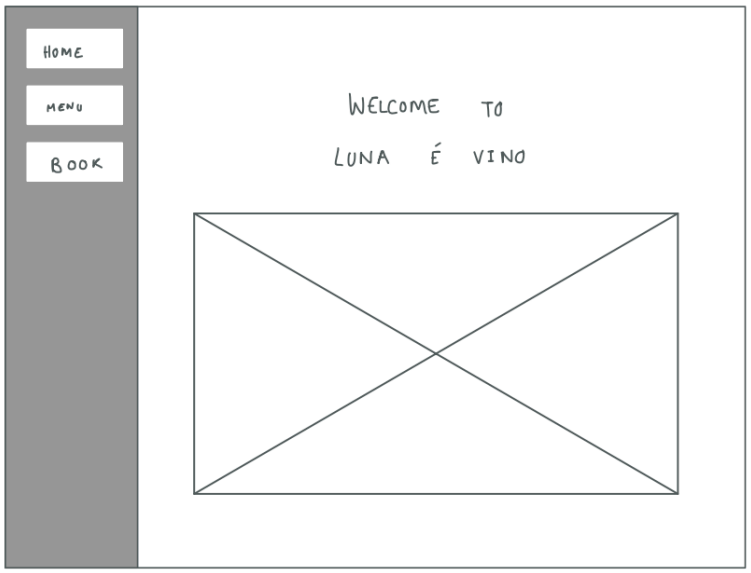
10. Staff Shifts per Day



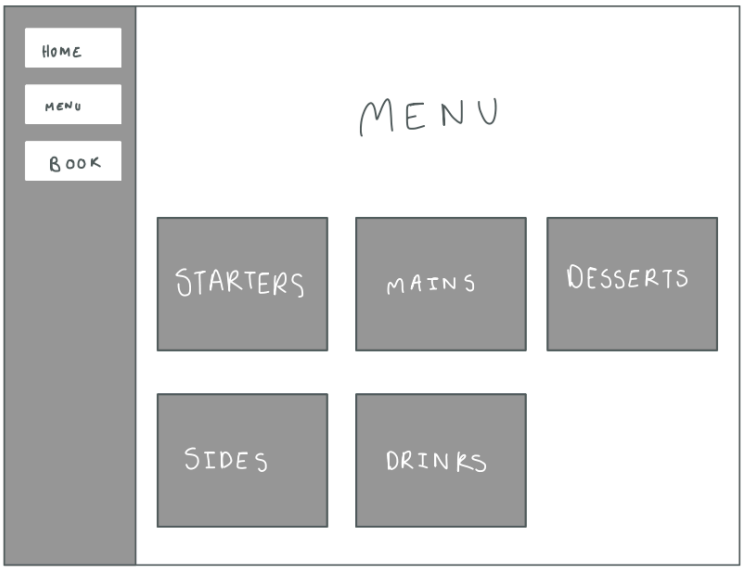
11. Food Inventory



12. Non-Food Inventory

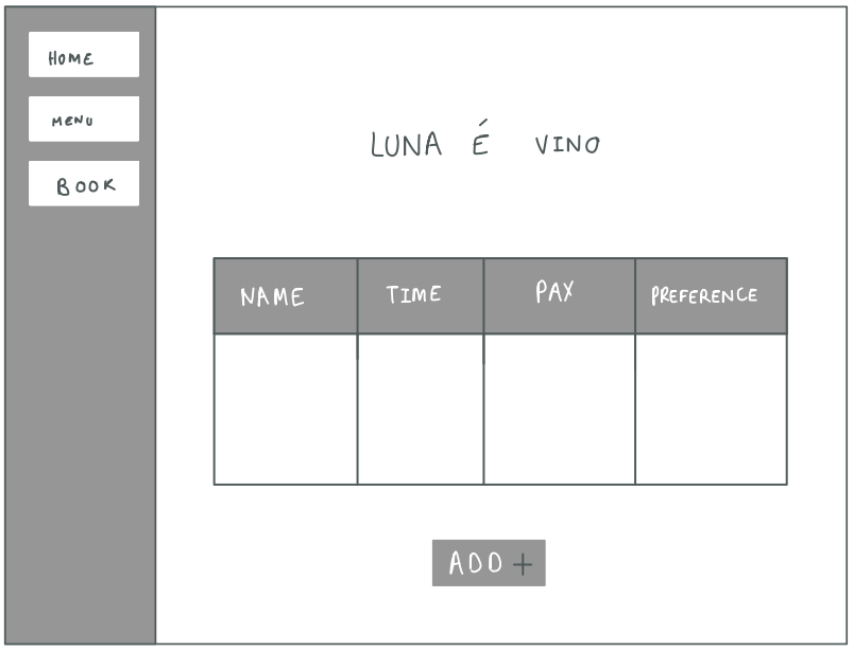


13. Reservations - Hostess View



14. Customer View

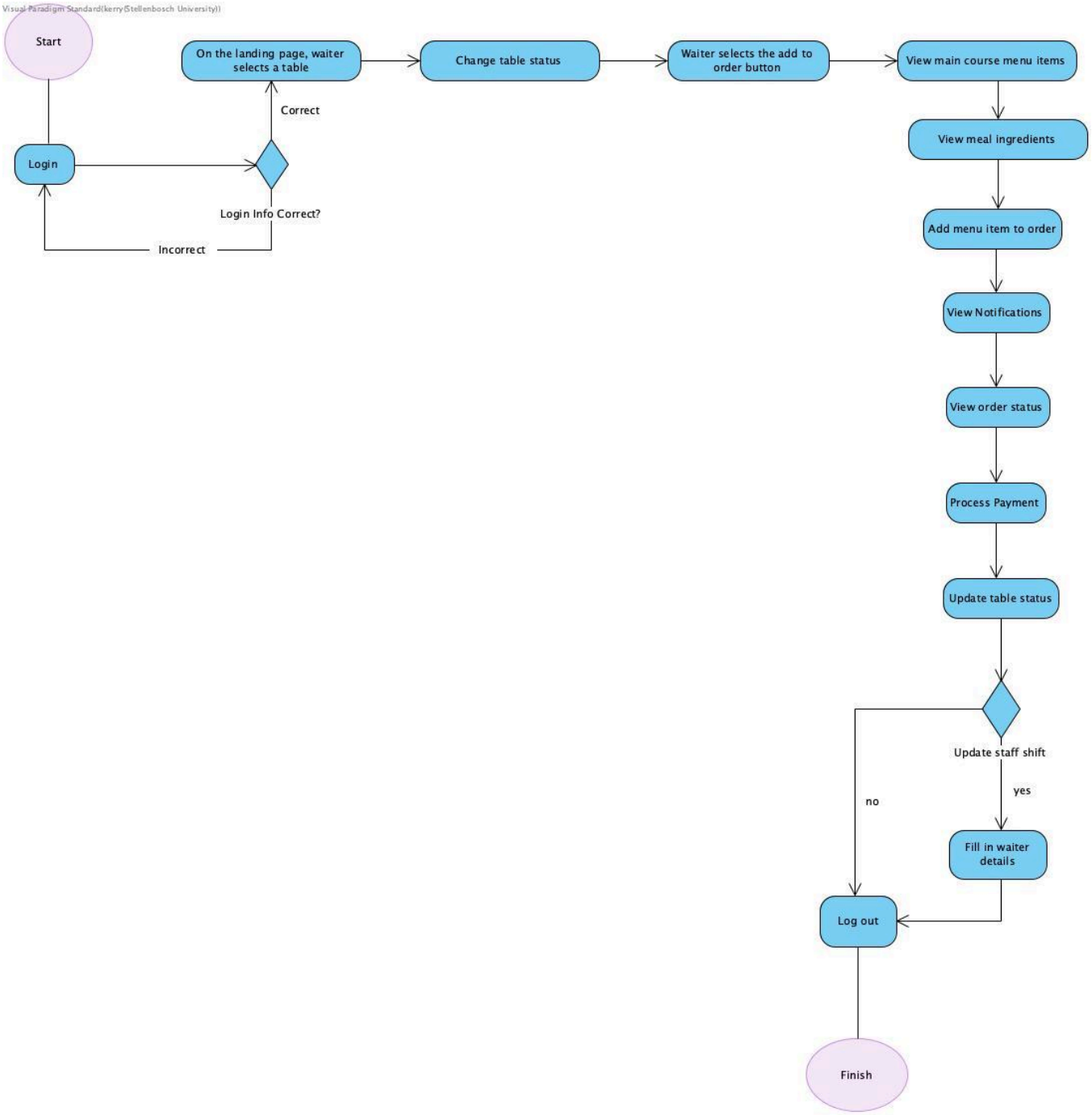
15. Menu - Customer View



16. Reservations - Customer View

4. User Flow Diagram
   a. A user flow diagram visually maps out the steps a user takes to complete a specific task within the restaurant management system. It helps us understand how users navigate through the system, from placing an order and managing reservations, to tracking inventory and tip allocation. By outlining these flows, we can identify potential obstacles, streamline interactions, and ensure an intuitive user experience. This process also helps optimise efficiency by reducing unnecessary steps, improving the usability of the system, and making it easier for restaurant staff to complete tasks smoothly. Ultimately, user flow mapping plays a key role in designing a system that is both functional and user-friendly.

b. Visual Representation of the User Flow Diagram



c. Steps in the User Flow Diagram:
    c.1. The waiter begins their use of the system by logging in to the Restaurant Management system on the work tablets at the restaurant.
    c.2. By entering their valid details, the waiter is authorised to use the system successfully.
    c.3. If their details are incorrect, they are not authorised into the system and have to retry login.
    c.4. The landing page shows the interactive table layout, and can select a table by clicking on the table number.
    c.5. The waiter can indicate that the customers have been seated at that specific table by setting the table status option to “Occupied”.
    c.6. Waiter clicks the add to order button for the specified table to begin the ordering process.
    c.7. Waiter is directed to the menu page where they can select the Mains button to view that section of the menu. This is because the customers are wanting to order mains.
    c.8. Waiter selects the drop down button on a Main Menu item to check the ingredients for dietary preferences or allergy concerns.
    c.9. The waiter adds order items by clicking the add to order button. This order is then sent directly to the Orders page, as well as the specified table bill.
    c.10. The waiter views the order status by clicking the hyperlink user buttons at the top to view notifications. This is where the staff receives updates on statuses of orders and tables.
    c.11. When the customers want to pay their bill, the waiter must process the payment. To do this they can print the bill from the table page.
    c.12. The waiter updates the table status to indicate that the customers have paid their bill. They can select the option “Bill Paid” to do this.
    c.13. At the end of the night, the managers asked employees to input their shifts for the following week. The waiter can decide whether to work next week or not.
    c.14. If the waiter chooses to work, they fill in their details under the shifts that they want to do.
    c.15. Either way, the waiter must end their shift by logging out of the system since they use the restaurant's work tablets. This ends the user flow with the system.

