

MANAGEMENT CAFE

Smarter Dining Starts Here



GROUP 2



MUNIF




DANISH



DANIEL



RAFIQ



INTRODUCTION



Issues in UTM cafeteria operations

Long queues, inaccurate orders, and food wastage are common problems that affect daily operations.

Proposed solution: Cafeteria Management System

We suggest implementing a digital system to streamline operations and reduce errors.



Strategic step towards better campus dining

It represents a long-term investment to modernize and improve UTM's cafeteria services.

Chronic service delays

Chronic service delays happen in manual ordering system such as:

- Inefficient transactions: Manual ordering and cash payments create bottlenecks during pick hours, resulting in:
- Excessive queue time (particularly 12:00-2:00 PM)
- Frustrated customers abandoning meals

Outdated customer experience

Static menu displays failed to show:

- Real-time sold-out dishes leading to customer disappointment
- Daily specials resulting in missed sales opportunity
- Blind visits: Difficult to check cafeteria's status(closure/crowding) before arrival

Operational weakness

Manual order taking(written) can cause:

- Miscommunication between staff and customers
- Incorrect meals being prepared, resulting in food waste and rework

Data deficiency: Lack of automated tracking for:

- Most and least popular items on the menu
- Peak demand periods leading to poor staffing and food prep planning

GENERAL PROBLEMS





PROPOSED SOLUTIONS TO BE IMPLEMENTED



**Smart
ordering
system**

**Dynamic
menu
management**

**Automated
kitchen
workflow**

**Data driven
operation**



**Real-time
cafeteria
status**



**Smart
ordering
system**

IMPLEMENTATION



Online Pre-Orders

- Customers order meals via UTM's existing app or web portal
- Scheduled pickups to eliminate queues (example: "Ready by 12:15 PM")

Digital Queue Management

- Real-time updates on order status (example: "Preparing the meal")
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**Dynamic
menu
management**

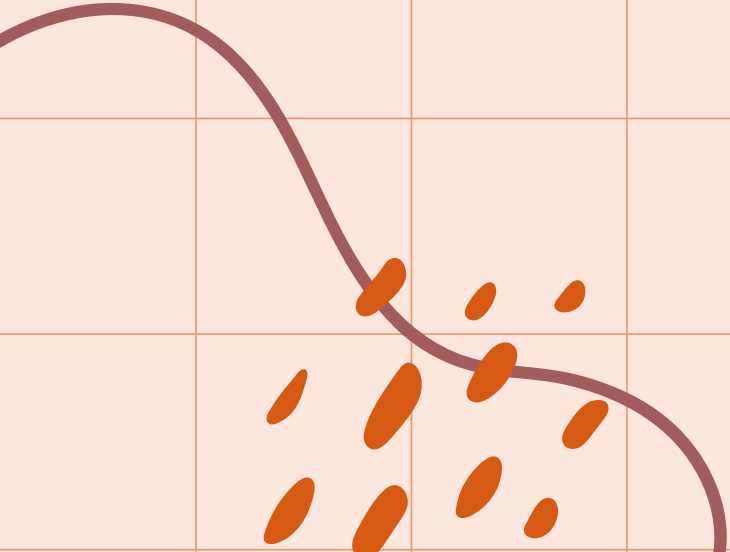
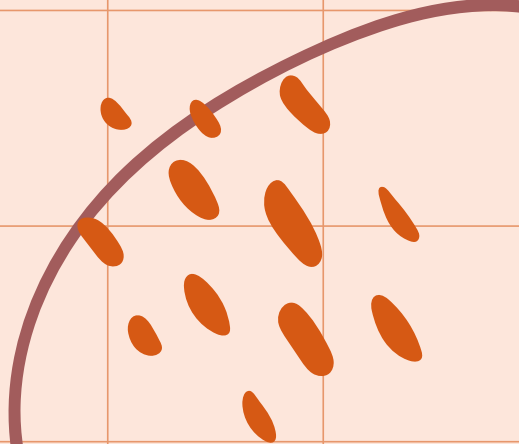
IMPLEMENTATION



Live menu updates

- Automatically marks sold-out items (synced with inventory)
- Highlights daily specials and promotions

Dietary filters

- Automatically marks sold-out items (synced with inventory)
 - Highlights daily specials and promotions
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**Automated
kitchen
workflow**

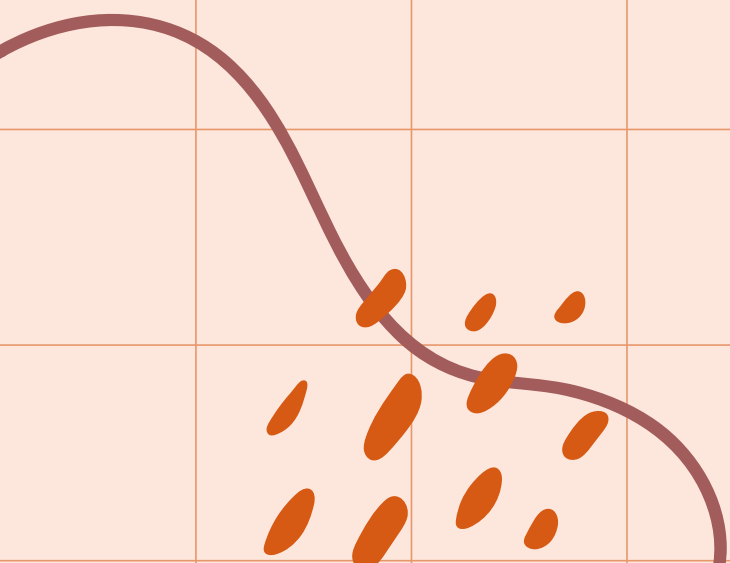
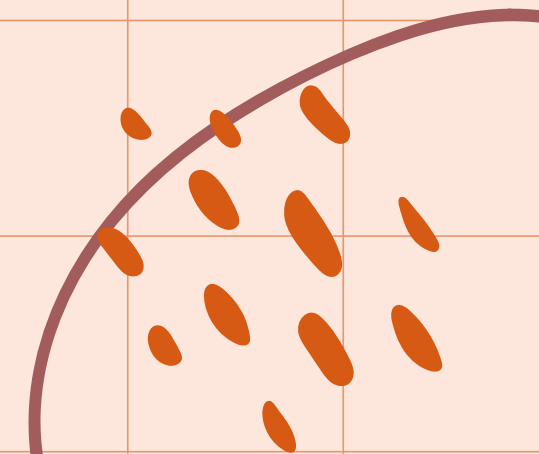
IMPLEMENTATION



Direct-to-kitchen orders

- Orders print/prepopulate in kitchen display system
- Reduces miscommunication from handwritten notes

Integrated payment

- Cashless via student ID/QR code (eliminates cashier delays)
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**Data-driven
operations**

IMPLEMENTATION



Sales analytics dashboard

- Tracks top-selling items by time/day
- Identifies underperforming dishes for menu optimization

Feedback system

- Instant ratings after pickup (example: "How was your meal?")
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**Real-time
cafeteria
status**

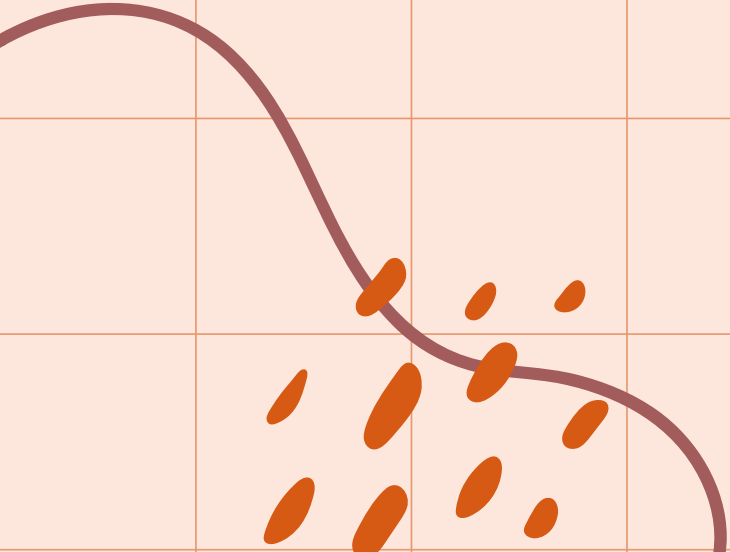
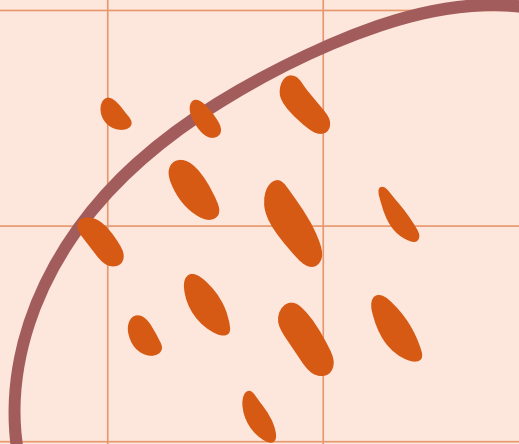
IMPLEMENTATION



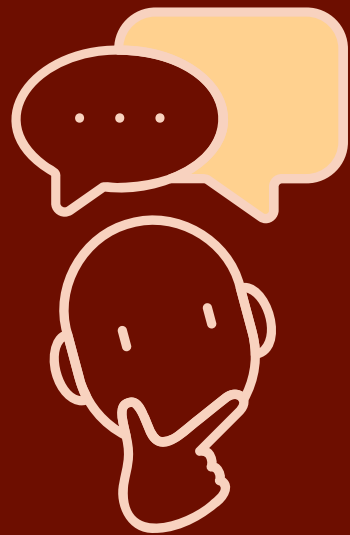
Live occupancy updates

- Shows crowd levels via colour codes (Green = less than 50% full)
- Table availability map for dine-in students

Push notifications

- Alerts for: "Peak hour warning (12:00 PM)", "Chicken Rice sold out", "Flash sale: 2PM to 3PM"
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METHODS USED TO GATHER INFORMATION



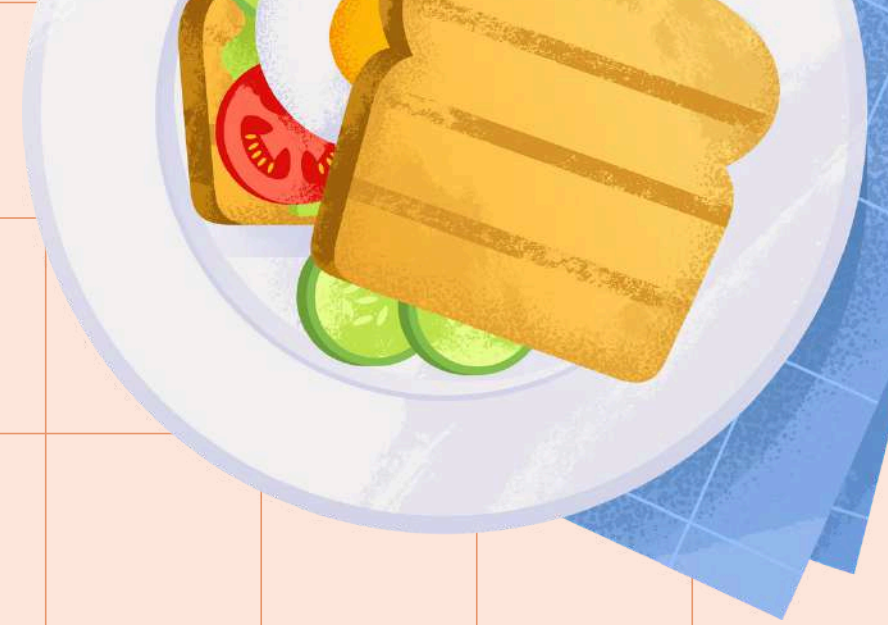
To understand user needs, we conducted a structured questionnaire-based survey at UTM. The survey involved students, staff, and cafeteria workers. We gathered both quantitative and qualitative data on cafeteria usage and challenges.

Common issues included long queues and delayed payments. We also explored user interest in digital features like pre-ordering, cashless payments, and real-time menus. The feedback collected guided the design of a user-focused Cafeteria Management System.