5. Low Fidelity Wireframes
    a. Wireframing serves as a blueprint for interface design, focusing on the arrangement of content, navigation, and key functionalities without using colours, detailed visuals, or styling. Wireframes help designers and stakeholders concentrate on usability and user experience. A well-structured wireframe lays the groundwork for a successful website, ensuring a clear and intuitive design before moving on to more detailed and interactive elements.

    b. Explanation of the Design Decisions Made Based on the Brainstorming Ideas:
        i. **Landing Page -** Firstly, during brainstorming, we realised that our initial idea of using access cards as authorisations would be a technical constraint, as the

work tablets would not support this technology. Instead we created a login page as seen in our wireframes below. This will be accessed through the intranet. Our landing page from brainstorming had some key ideas that we used in our final landing page. The left-aligned navigation bar and users button above work well in creating a professional and effective layout. However, The centre images and buttons used to direct users to new pages are redundant. This functionality is already laid out in the navigation bar which makes more sense. Ultimately we decided that having interactive table layout would be more useful and effective for the users of the system, as the core of the restaurant operations revolve around customer tables.

ii. **Floor Plan -** The floor plan underwent refinements to enhance spatial awareness and usability. We removed unnecessary elements, such as the kitchen location, to avoid clutter and optimise focus on the tables. We also introduced dotted lines to indicate doors between indoor and outdoor dining areas, allowing employees to navigate the restaurant layout more effectively and support a seamless workflow.

iii. **Table Info -** The table info page considered drop-down menus for updating the various details of the table status. This method would not be effective as the drop-down menus would require multiple actions within the same page. Users might find this difficult to navigate. The hyperlink buttons in our wireframes provide faster action execution.

iv. **Order Menu -** The menu page for the employees would be found when dropping down the orders option under table status. This would create confusion and inefficiencies. We improved this by designing a separate page for Menu in our wireframes.

v. **Mains Page -** The menu for each course is presented through images. Through brainstorming visualisations we noticed that this was too busy. While image based navigation can be quicker than words, in this case it was too much for efficient comprehension. Further, the problem with this would be that each image was a hyperlink to take you to an ingredients page for the selected meal, which would create multiple new pages on the system and ultimately slow down operations. In this case we decided that a drop down list of the ingredients for each meal would create a better user experience and better system efficiency.

vi. **Bill -** The bill page was originally accessible as a drop-down option under Table Status. This complicated processes and therefore we decided to have the bill auto-generate when orders are added for each table. This would avoid potential human error.

vii. **Orders -** The orders page that we brainstormed was grouped by times. This would be helpful for ensuring that there was priority on orders placed first. However, this could create problems with which orders belong to the same table. Synchronized meal delivery improves the customer dining experience, and so we restructured the orders page to group orders by table.

viii. **Sales and Analytics -** The Sales and Analytics page that we brainstormed was one page that showed all recent sales and analytics. This approach lacked clarity and organization, making it difficult for managers to analyze trends effectively. To enhance data visualization and usability, we divided

Sales and Analytics into separate pages, structuring the data chronologically by year for a more streamlined and intuitive experience.

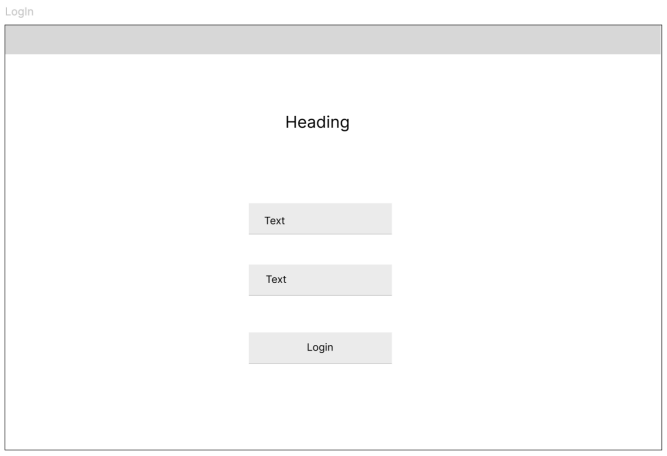
ix. **Staff Shifts and Staff Shifts per Day -** The Staff Shifts page originally was on a monthly basis, where employees could add their shifts by clicking on a date through a calendar. This would take them to a new page to add their name into a shift. We saw that we could improve usability and staff commitment, by implementing a scrollable weekly shift schedule. This reduces last-minute cancellations and promotes better shift accountability from staff.

x. **Food and Non-Food Inventory -** The inventory lists were originally made with images for each item. This stemmed from the same image based navigation on the menu page. However the same issues with images presented themselves. The tables became very busy and images would cause the system to load slower. We streamlined the pages by removing images from the tables for better clearer data retrieval.

xi. **Reservations Hostess View -** The hostess reservations page was brainstormed in a simple table format. This table would only show the reservations for that day. It also meant that the hostess had to manually enter a table number for the customers, which could lead to double bookings because of human error. The interactive floor plan that we decided to implement will allow hostesses to visually assign tables, and view all reservations for the upcoming month.

xii. **Customer Views -** The Customer interfaces were kept very similar from the initial brainstorming to the wireframes. We noticed a security issue in the customers having access to the navigation bar, as this might allow them to browse through items on the employee system. This could lead to errors and confusion as the customer has not been granted access to these through the internet. The internet customer system now only has public facing features without unintended system interference.

c. Visual Of The Initial Wireframes For The Different Functions Of The System



Login - We designed the login page to be simple in order to ensure that unauthorized users would not have access to business information from the navigation bar. The key features include the restaurant logo or name as well as a login button. We have made use of both internet and intranet login systems. The internet login allows anyone with an internet connection to have access to the website, while intranet login is more restricted because it requires usernames and passwords to gain access to internal systems. Keeping the login page minimalistic helps to enhance security.

Landing page 1

Landing Page 1 - The landing page displays a view of the restaurant's table layout. This design choice was made to prioritize efficient table management, as tracking table statuses and orders is crucial for ensuring a smooth and enjoyable experience for customers. The key feature of this layout is its interactivity which allows staff to easily monitor and update table information in real time. The left-aligned navigation bar allows the user to select options for restaurant processes. The “User” hyperlink button at the top allows the user to view their account, and the notifications they have received on order and table status.

Table Details

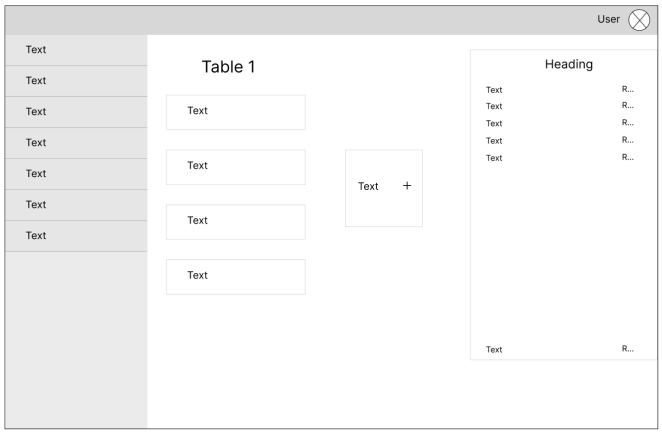
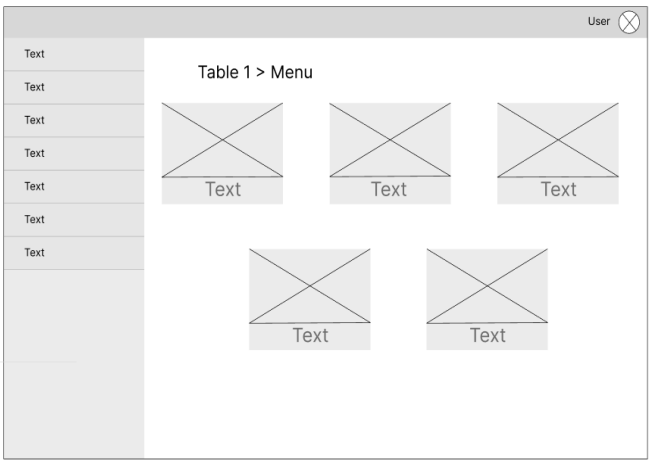
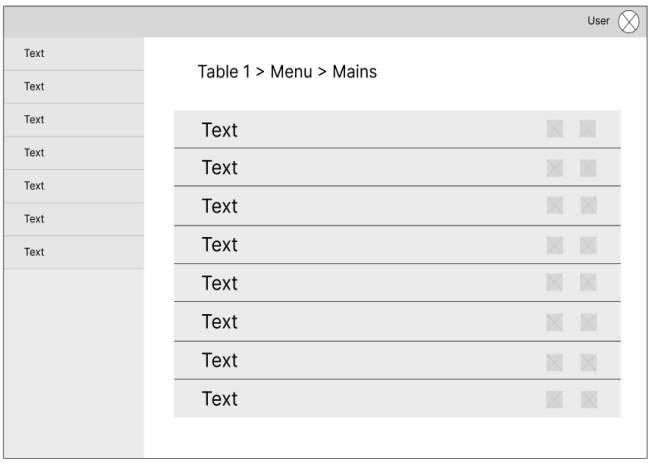


Table Details - This page allows the user to edit the details of the table in order to create live updates for other workers. This is so that the restaurant operations flow seamlessly. The key features are the options for updating the table as well as what will be the bill tab that keeps live tallies of what the table’s total bill will amount to.