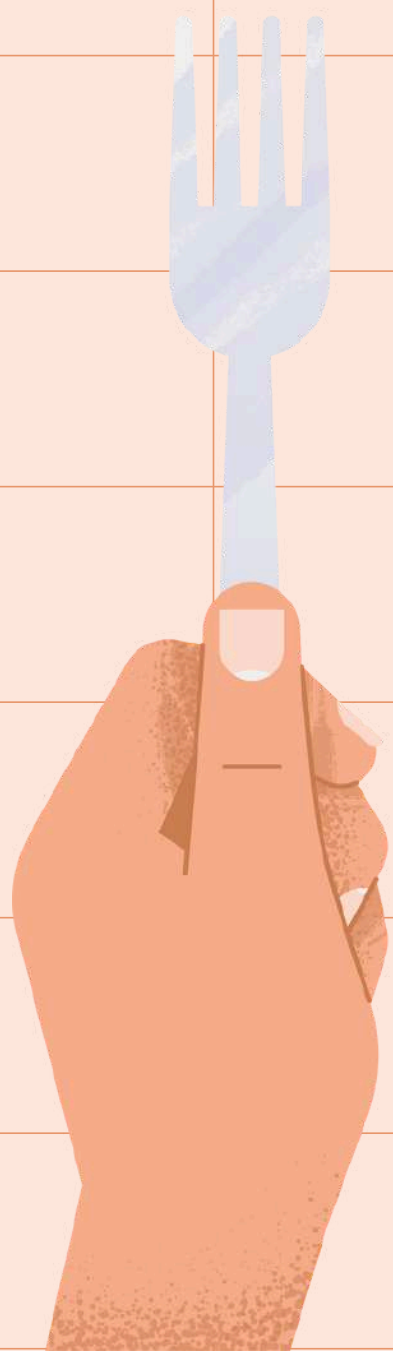
QUESTIONNAIRE

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LOGICAL DFD (AS-IS) SYSTEM



CONTEXT DIAGRAM

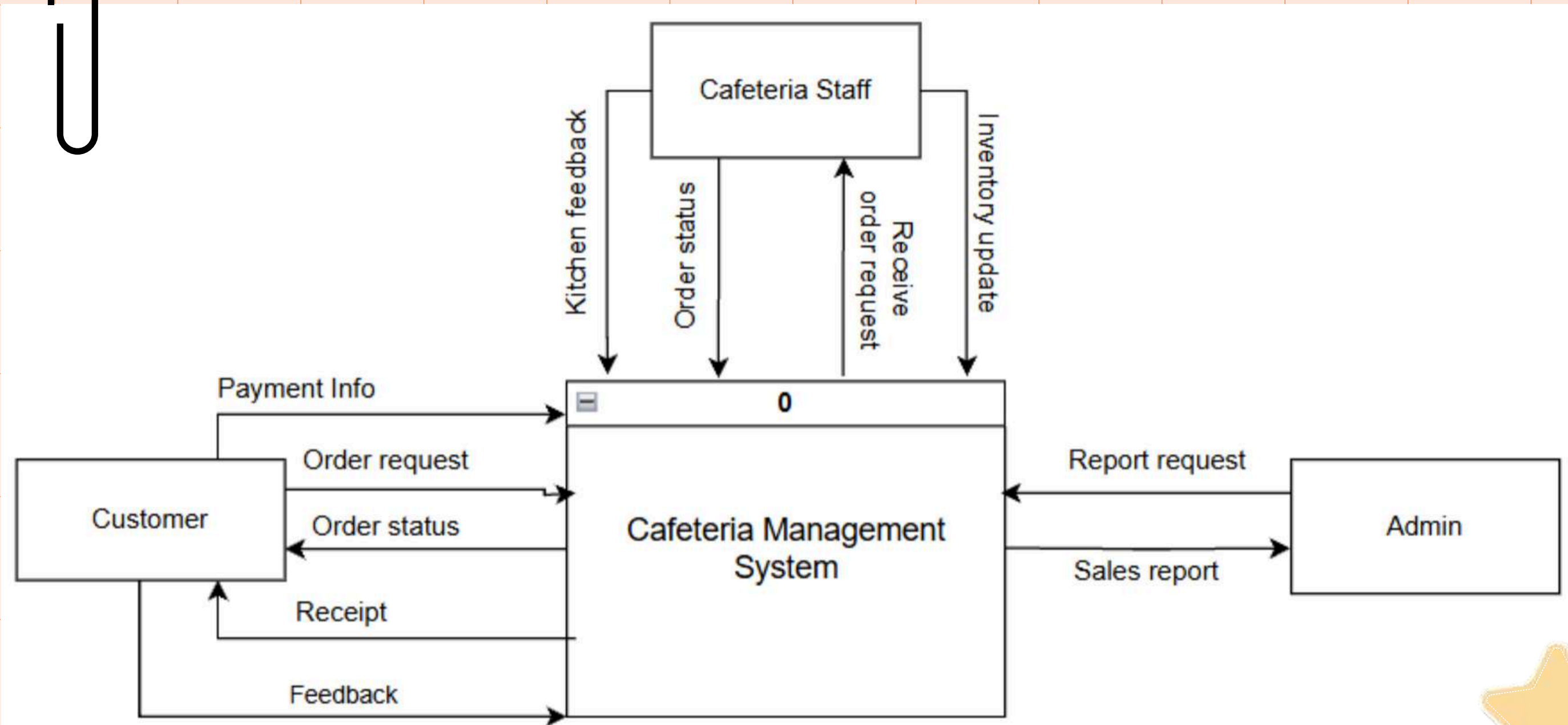
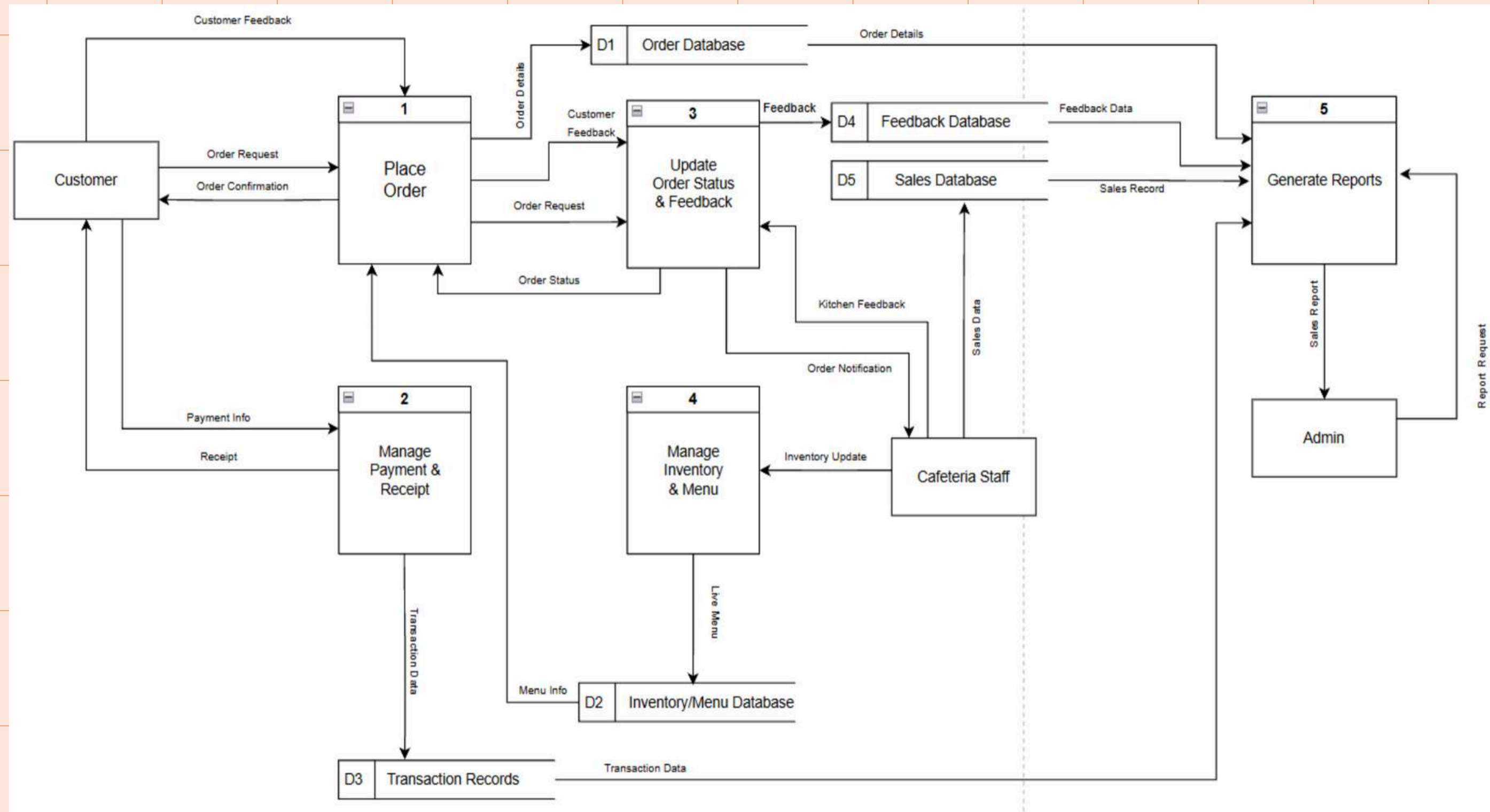
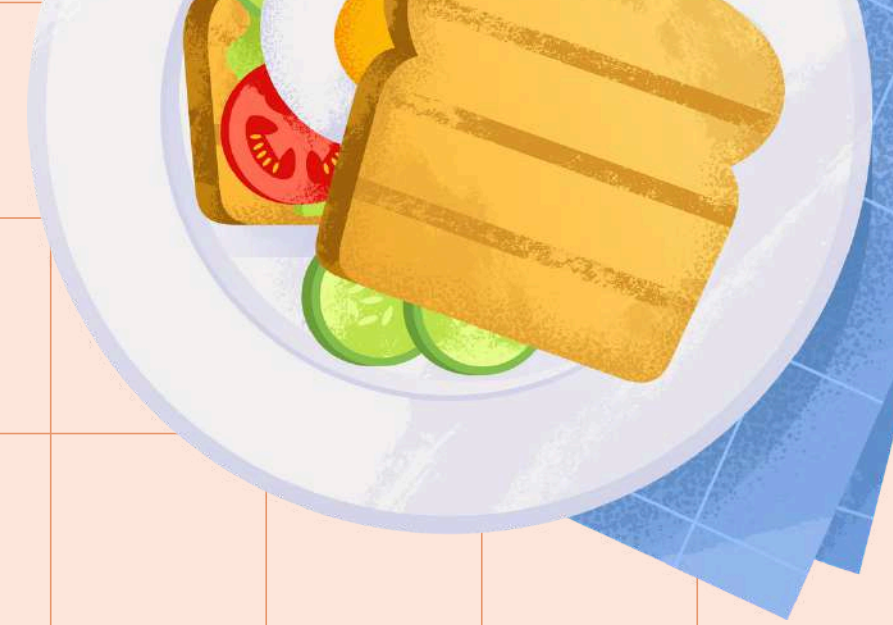