Add to order - Menu



Add to order - Menu 2

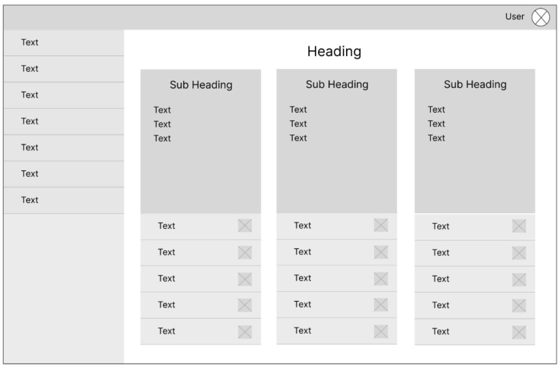


Add to order - This is one of the options from the Table Details page that allows the wait staff to add to the bill when a customer orders food. The key feature is that this takes the user to the wait staff’s version of the menu giving options for which meal course the food is in. When selecting an option, this takes the user to the menu of that specific course on Add To Order page 2. Here the waiter has a drop down option to view the ingredients list for each meal, in the case of allergies/questions from customers. This is a key feature since the customers version of the menu does not include this.

Table Status

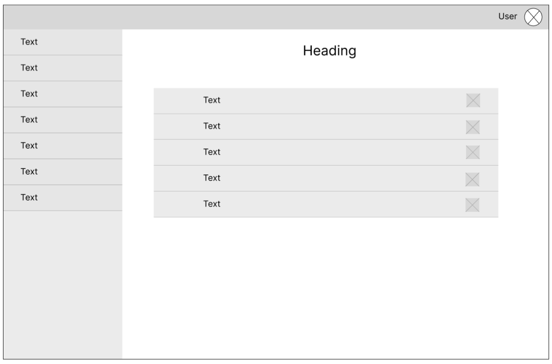
Table Status - This is another option from the Table Details page that allows the various employees to check the table status on a checklist. Waitsaff, Bus Staff, and Hostesses will all be able to update the status as the options are included in each of their job scopes respectively. The key feature is the check list option to make for quick, live updates to reinforce a seamless experience for customers.

Orders



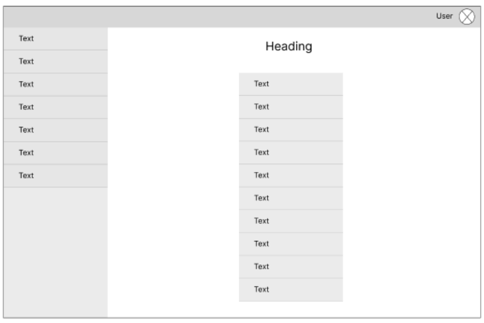
Orders - The orders page can be accessed from the navigation bar, and allows the kitchen and waitstaff to see the status of the customer's food orders. The key feature is the checklist that allows for real-time updates on food preparation and status so that customers do not need to wait too long for their orders, and waiters are kept in the know. It is organised by table so that the kitchen knows which meals need to be ready around the same time.

Notifications

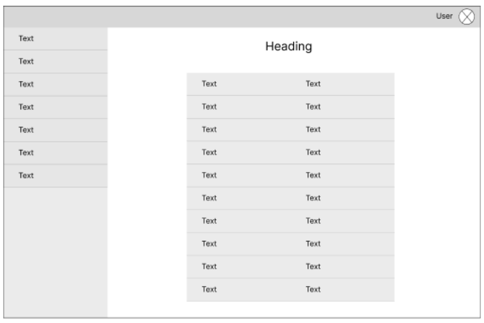


Notifications - The notifications page can be accessed from the hyperlink buttons at the top of the screen, and allows the staff to see the status of tables and orders through notifications. The key feature on this page is that notifications do not require extra action. They are automated by the system when the statuses are updated by employees and can simply be viewed. The staff can click the "x" on the side to clear the notification so that they can easily keep track of their tasks.

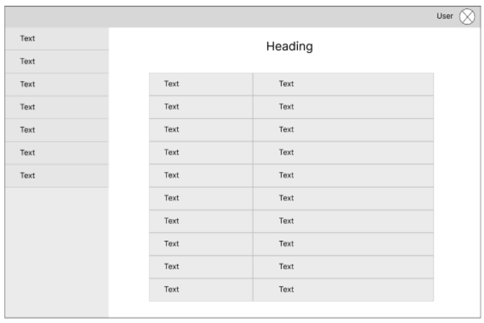
Sales 1



Sales 2



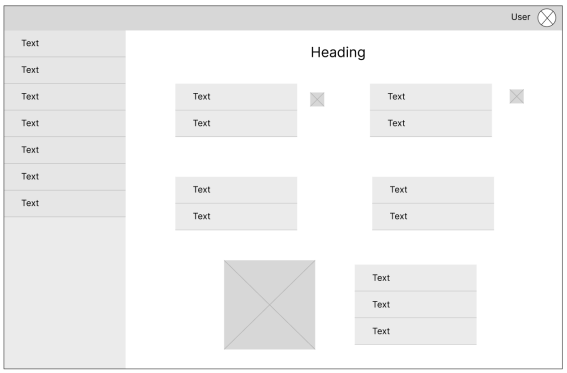
Sales 3



Sales - The Sales page can be accessed from the navigation bar and owners/managers will use this to keep track of restaurant sales. The key feature of this page is the list of each