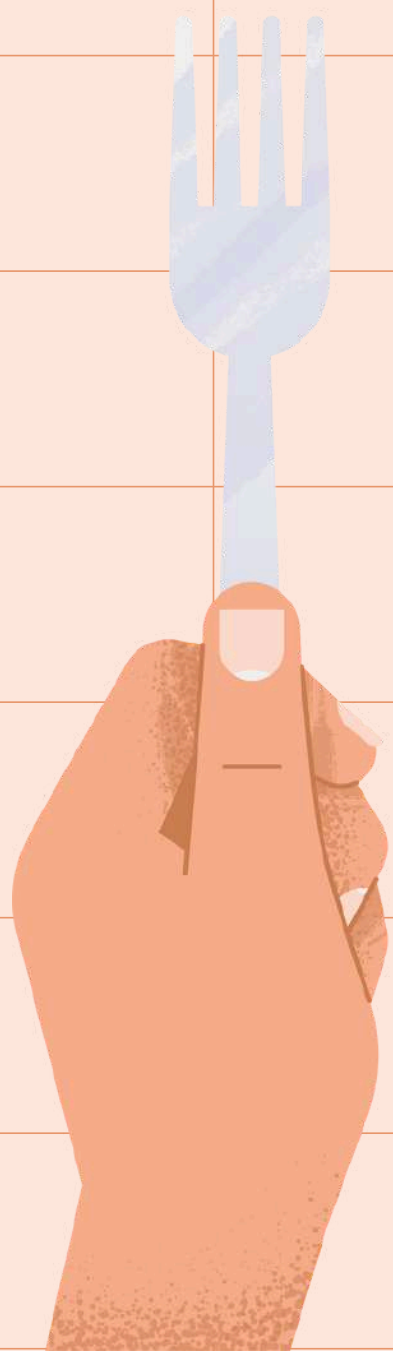
DIAGRAM 0



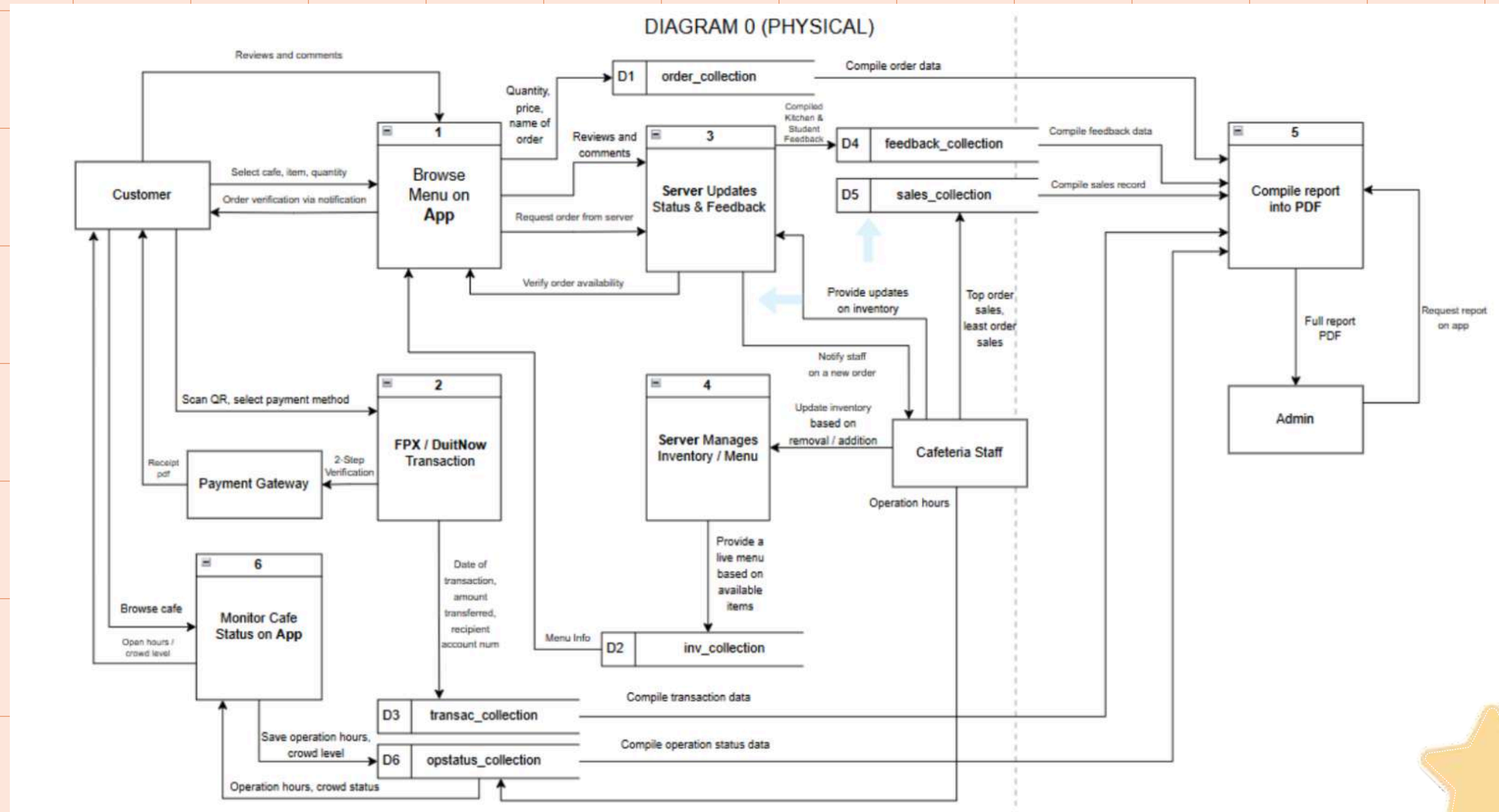
Link: [SAD-Project-DFD-Page-2.drawio \(1\).pdf](#)



SYSTEM ANALYSIS AND SPECIFICATION

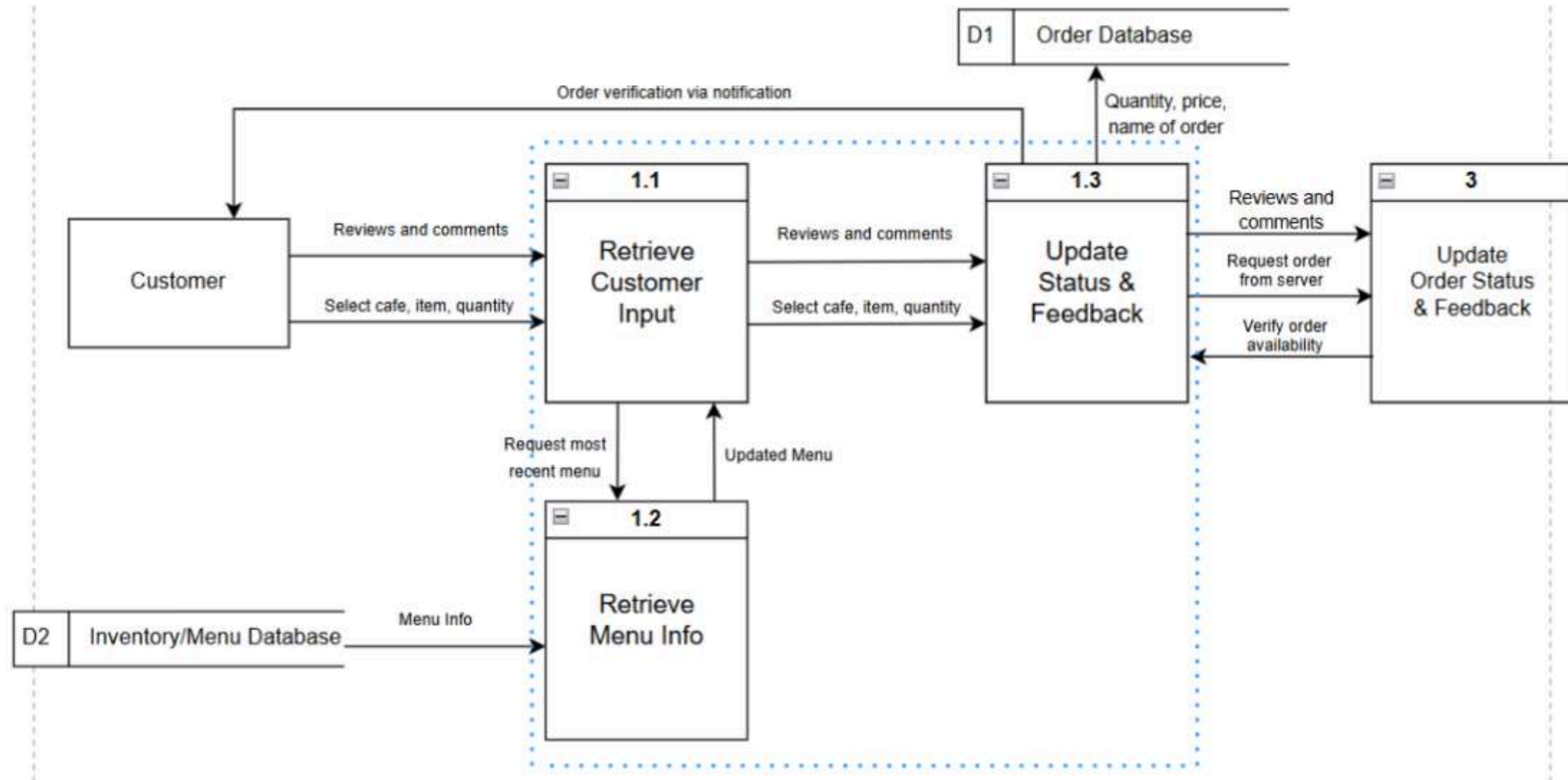


LOGICAL DFD (TO-BE)



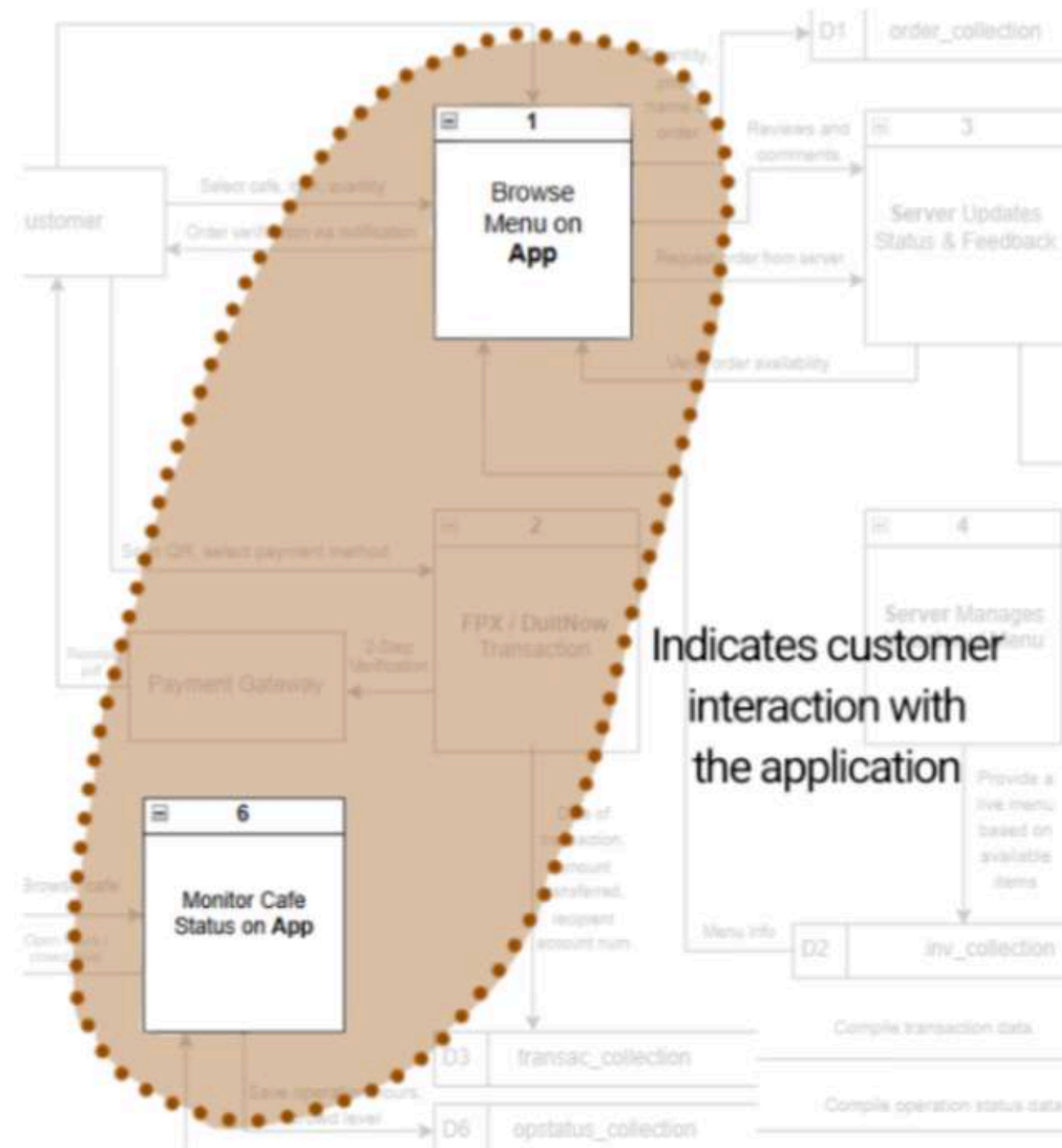
CHILD DIAGRAM

- Child Diagram (Process 1)