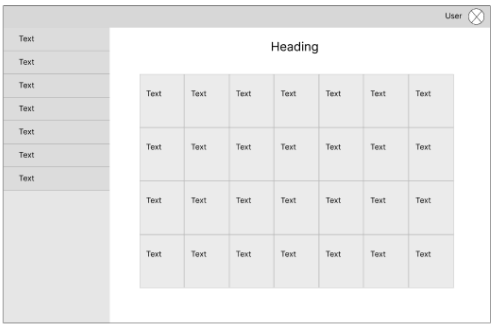
month of the year. When the user clicks on a list option, it redirects to the ‘Sales 2’ page. This shows the dates of the month selected and the total sales amount in the corresponding list. If the user clicks on a specific date it redirects to the ‘Sales 3’ page. This page will show the time a bill was paid and how much the bill costs to tally up the totals for that day on ‘Sales 2’ and therefore the month on ‘Sales 1’. The key feature is the list options being hyperlinks to specific pages.

Analytics

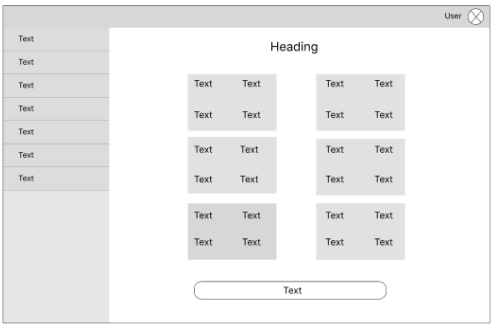


Analytics - The Analytics page can be accessed from the navigation bar and will be used by owners/managers to track trends and sales. The key features on this page are the option to select dates and view the trends for those dates.

Hostess View Reservations Calender



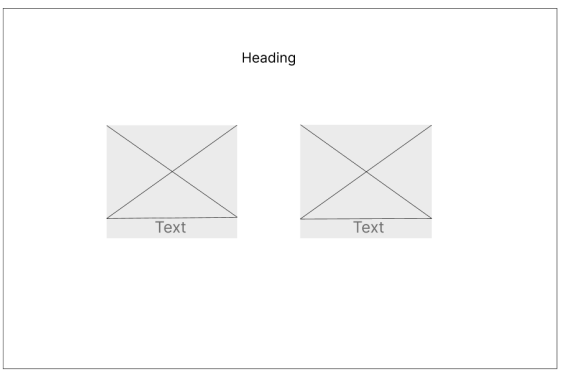
Hostess View Reservations



Hostess Make Reservations

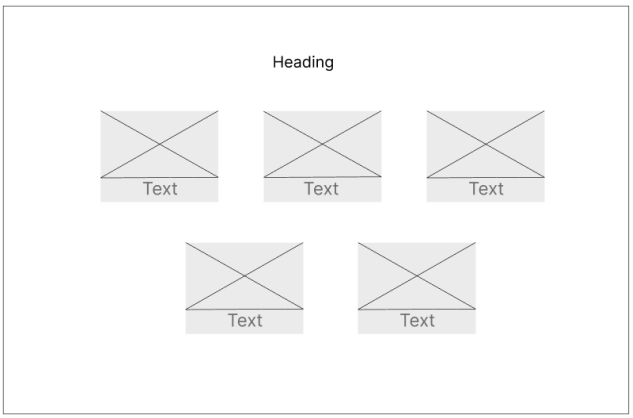
Reservations (Hostess View) - The Reservations page is accessible through the navigation bar and will be used by hostesses to view reservations. The key feature is the interactive calendar. When the user clicks on a date in the calendar it redirects to the Reservations View page. On this page the hostess can view the reservations for that day on cards. The key feature here is the “Add” button at the bottom, and when clicked it will redirect the hostess to the Make Reservations page. Here, the key feature is adding the information of a booking (from a customer phone call) to the relevant fields. Another key feature is the floor plan at the bottom of the page. The Hostess selects the table from the floorplan where this booking will take place. When added, this will update on all other reservations pages.

Customers View 1

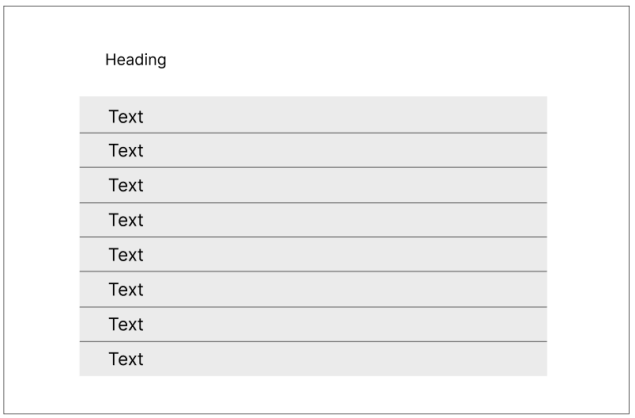


Customers View 1- When customers access our system online, they do not have access to the restaurant's internal system. They can only view two options: the menu and the reservations page. Therefore, the main features of this page include a button linking to the menu and another button which directs to the reservations page.

Customers View Menu Options

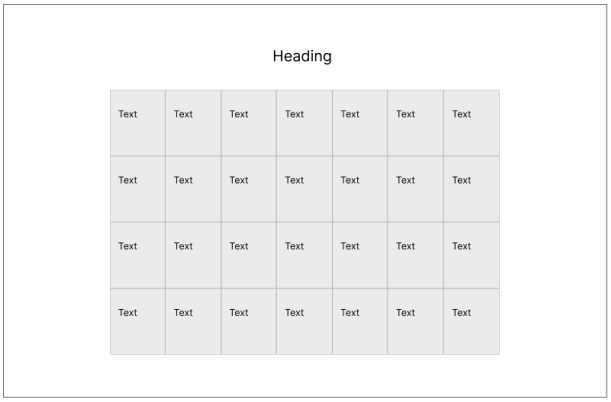


Customers View Menu Items



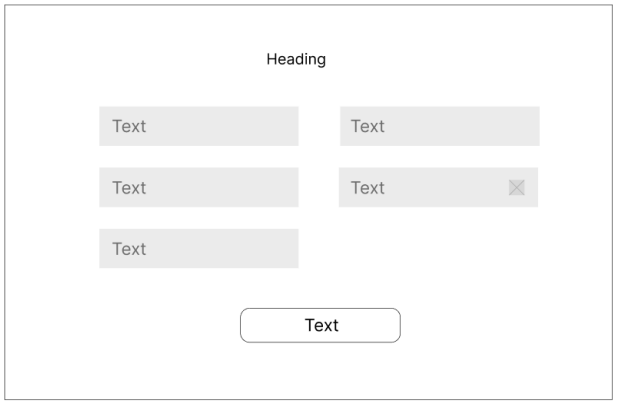
Customers View Menu Options- When a customer wants to explore the restaurant's menu, including all available meals and drinks, they can select the 'Menu' button. This will redirect them to a page displaying different menu categories, such as starters, mains, desserts, sides, and drinks. Selecting a specific category will further redirect the customers to view the available options within that section. A key feature of this page is its table format, which presents the data in rows and columns, making it easy to view.

Customers Reservations Calender



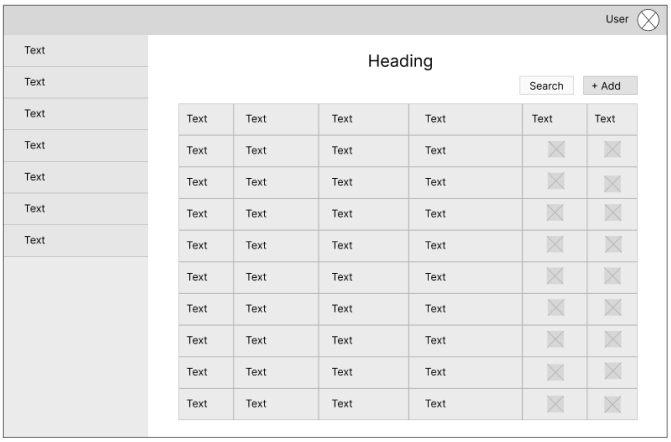
Reservations Calendar- When customers select the reservation button, the system automatically redirects them to a page displaying a calendar. They must choose their preferred date before proceeding with their reservation. A key feature of this page is the use of an interactive calendar, enabling customers to book months in advance and easily find their desired date.

Customers Create Reservations



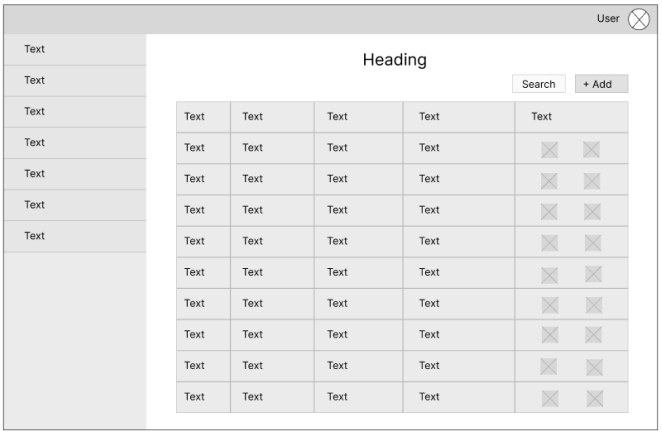
Customers Create Reservations- After selecting their desired date, customers are directed to the reservation page, where they can enter the required details about themselves and their booking. A key feature of this page is that it enables customers to make a reservation online without needing to call the restaurant, making the process quick and efficient for all. Additionally, customers can choose their seating preference, opting to sit either indoors or outdoors. Once all necessary information has been entered, they can complete the booking by clicking the "Create" button.