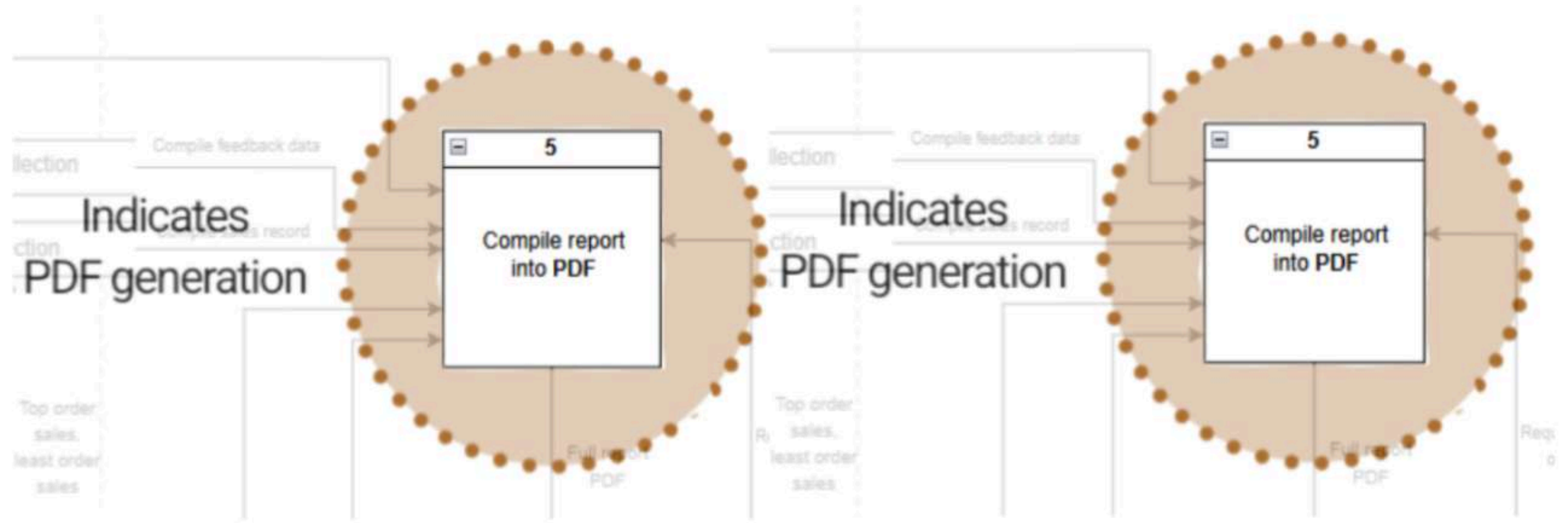


PARTITIONING

- Partitioning (DIAGRAM 0)

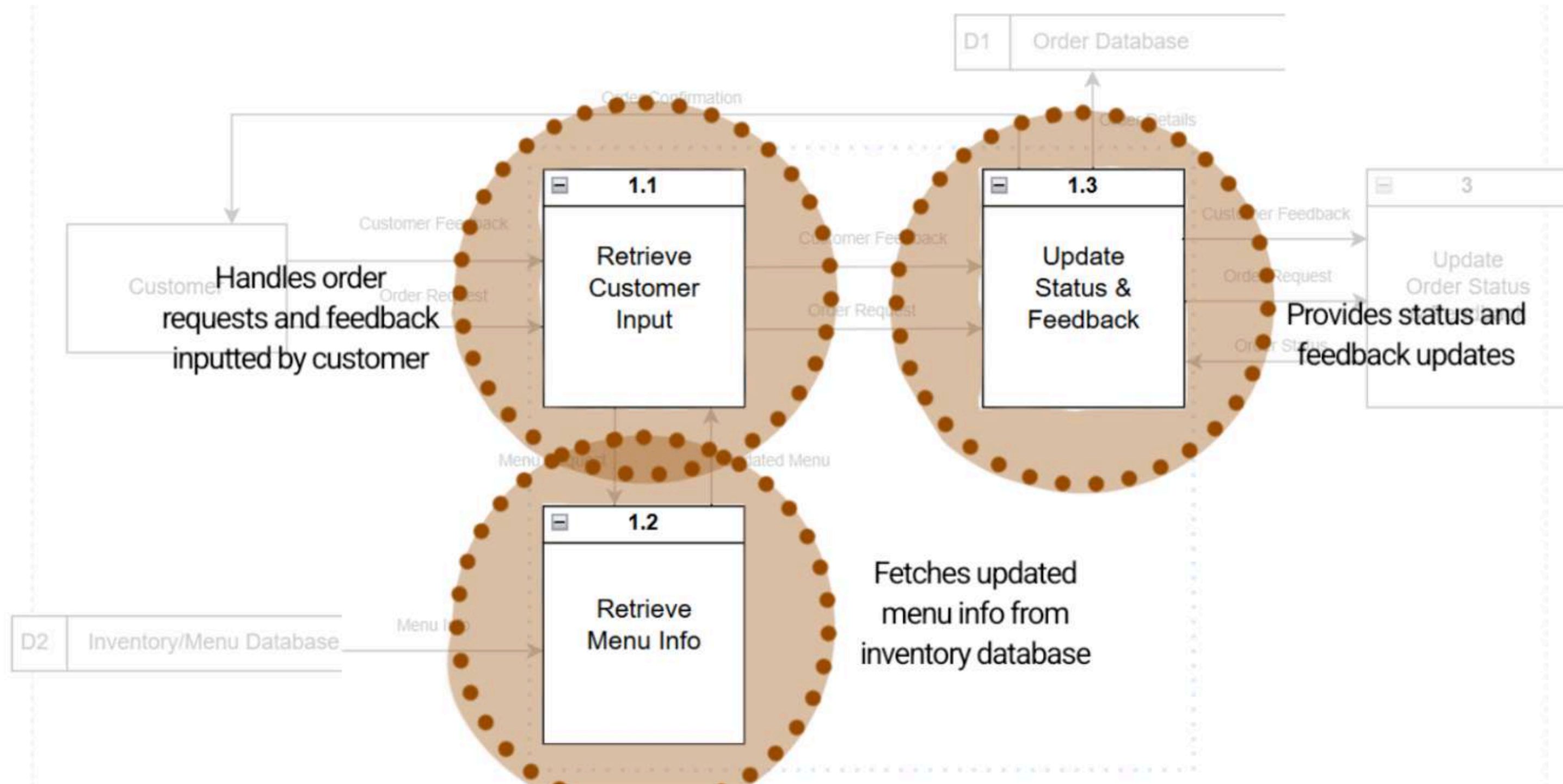


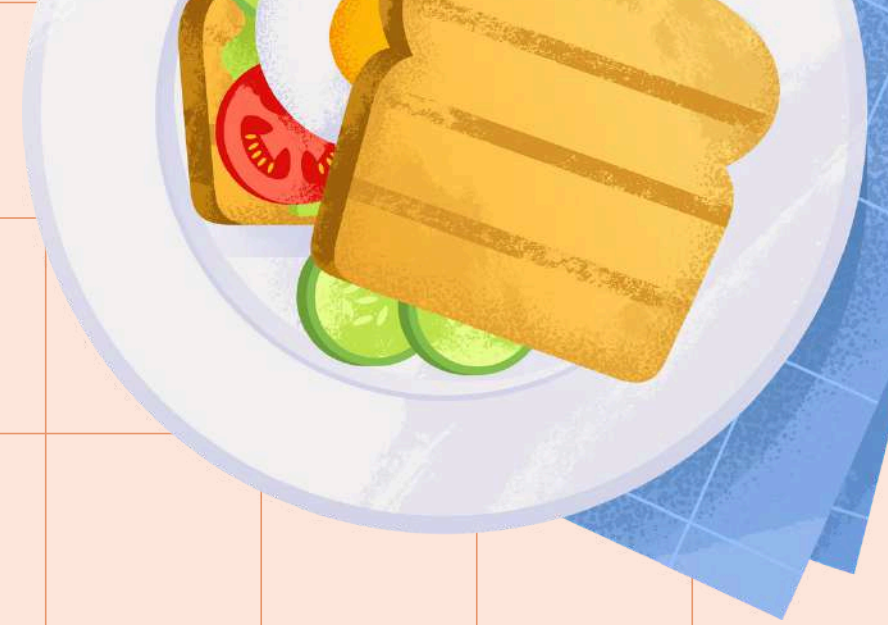
PARTITIONING



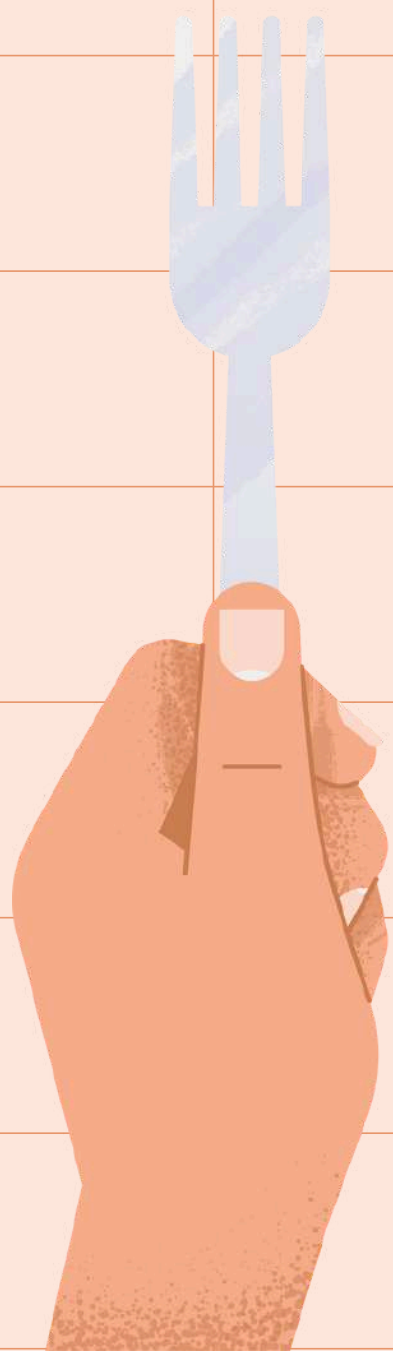
PARTITIONING

- Partitioning (CHILD DIAGRAM PROCESS 1)





PHYSICAL SYSTEM DESIGN



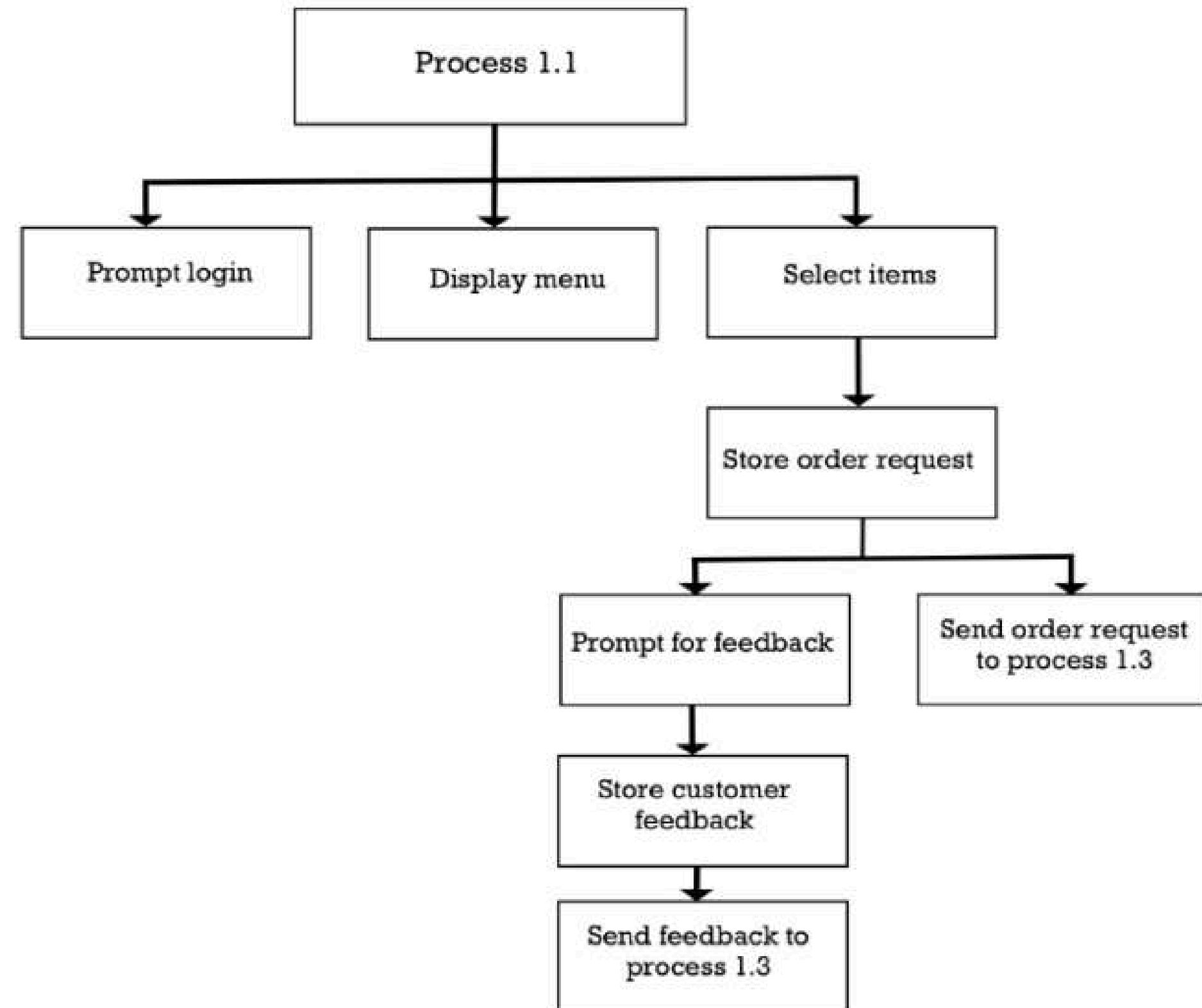
CRUD MATRIX

Activity	Customer	Admin	Cafeteria Staff
Order	C, R, U, D	R	R, U, D
Inventory/Menu	R	R	R, U, D
Transaction Record	R	R	C
Feedback	C, R, U, D	R	R
Sales Record		R	C, R, U

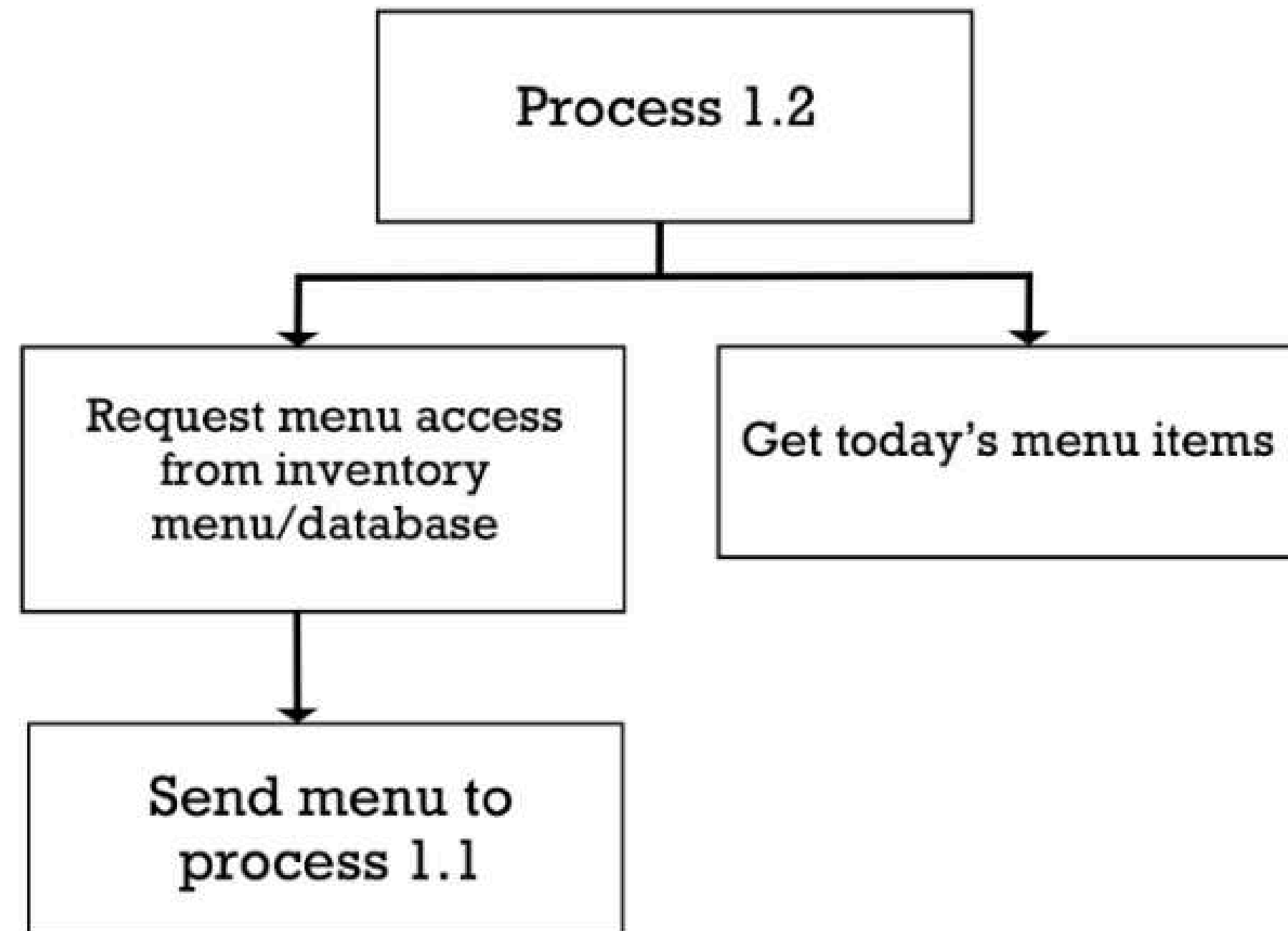
EVENT RESPONSE TABLE

Event	Source	Trigger	Activity	Response	Destination
Customer Places Order	Customer	Customer submits order details	Sends the order details towards the cafeteria staff 	Payment Details	Cafeteria Staff
Customer Checks Operation Hours	Customer	Click on "Check Operation Hours" button	Provides the details of the live operation hours of the cafeteria/restaurant	Restaurant Main Page	Customer
Customer Provides Feedback	Customer	Customer provides feedback	Sends feedback messages onto the system.	Restaurant Main Page	Cafeteria Staff
Admin Requests Report	Admin	Click on "Generate Report" button	Provides details for live inventory and record sales for the cafeteria	Full report	Admin
Cafeteria Staff Updates Inventory	Cafeteria Staff	Cafeteria Staff updates the live inventories	Updates the live inventory for the cafeteria	Inventory Page	Admin
Cafeteria Staff Records Sales	Cafeteria Staff	Stores Record Sales	Saves record sales for the day onto the system	Sales Record Page	Admin
Kitchen Status Update	Cafeteria Staff	Cafeteria Staff updates the progress	Updates the kitchen status and provides an estimated time for the customer	Kitchen Status Page	Customer

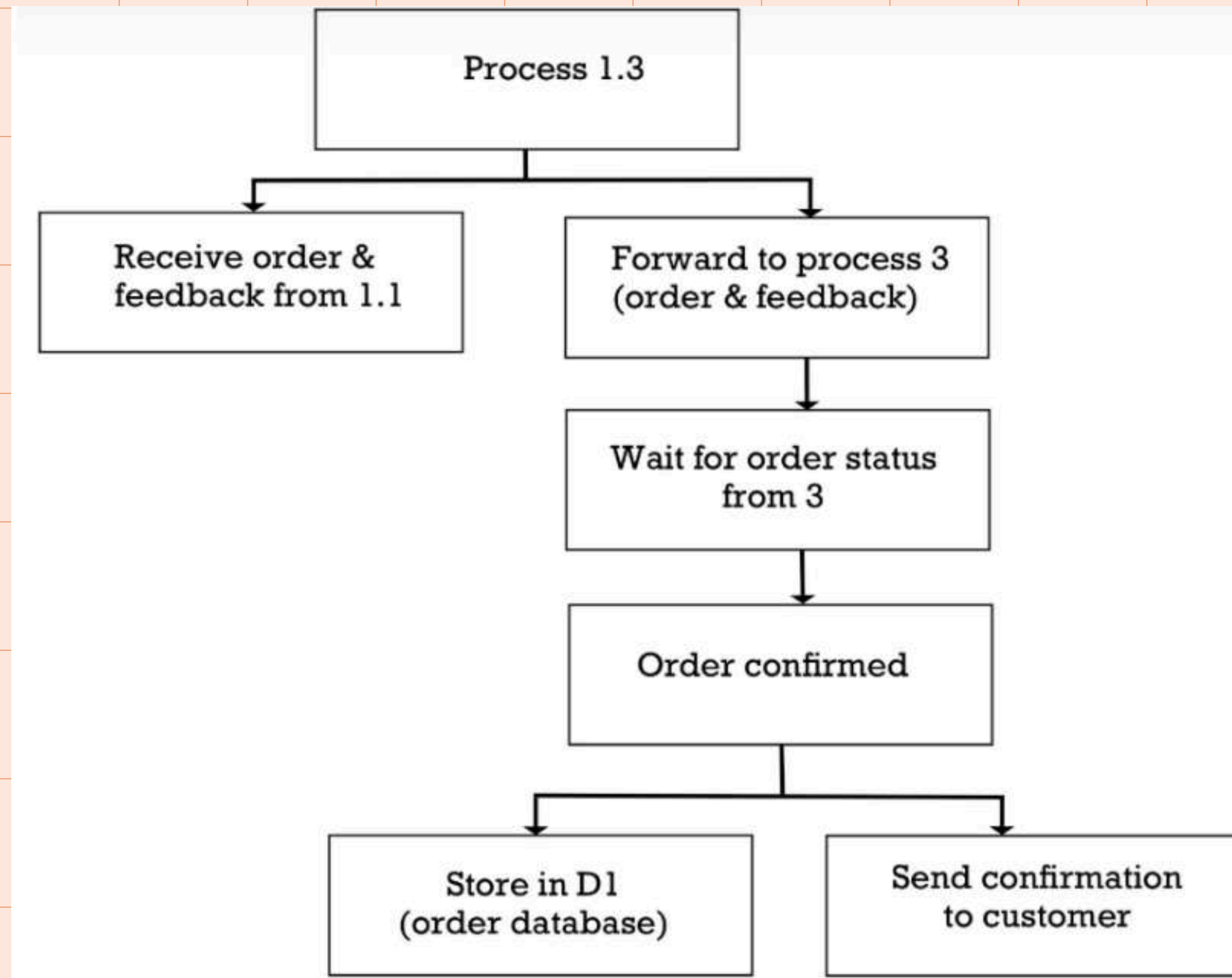
STRUCTURE CHART

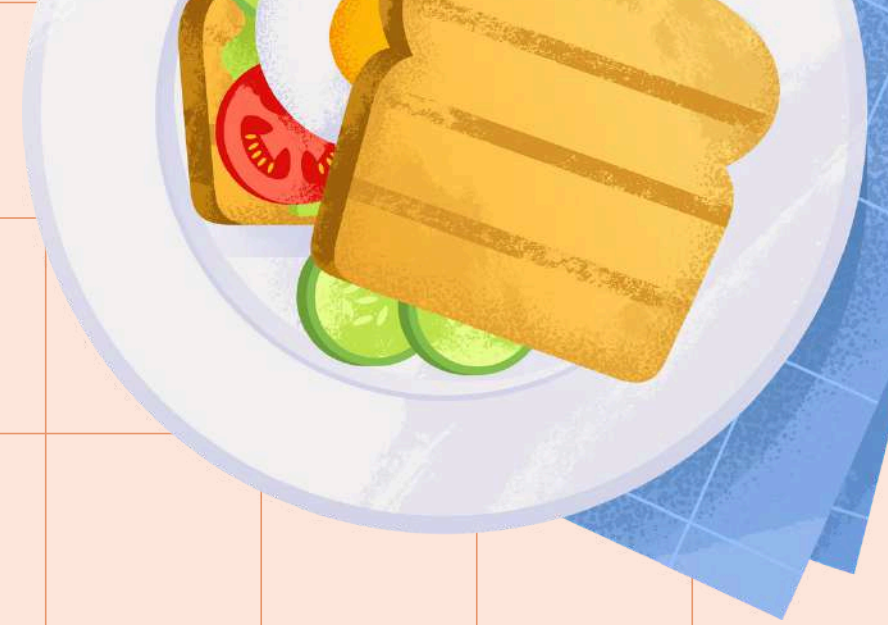


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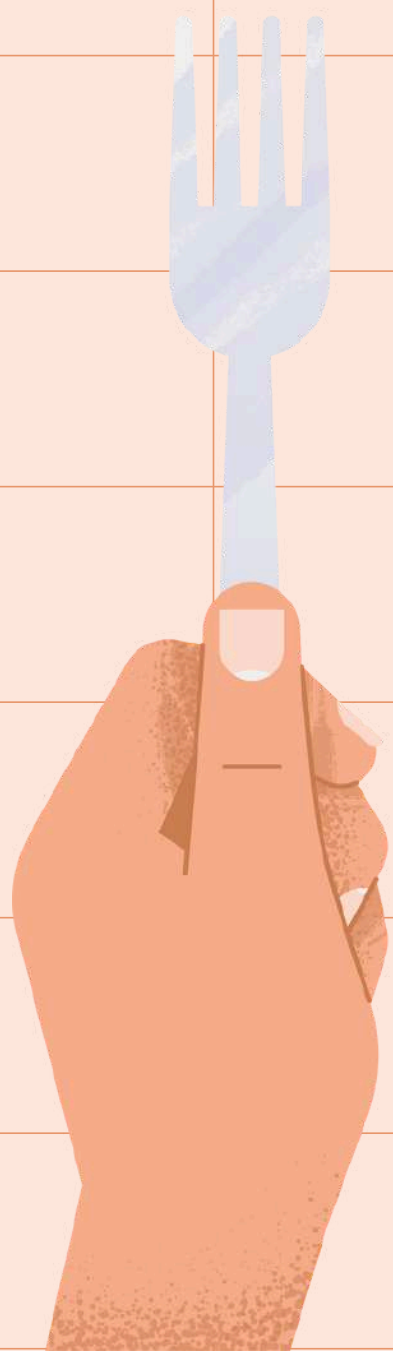