Food inventory



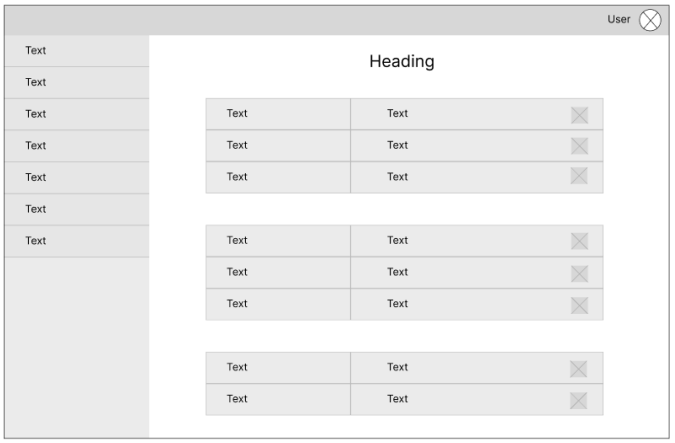
Food Inventory- The food inventory page allows employees to monitor the daily availability of specific food items in the restaurant. At the end of each day, the kitchen staff are responsible for counting stock, tracking ingredient usage, and updating the system. Additionally, when new food items arrive, employees can quickly add them to the inventory list. Key features of this page include the search and add buttons, ensuring smooth and efficient stock management.

Non-food inventory



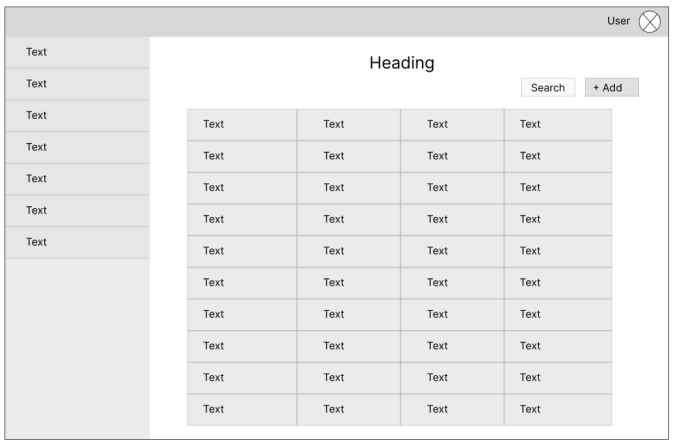
Non-Food Inventory- The non-food inventory page functions similarly to the food inventory page, as both track stock levels and allow employees to update and add inventory. However, this page specifically manages non food items, such as cleaning products and other essential supplies.

Staff Shifts



Staff Shifts- This wireframe represents the layout of the staff shift page within our system. On this page, staff, managers, and owners can view the daily work schedule and see which employees are on duty. A key feature of this page is the use of tables for each day of the week, ensuring clarity, ease of use, and efficient analysis.

Users List



Users Page - Managers and owners can access this through the navigation bar. This controls the staff's user details who will need to login to the system. This improves the security of the system by only allowing managers and staff to view account details. Staff can add, search and edit these user accounts.

6. Conclusion
    a. Within this assignment we have created a Restaurant Management System that streamlines the user experience while working at a restaurant. The daily operations of the restaurant staff can now be tracked and monitored digitally. In having the system automate processes, the restaurant can store data efficiently. The key functionalities of the system include interactive table management, live order and table tracking, streamlined inventory management, staff scheduling and reservation handling. The left-aligned navigation system allows for intuitive access to the various pages. These include Menu (which holds the ingredient details for each course), Sales, Analytics, Orders, Reservations, Staff Shifts, and Food and Non-Food Inventory. The system allows for automated notifications to staff after updates on table and order statuses to allow for real time updates and task management. By making use of both intranet and internet systems, our Restaurant Management System allows for customers to access public facing information through the internet without the need of authentication. The intranet creates a security boundary as workers need to be authorised through a login page in order to access the business operations. Furthermore, implementing real time updates, automated billing, and interactive seating, this system promotes efficiency across the restaurant operations and accuracy in data handling. This leads to a seamless workflow. The managers and owners can manage user access to the system via the Users page.

    b. The design process brought up issues that we had overlooked in our original plan for this Restaurant Management System.The first challenge was realising that the access card authorisation would create a technical issue, and that we needed to create a new form of authorisation for employees versus customers. From there we implemented the use of intranet and internet systems, and a login page for employees in order to promote a secure system. The next challenge we faced was managing the cognitive load of our pages. We did not want to overwhelm users with too much information, but we still wanted to ensure good usability of the system. Balancing the number of images on a page was a step we took towards fixing this issue. Performance optimization was important to us for this Restaurant Management System. We ensured that our system would run smoothly by separating content onto their individual pages, rather than overwhelming single pages with content. We also wanted to ensure that the system was still aligned with the needs of the users. For example, we separated the Sales and Analytics pages for streamlined data storage which was one of the needs for this system. Navigating information architecture was more complex, and it took time to come to the best decision for each employee process within the restaurant system. Understanding that each section needs its own personalised functionalities, while still maintaining a cohesive and unified system was a challenge. We decided to implement similar elements throughout the system while maintaining personalisation for each page. In our brainstorming, we forgot to add notifications as an option for staff. This is a critical part of the system that allows for real time updates and seamless workflow. This was then added as simple automated messages to ensure usability. We also encountered the challenge of being able to effectively manage users. To counter this problem, we created a users page that will only be accessed by managers and owners. They can add, edit, and search for users and their details, in order to manage access to the system.