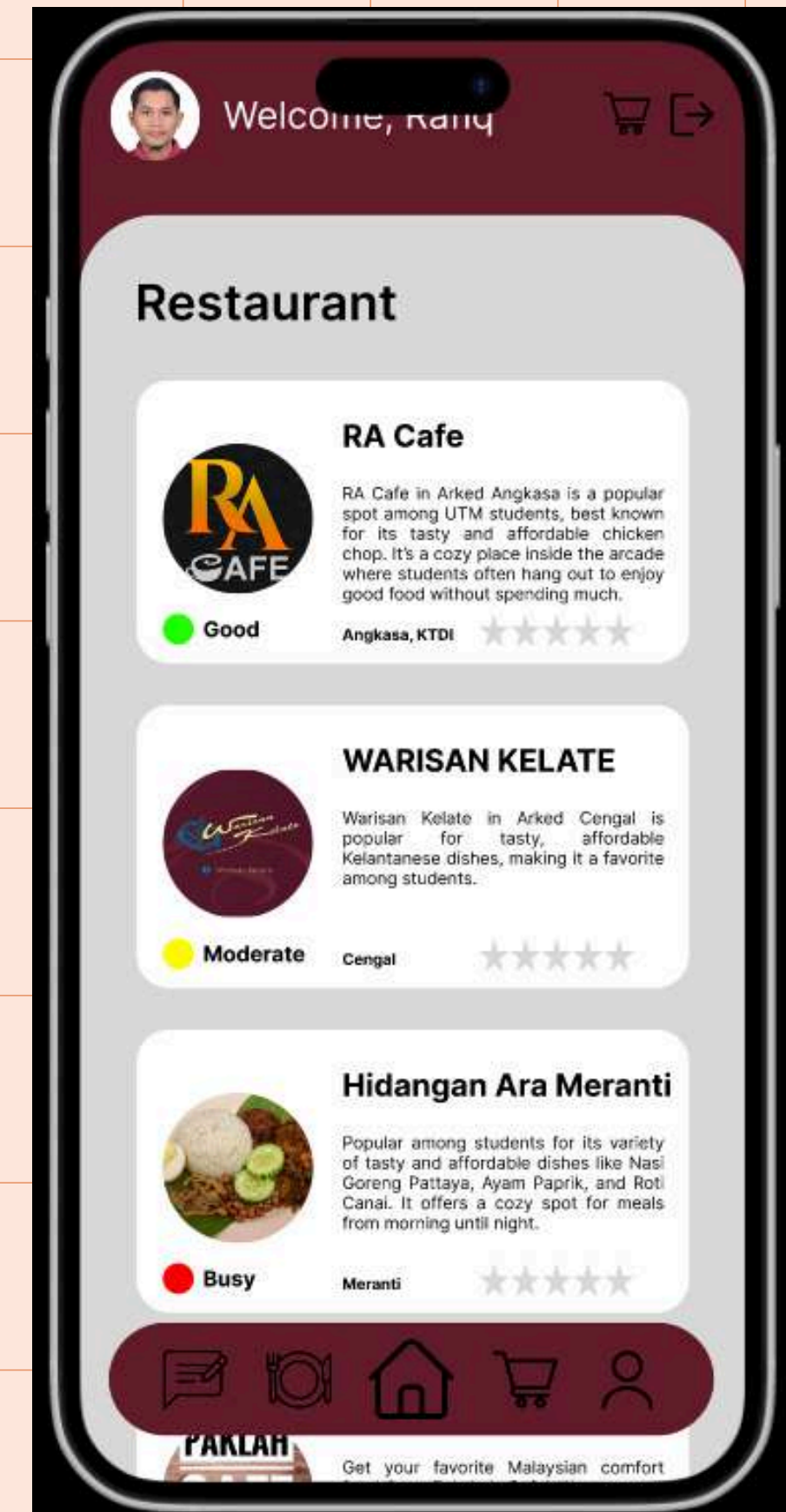
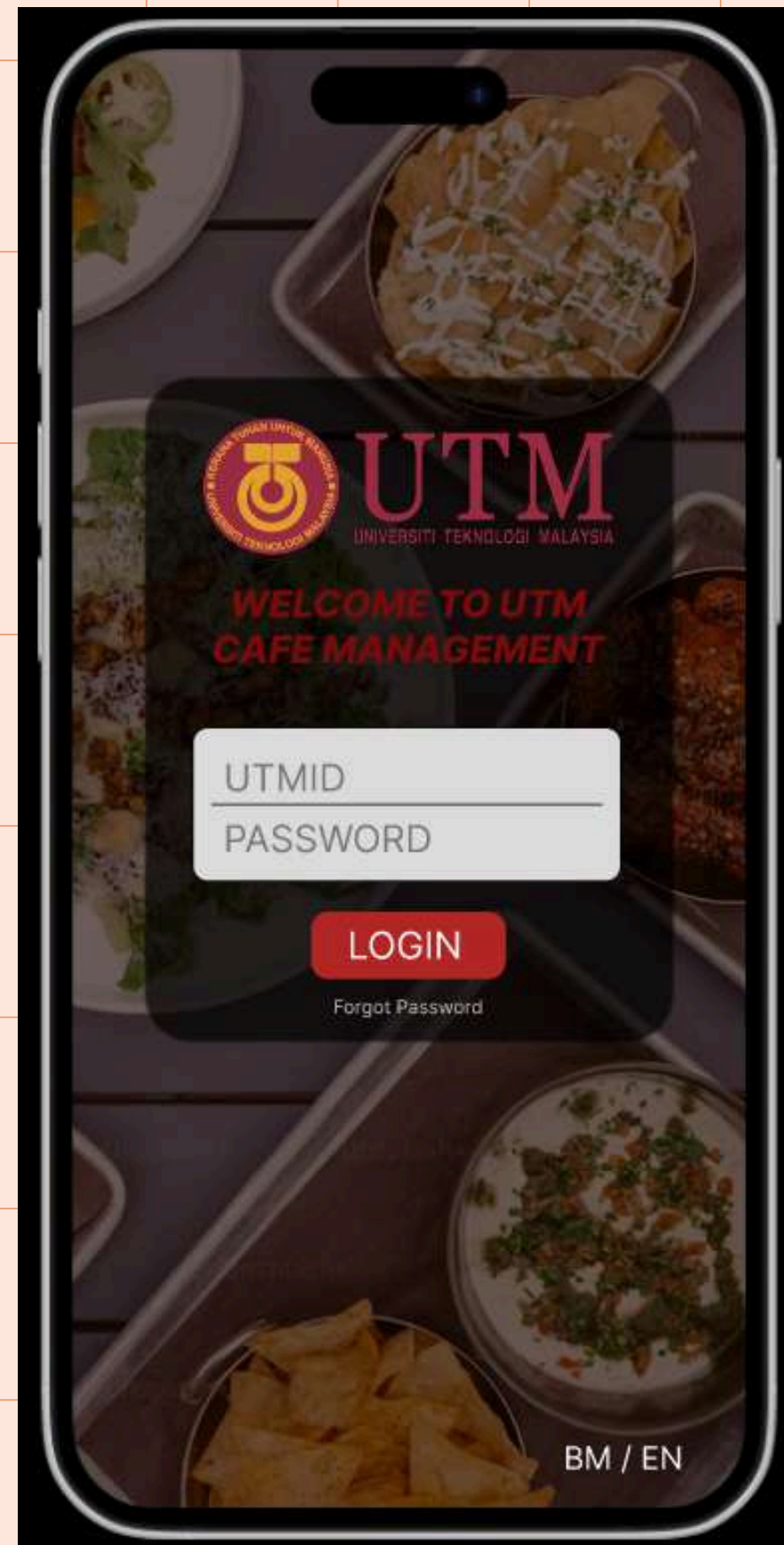
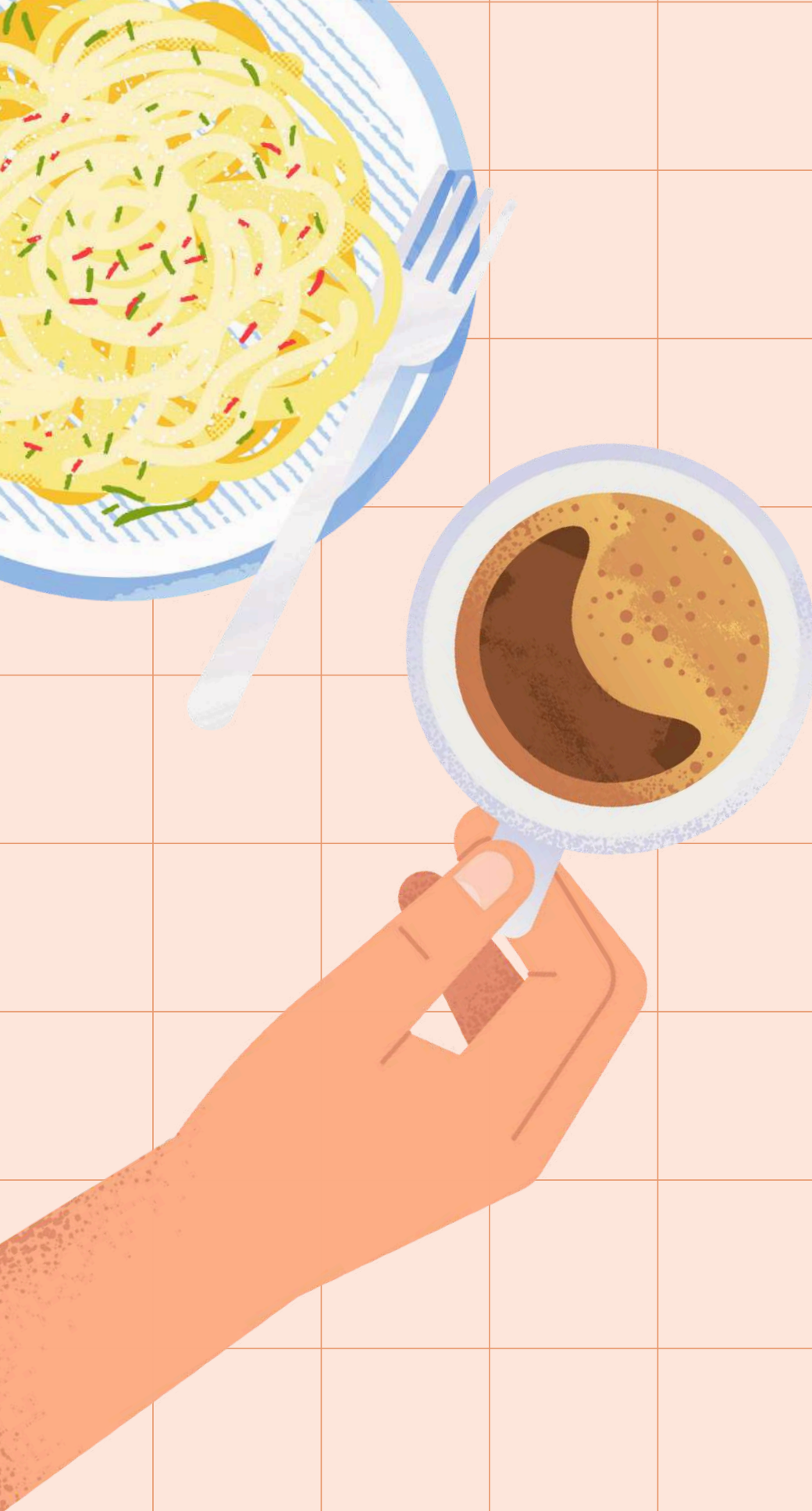
STRUCTURE CHART



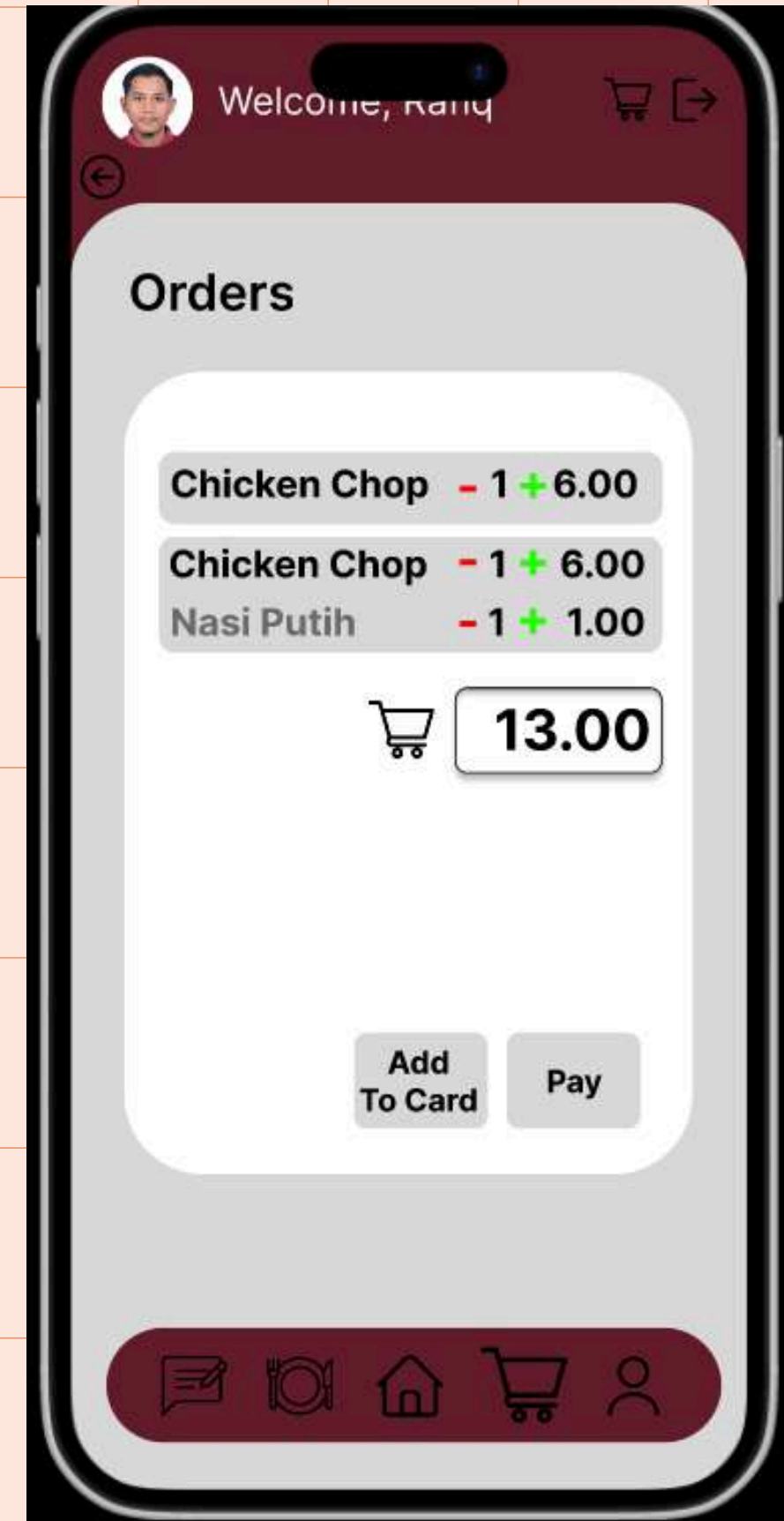
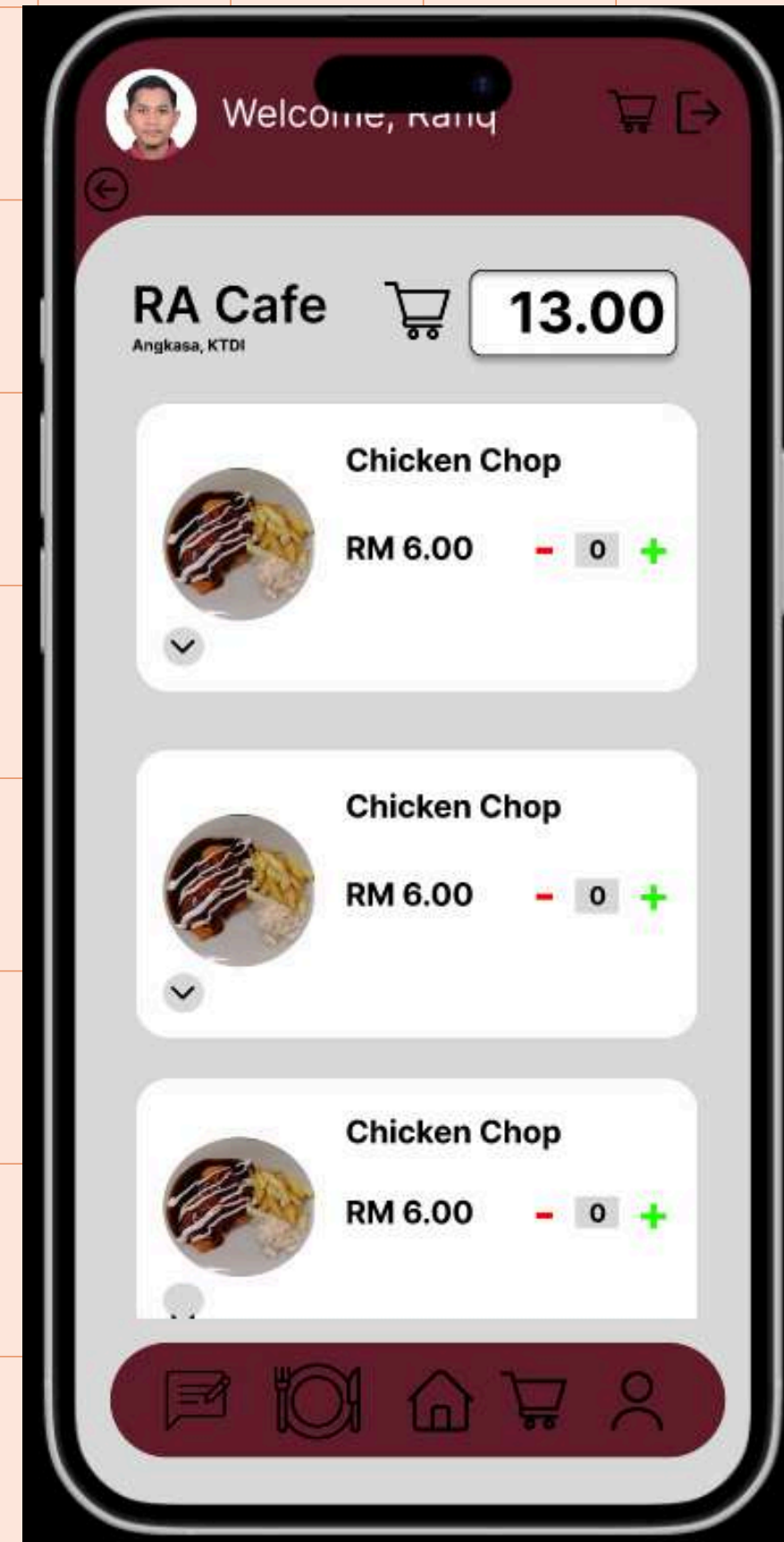
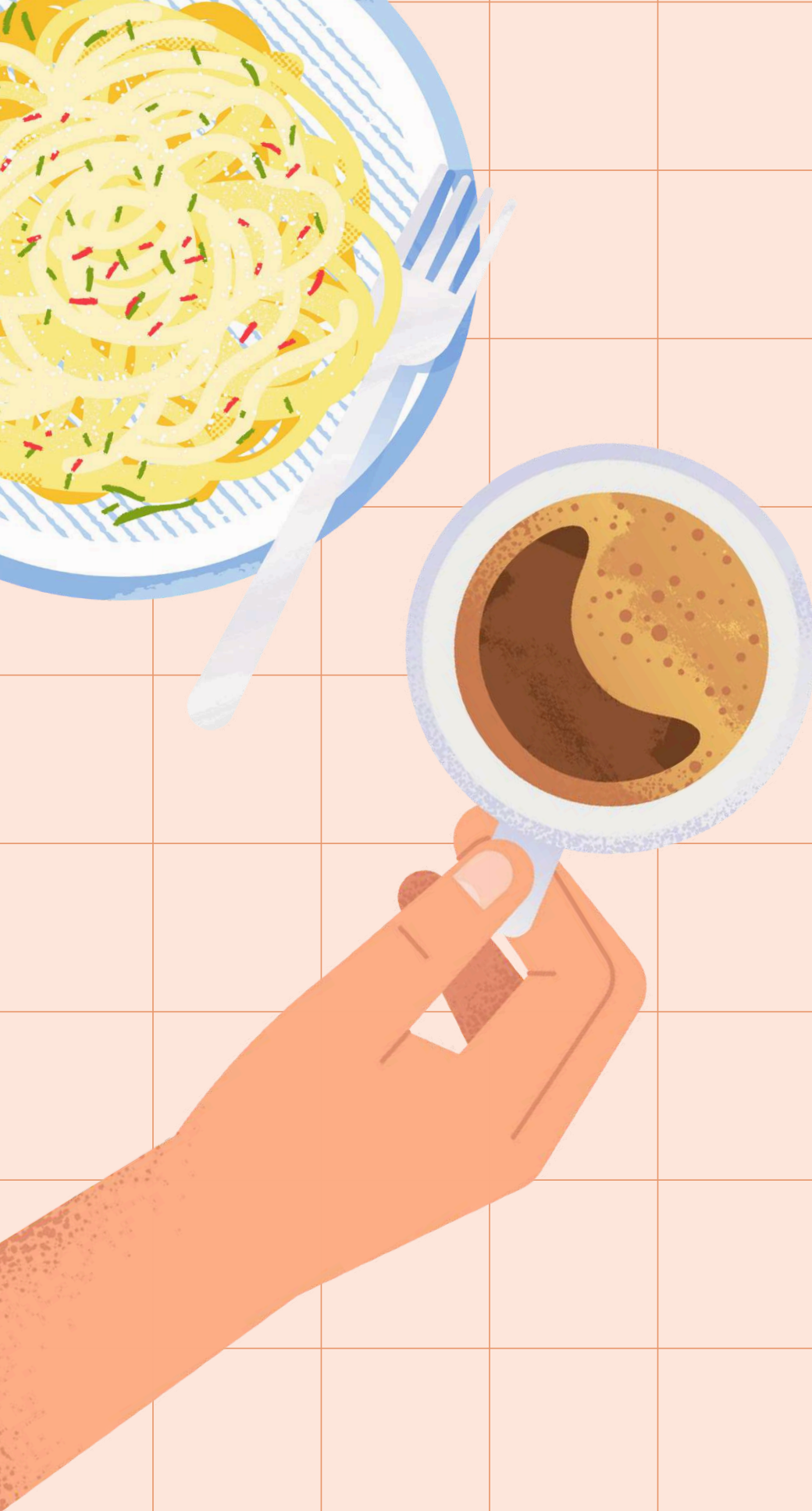


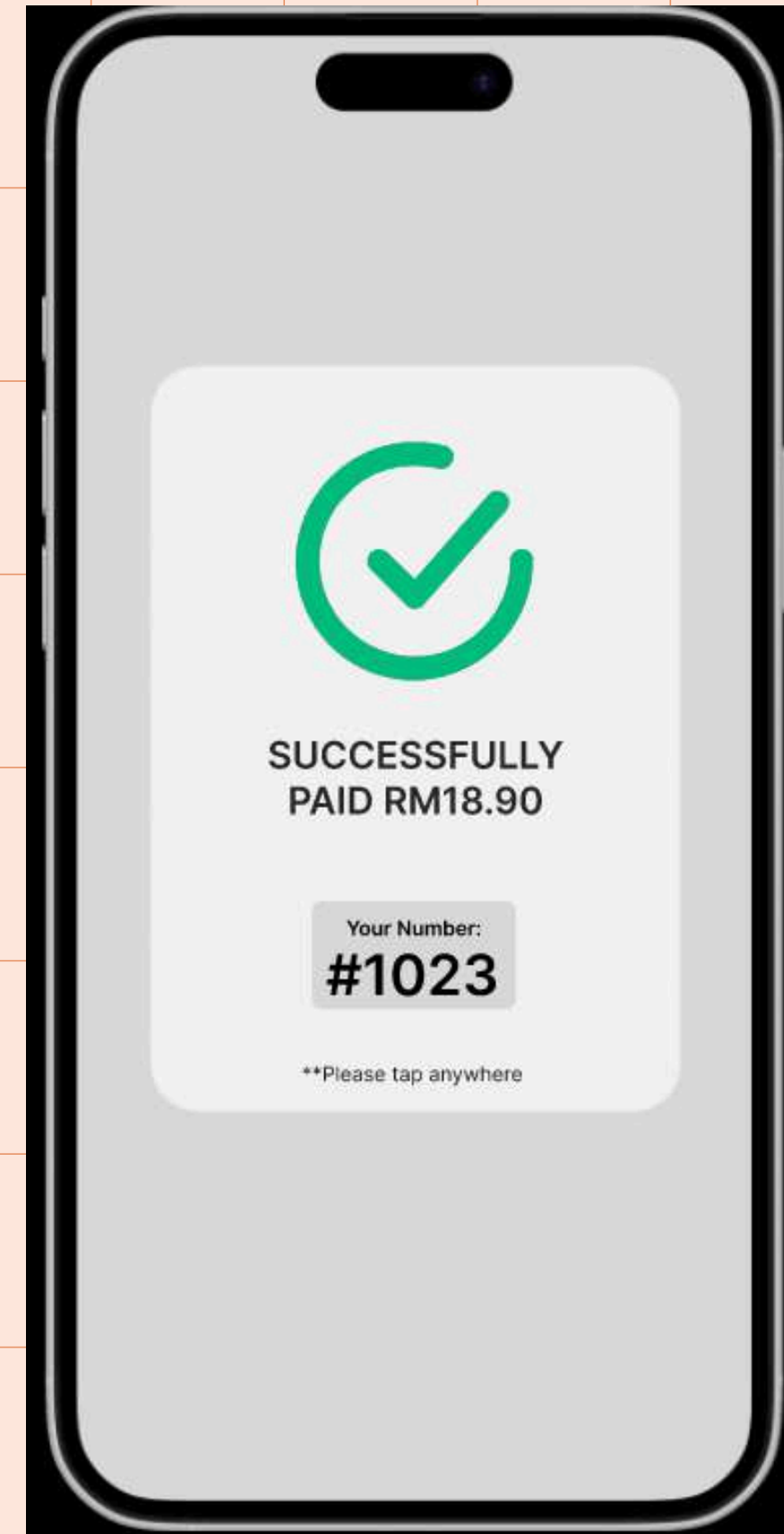
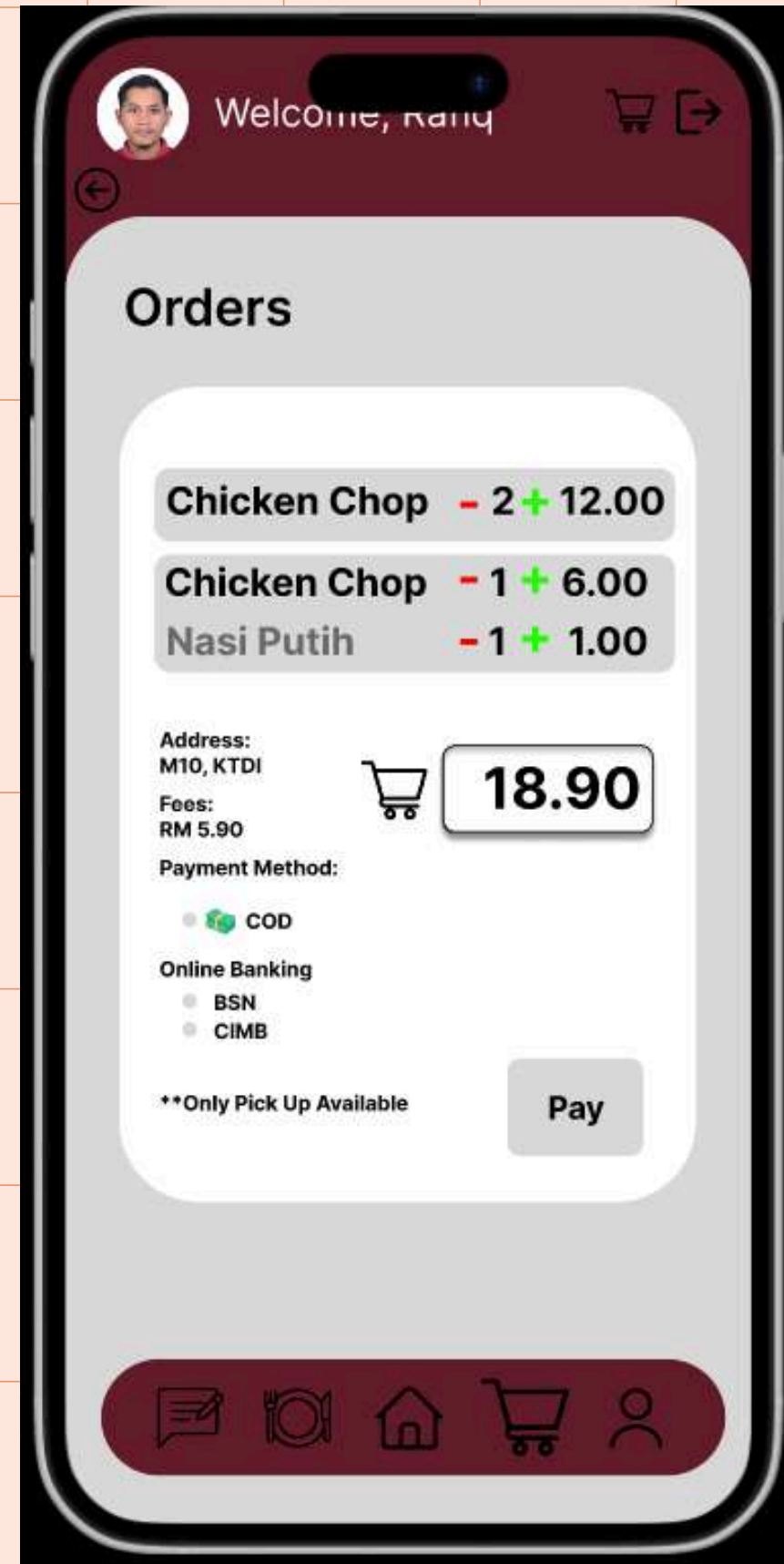
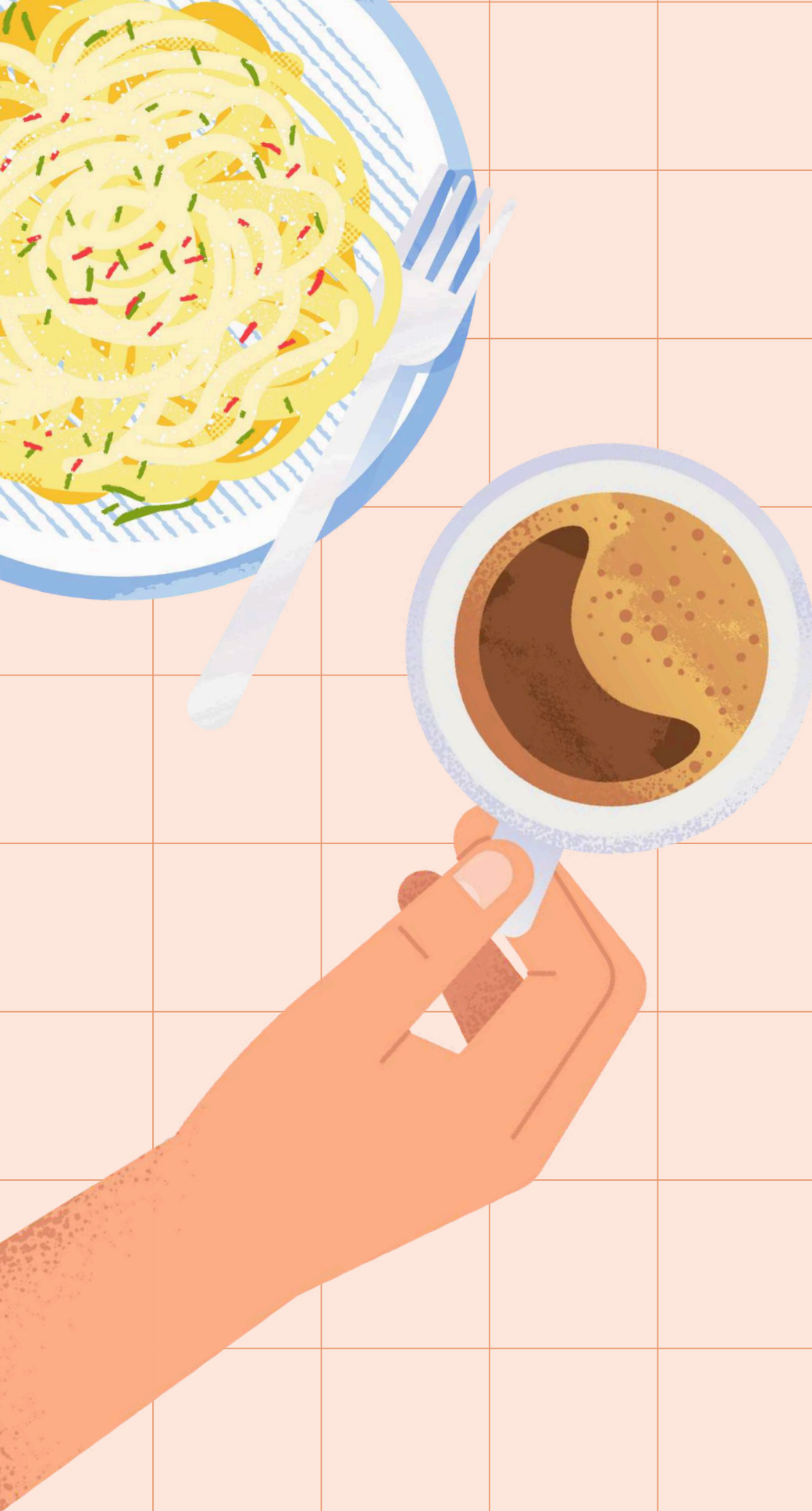
SYSTEM WIREFRAME





<https://www.figma.com/design/TCSsUVmclCgpV2fFj3M0uX/SAD?node-id=0-1&t=xGX27AjBcg0C6UXC-1>







SUMMARY

The proposed Digital Cafeteria Management System for Universiti Teknologi Malaysia (UTM) is a mobile-based solution designed to improve efficiency, reduce service delays, and enhance the overall dining experience. By allowing students and staff to place pre-orders through a mobile platform, the system helps eliminate long queues and manage peak-hour congestion. It features real-time menu updates that reflect sold-out items, highlight daily specials, and provide dietary information, allowing users to make informed choices. Orders are sent directly to the kitchen, reducing miscommunication and speeding up preparation, while integrated cashless payments streamline transactions. Additionally, the system includes data analytics to track sales trends and customer feedback, helping optimize inventory, staffing, and menu planning. Real-time occupancy updates and push notifications further support user convenience and resource management. Overall, the system transforms the traditional cafeteria into a smart, efficient, and user-focused dining environment.